

# SITE MANAGEMENT PLAN

**Rockfarmer 37<sup>th</sup> Avenue**  
 82-13 37<sup>th</sup> Avenue  
 Jackson Heights, Queens County, New York 11372  
 Block 1456, Lots 35 & 41  
 NYSDEC Site No. C241212

**DECEMBER 2022**

**PREPARED FOR:**

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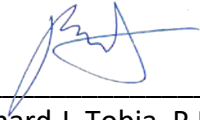
**VERTEX PROJECT NO: 48122**

**REVISIONS TO FINAL APPROVED SITE MANAGEMENT PLAN**

Revision No.	Date Submitted	Summary of Revision	NYSDEC Approval Date

**CERTIFICATION**

I, Richard J. Tobia, P.E., certify that I am currently a New York State registered professional engineer and that this Site Management Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).



\_\_\_\_\_  
Richard J. Tobia, P.E.

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095039-1  
License Number



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Seal

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December 1, 2022  
Date

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**LIST OF ACRONYMS**

<b>Acronym</b>	<b>Definition</b>
1,1,1-TCA	1,1,1-Trichloroethane
AWQS	Ambient Water Quality Standards
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
BGS	Below Ground Surface
CAMP	Community Air Monitoring Plan
cis,1,2-DCE	Cis-1,2-Dichloroethene
CLASS GA	Groundwater Effluent Limitations
COC	Contaminant of Concern
CVOC	Chlorinated Volatile Organic Compound
DER	Division of Environmental Remediation
DUSR	Data Usability Summary Report
EC	Engineering Control
ECL	Environmental Conservation Law
ESA	Environmental Site Assessment
EWP	Excavation Work Plan
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
HASP	Health and Safety Plan
IC	Institutional Control
IRM	Interim Remedial Measure
mg/kg	Milligrams per Kilogram
NYCDOB	New York City Department of Buildings
NYCRR	New York Codes, Rules, and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PBS	Petroleum Bulk Storage
PCE	Tetrachloroethene
PE	Professional Engineer
PID	Photo-Ionization Detector
PRR	Periodic Review Report

Acronym	Definition
PVC	Poly Vinyl Chloride
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan
RIWP	Remedial Investigation Work Plan
RIR	Remedial Investigation Report
ROD	Record of Decision
RSO	Remedial Site Optimization
RUSCO-C	Restricted Use Soil Cleanup Objective – Commercial
RUSCO-GW	Restricted Use Soil Cleanup Objective – Groundwater Protection
SCG	Standards, Criteria, and Guidance Value
SCO	Soil Cleanup Objective
SMP	Site Management Plan
SRIWP	Supplemental Remedial Investigation Work Plan
SSDS	Sub-Slab Depressurization System
TCE	Trichloroethene
TOGS	NYSDEC Division of Water Technical and Operational Guidance
ug/L	Micrograms Per Liter
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
UUSCO	Unrestricted Use Soil Clean Objective
VI	Vapor Intrusion
VOC	Volatile Organic Compounds



**EXECUTIVE SUMMARY**

The following provides a brief summary of the controls implemented for the Site, as well as the inspections, monitoring, maintenance, and reporting activities required by this Site Management Plan (SMP).

<b>Site Identification:</b>	Site No. C241212 82-13 37 <sup>th</sup> Avenue, Jackson Heights, Queens County, New York
<b>Institutional Controls:</b>	<ol style="list-style-type: none"> <li>1. The Site may be used for Restricted Residential, Commercial, and Industrial Use.</li> <li>2. All Institutional Controls (ICs) must be operated and maintained as specified in this SMP.</li> <li>3. All Engineering Controls (ECs) must be inspected at a frequency and in a manner defined in this SMP.</li> <li>4. The use of groundwater underlying the Site is prohibited without necessary water quality treatment as determined by the New York State Department of Health (NYSDOH) or the New York City Department of Health and Mental Hygiene to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the New York State Department of Environmental Conservation (NYSDEC).</li> <li>5. Groundwater and other environmental or public health monitoring must be performed as defined in this SMP.</li> <li>6. Data and information pertinent to site management must be reported at the frequency and in a manner as defined in this SMP.</li> <li>7. All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP.</li> <li>8. Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP.</li> <li>9. Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in this SMP.</li> <li>10. Access to the Site must be provided to agents, employees, or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement.</li> <li>11. The potential for vapor intrusion must be evaluated for any buildings developed in the area within the IC boundaries noted on Figure 9, and any potential impacts that are identified must be monitored or mitigated.</li> <li>12. Vegetable gardens and farming on the Site are prohibited.</li> </ol>

<b>Site Identification:</b>	Site No. C241212 82-13 37 <sup>th</sup> Avenue, Jackson Heights, Queens County, New York	
<b>Institutional Controls:</b>	13. An evaluation shall be performed to determine the need for further investigation and remediation should large scale redevelopment occur, if any of the existing structures are demolished, or if the subsurface is otherwise made accessible.	
<b>Engineering Controls:</b>	1. Cover System	
	2. Active Sub-Slab Depressurization System	
<b>Inspections:</b>		<b>Frequency:</b>
1. Cover System / Site-Wide Inspection		Annually
2. Groundwater Monitoring Wells MW-1 to MW-10		Annually
3. Active Sub-Slab Depressurization System (Blower, Sub-Slab)		Annually
4. Active Sub-Slab Depressurization System (Piping)		Quarterly
5. Active Sub-Slab Depressurization System (Alarm)		Quarterly
<b>Monitoring:</b>		<b>Frequency:</b>
1. Groundwater Monitoring Wells (MW-1, MW-2, MW-3, MW-8, and MW-10)		Annually
2. Vapor Intrusion (Indoor Air, Ambient Air)		Annually (Next three heating seasons)
<b>Maintenance:</b>		<b>Frequency:</b>
1. Cover System		As Needed
2. Active Sub-Slab Depressurization System		As Needed
<b>Reporting:</b>		<b>Frequency:</b>
1. Period Review Report		Annually

Further descriptions of the above requirements are provided in detail in the latter sections of the SMP.

## 1.0 INTRODUCTION

### 1.1 General

This Site Management Plan (SMP) is a required element of the remedial program for the Rockfarmer 37<sup>th</sup> Avenue property located at 82-13 37<sup>th</sup> Avenue in Jackson Heights, Queens County, New York (hereinafter referred to as the “Site”). A Site Location Map is provided as **Figure 1**. The Site is currently in the New York State Brownfield Cleanup Program (BCP), Site No. C241212, which is administered by the New York State Department of Environmental Conservation (NYSDEC).

The Volunteer (37<sup>th</sup> Owner LLC; Horizon 37<sup>th</sup> Ave, LLC; and RFC Ketcham 37<sup>th</sup> Ave, LLC) entered into a Brownfield Cleanup Agreement (BCA) on July 25, 2018, with the NYSDEC to remediate the Site. A figure showing the Site location and boundaries of the Site is provided as Figure 2. The boundaries of the Site are more fully described in the metes and bounds description that is part of the Environmental Easement provided in **Appendix A**.

After completion of the remedial work, some residual contamination from various sources remained at the Site, which is hereafter referred to as “remaining contamination”. Institutional controls (ICs) and engineering controls (ECs) have been incorporated into the Site remedy to control exposure to remaining contamination to ensure protection of public health and the environment. An Environmental Easement granted to the NYSDEC, and recorded with the Queens County Clerk, requires compliance with this SMP and all ICs and ECs placed on the Site.

This SMP was prepared to manage remaining contamination at the Site until the Environmental Easement is extinguished in accordance with Environmental Conservation Law (ECL) Article 71, Title 36. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor’s successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

It is important to note that:

- This SMP details the Site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the Environmental Easement, which is grounds for revocation of the Certificate of Completion.
- Failure to comply with this SMP is also a violation of ECL, 6 New York Codes, Rules, and Regulations (NYCRR) Part 375 and the BCA (Index No. C241212-07-18, Site No. C241212) for the Site, and thereby subject to applicable penalties.

All reports associated with the Site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State. A list of contacts for persons involved with the Site is provided in **Appendix B** of this SMP.

This SMP was prepared by Vertex Engineering, PC, on behalf of 37<sup>th</sup> Owner LLC; Horizon 37<sup>th</sup> Ave, LLC; and RFC Ketcham 37<sup>th</sup> Ave, LLC, in accordance with the requirements of the NYSDEC's DER-10 (Technical Guidance for Site Investigation and Remediation), dated May 2010, and the guidelines provided by the NYSDEC. This SMP addresses the means for implementing the ICs and/or ECs that are required by the Environmental Easement for the Site.

## 1.2 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. The NYSDEC can also make changes to the SMP or request revisions from the remedial party. Revisions will be necessary upon, but not limited to, the following occurring: a change in media monitoring requirements; upgrades to or shutdown of a remedial system; post-remedial removal of contaminated sediment or soil; or other significant change to the Site conditions. In accordance

with the Environmental Easement for the Site, the NYSDEC project manager will provide a notice of approved changes to the SMP and append these notices to the SMP that is retained in its files.

### **1.3 Notifications**

Notifications will be submitted by the property owner to the NYSDEC, as needed, in accordance with NYSDEC's DER-10 for the following reasons:

- 60-day advance notice of any proposed changes in Site use that are required under the terms of the BCA, 6 NYCRR Part 375 and/or Environmental Conservation Law.
- 7-day advance notice of any field activity associated with the remedial program.
- 15-day notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan. If the ground-intrusive activity qualifies as a change of use as defined in 6 NYCRR Part 375, the above-mentioned 60-day advance notice is also required.
- Notice within 48 hours of any damage or defect to the foundation, structures, or EC that reduces or has the potential to reduce effectiveness of an EC, and likewise, any action to be taken to mitigate the damage or defect.
- Notice within 48 hours of any non-routine maintenance activities.
- Verbal notice by noon of the following day of any emergency, such as a fire; flood; or earthquake that reduces or has the potential to reduce the effectiveness of ECs in place at the site, with written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.
- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action submitted to the NYSDEC within 45 days describing and documenting actions taken to restore the effectiveness of the ECs.

Any change in the ownership of the Site of the responsibility for implementing this SMP will include the following notifications:

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser/Remedial Party has been provided with a copy of the BCA and all approved work plans and reports, including this SMP.
- Within 15 days after the transfer of all or part of the Site, the new owner’s name, contact representative, and contact information will be confirmed in writing to the NYSDEC.

The following table includes contact information for the above notifications. The information on this table will be updated as necessary to provide accurate contact information. A full list of Site-related contact information is provided in **Appendix B**.

NOTIFICATIONS <sup>(1)</sup>		
NAME	CONTACT INFORMATION	REQUIRED NOTIFICATION <sup>(2)</sup>
NYSDEC Project Manager: Sadique Ahmed, P.E.	(518) 402-9656 / sadique.ahmed@dec.ny.gov	All Notifications
NYSDEC Section Chief: William Bennett	(518) 402-9659 / william.bennett@dec.ny.gov	All Notifications
NYSDEC Site Control Section Chief: Kelly Lewandowski	(518) 402-9569 kelly.lewandowski@dec.ny.gov	Notifications 1 and 8
NYSDEC Bureau Director: Gerard Burke	(518) 402-9817 / gerard.burke@dec.ny.gov	All Notifications
NYSDOH Project Manager: Kristen Kulow	(607) 353-4335 / kristin.kulow@health.ny.gov	Notifications 4, 6, and 7

- Notifications are subject to change and will be updated as necessary.
- Numbers in this column reference the numbered bullets in the notification list in this section.

## 2.0 SUMMARY OF PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

### 2.1 Site Location and Description

The Site is located in Jackson Heights, Queens County, New York and consists of two contiguous parcels identified as Block 1456, Lots 35 and 41. A Site Location Map is provided as **Figure 1** and a Tax Map is provided as **Figure 2**. According to the New York City Department of Buildings (NYCDOB), the Site is identified with the following addresses: 82-01 to 82-11 37<sup>th</sup> Avenue, 82-13 to 82-21 37<sup>th</sup> Avenue, 35-57 to 35-65 82<sup>nd</sup> Street, and 35-64 83<sup>rd</sup> Street. The Site is located in an urban area with a mix of commercial and residential buildings, located on the north side of 37<sup>th</sup> Avenue, between 82<sup>nd</sup> Street and 83<sup>rd</sup> Street. The approximate Site area is 20,000 square feet (0.459 acres), which is divided equally between the two lots. The boundaries of the Site are more fully described in **Appendix A** (Environmental Easement). The owners of the Site parcels at the time of issuance of this SMP are 37<sup>th</sup> Avenue Owner LLC; RFC Ketcham 37<sup>th</sup> Ave, LLC; and Horizon 37<sup>th</sup> Ave, LLC as tenants in common, having an office c/o Rockfarmer Properties, 42-15 235<sup>th</sup> Street, Douglaston, New York 11355.

### 2.2 Physical Setting

#### 2.2.1 Land Use

The Site is improved with an approximately 108,000-square foot (above-grade), nine-story commercial office building, with ground-floor retail (Rite Aid, nail salon, and vacant space) and a two-level parking garage. The Site building is improved with a basement, which is occupied by office space, utilities, and storage space. The building footprint covers the entire Site, and is surrounded to the south, east, and west by public sidewalks and roadways; to the north are residential structures.

The Site is currently active, and there are no proposed use changes. Based on a review of the New York City Department of City Planning Zoning and Land Use mapping program, the Site is zoned C4-3. The C4 (commercial) zoning is described as areas mapped in regional commercial centers, outside of the central business districts. The C4 zone typically includes specialty and department stores, theaters, and other commercial and office uses. The neighboring properties are currently used for a combination of commercial and residential uses.

### **2.2.2 Geology**

Based upon the findings of the subsurface investigations completed, soils encountered on the exterior of the Site building generally consisted of sands from approximately 1.0 foot below ground surface (bgs) to the soil boring completion depth of 40.0 feet bgs. Soils encountered below the footprint of the Site building generally consisted of clays, silty sands, and sands from below the basement slab to the soil boring completion depth of 12.0 feet below the basement slab. Fill materials (clay and sand with brick, concrete, and rock) were encountered in several soil borings from below the basement slab to approximately 5.0 to 8.0 feet below the basement slab. Bedrock was not encountered to a depth of 40 feet bgs.

A geologic cross section is shown in **Figure 3**. Site-specific boring logs are in **Appendix C**.

### **2.2.3 Hydrogeology**

Groundwater was encountered at depths ranging from 29.5 to 32.8 feet bgs in the monitoring wells installed in the sidewalk around the exterior of the Site building. Based on the approximate basement finished floor depth of 11 feet bgs, groundwater would be encountered approximately 17.5 to 21.5 feet below the basement slab. Monitoring well MW-10 was installed below the building footprint, in the northeast portion of the Site. During the April 2020 groundwater sampling event, groundwater was encountered 21.04 feet below the basement slab. Based on surveyed groundwater elevations at the Site, groundwater flow at the Site is northwest (March



and June 2019) to southwest (April 2020).

In accordance with New York Codes, Rules and Regulations Title 6 (6 NYCRR) Part 701: Classifications -Surface Waters and Groundwater, groundwater at the site is identified as Class GA (fresh groundwater). There are no known groundwater supply wells on the Site, and currently there are no known deed restrictions on the use of groundwater at the Site. Groundwater in the vicinity of the Site is not utilized for industrial, agriculture, or public supply purposes.

A groundwater contour map is shown in **Figure 4**. Groundwater elevation data is provided in **Table 1**. Groundwater monitoring well construction logs are provided in **Appendix C**.

## **2.3 Investigation and Remedial History**

The following narrative provides a remedial history timeline and a brief summary of the available project records to document key investigative and remedial milestones for the Site. Full titles for each of the reports referenced below are provided in Section 8.0 (References).

### **2.3.1 Phase I Environmental Site Assessment (November 2017)**

According to a Draft *Phase I Environmental Site Assessment* (ESA) prepared by Merritt Environmental Consulting Corp., dated November 13, 2017, and VERTEX's review of Sanborn fire insurance maps, the earliest identified use of the Site included commercial retail by at least 1930. The current commercial office building, with ground-floor retail and a parking garage, was constructed in 1993. Review of city directories identified Star Cleaning & Dyeing Co. at 82-05 37th Avenue in 1939 and Columbia Cleaners at 82-13 37th Avenue for the years 1939 to 1970. In addition, Cecil Cleaners was identified at 35-62 83rd Street from 1986 to 1994. The location of the former dry cleaners at the Site is depicted on **Figure 5**. No other historical operations of environmental concern were identified.

### **2.3.2 Phase II Focused Subsurface Investigation (March 2018)**

The *Phase II Focused Subsurface Investigation*, prepared by The Vertex Companies, Inc. and dated March 15, 2018, documented the subsurface investigation activities completed at the Site to evaluate sub-slab soil vapor, indoor air, groundwater, and soil conditions.

Vapor intrusion (VI) sampling conducted during the heating season in December 2017 and February 2018 included the collection of 10 sub-slab soil vapor samples (SS-1 through SS-10), 12 indoor air samples (IA-1 through IA-12), and two ambient air samples (AA). All samples were analyzed for the presence of volatile organic compounds (VOCs) utilizing United States Environmental Protection Agency (USEPA) Method TO-15. Evaluation of the soil vapor analytical data identified concentrations of carbon tetrachloride and tetrachloroethene (PCE) in exceedance of the New York State Department of Health (NYSDOH) matrix sub-slab soil vapor concentration criteria. In addition, indoor air concentrations of carbon tetrachloride and PCE were identified at elevated concentrations at co-located positions with the highest sub-slab vapor samples. Evaluation of the soil vapor data compared to the indoor air data using the NYSDOH Vapor/Indoor Air Matrix Guidance (May 2017) identified seven sample locations where the contaminant concentrations are elevated to such levels that mitigation of the VI concern is warranted. None of the other detected indoor air concentrations were identified in exceedance of the Indoor Air Quality Guidance Values (Table 3.1 in the NYSDOH *Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York* dated October 2006 and updated in September 2013 and August 2015).

The soil and groundwater investigation conducted in February 2018 included the installation of three soil borings (VTW-1 through VTW-3) on the exterior of the Site building. Each soil boring was converted to a temporary monitoring well for the collection of a groundwater sample. Soil and groundwater samples were collected and analyzed for VOCs. Review of the soil analytical results identified no VOCs in exceedance of the most stringent NYSDEC Soil Cleanup Objectives (SCOs). Review of the groundwater analytical results identified concentrations of PCE at VTW-1

(17 micrograms per liter [ug/L]) and at VTW-3 (90 ug/L) in exceedance of the NYSDEC Ambient Water Quality Standard (AWQS) and NYSDEC Groundwater Effluent Limitations (Class GA) standard of 5 ug/L. No exceedances of the applicable criteria were reported for the sample collected from the up-gradient well (VTW-2).

### **2.3.3 Remedial Investigation Work Plan (February 2019)**

The *Remedial Investigation Work Plan (RIWP)*, prepared by VERTEX and dated February 7, 2019, proposed the completion of a sewer evaluation, installation of soil borings beneath the Site building footprint and along the sidewalk along 37<sup>th</sup> Avenue; collection of soil samples; completion of a sub-slab depressurization system (SSDS) pilot study; installation of permanent monitoring wells; and the collection of groundwater samples. The RIWP was approved by the NYSDEC on February 8, 2019.

### **2.3.4 Supplemental Remedial Investigation Work Plan (February 2020)**

On November 22, 2019, VERTEX submitted a draft Remedial Investigation Report (RIR) to the NYSDEC to provide a summary of the nature and extent of contamination at the Site. The RIR incorporated the information collected during the remediation investigation conducted in accordance with the NYSDEC-approved RIWP (VERTEX, February 2019).

On January 7, 2020, VERTEX received a letter from the NYSDEC which expressed concerns regarding the conclusion that PCE detected in on-site groundwater and soil vapor was solely from an up-gradient, off-site source, and requested that an additional groundwater investigation be conducted at the Site.

The *Supplemental Remedial Investigation Work Plan (SRIWP)*, prepared by VERTEX and dated February 14, 2020, included the installation of five permanent monitoring wells (MW-6 to MW-10) and the collection of groundwater samples from the five previously installed monitoring wells

(MW-1 to MW-5) and the newly installed wells. The SRIWP was approved by the NYSDEC on February 25, 2020.

### **2.3.5 Remedial Investigation Report (June 2020)**

VERTEX prepared the *Remedial Investigation Report (RIR)*, dated June 11, 2020, to provide a summary of the nature and extent of contamination at the Site, and incorporate the findings of the NYSDEC-approved RIWP (VERTEX, February 2019) and SRIWP (VERTEX, February 2020). Based on the remedial investigation findings, the primary contaminants of concern (COCs) at the Site are chlorinated volatile organic compounds (CVOCs) that were identified in the groundwater and soil vapor.

No CVOC soil source was detected on-site or within the immediate area of the Site building footprint. Only one soil sample out of 21 locations had a PCE detection, which only slightly exceeded the NYSDEC Unrestricted Use Soil Cleanup Objective (UUSCO). No evidence of a chlorinated solvent release to soil (elevated photoionization detector (PID) readings, odors, or staining) was identified in any of the soil borings installed below the footprint of the Site building or along the adjoining sidewalks.

Groundwater flow direction was documented at the Site to be northwest (March and June 2019) and southwest (April 2020), and groundwater is encountered at approximately 29.5 to 32.8 feet bgs on the exterior of the Site building and approximately 21 feet below the basement slab of the Site building. CVOC impacts in groundwater were identified in the up-gradient monitoring wells on the Site (MW-1, MW-3, MW-8, and MW-10) and up-gradient off-site wells (MW-4 and MW-5). Review of the groundwater data for the down-gradient monitoring wells (MW-2, MW-6, MW-7, and MW-9) identified no CVOC concentrations exceeding the AWQS or Class GA. The groundwater impacts are delineated in the down-gradient direction and extend beneath the footprint of the Site building.

The highest sub-slab soil vapor detections were identified in the southern and eastern portions of the Site. The SSDS remedy will serve the entire building and will be focused in areas with elevated sub-slab vapor detections. Further, while the highest sub-slab vapor detections were identified in southern and eastern portions of the Site, there is a potential for off-site SVI (soil vapor intrusion) impacts.

The NYSDEC approved the RIR on June 17, 2020.

### **2.3.6 Supplemental Pre-Design Investigation Work Plan (September 2020)**

The *Supplemental Pre-Design Investigation Work Plan*, prepared by VERTEX and dated September 16, 2020, was submitted to the NYSDEC because the Volunteers were conducting interior renovations at the Site to accommodate new tenant occupancy, which work resulted in making the sections of the Site building slab in the path of the proposed SSDS accessible. The scope of the work plan included the following: installation of trenches in the Site building basement along the pathway of the proposed SSDS horizontal piping; sampling of soils at the requested intervals at each of the identified extraction points for the SSDS; and installation of horizontal SSDS piping and gravel in the exposed trenches.

The report also included an IRM Work Plan, which outlined the proposed remedial actions to remove the soils exhibiting, or that previously exhibited, the elevated presence of PCE at soil sample RF-9. Soil sample RF-9 was collected during the remedial investigation activities in February 2019, at a depth of 1.5 to 2.0 feet below the basement slab. The proposed IRM included a limited soil excavation and post-excavation soil sampling. The IRM Work Plan was approved by the NYSDEC on September 11, 2020.

### **2.3.7 IRM Construction Completion Report (January 2021)**

To document the completion of the IRM activities, VERTEX prepared the *Interim Remedial Measure Construction Completion Report*, dated January 29, 2021. Limited soil excavation activities were conducted in September 2020, and one 55-gallon drum of non-hazardous soil was disposed off-site. Post-excavation soil sampling identified no VOC concentrations in exceedance of the applicable NYSDEC SCOs, except for acetone, which slightly exceeded the UUSCO only. Acetone is a typical laboratory contaminant, and the low-level detection is expected to be a result of laboratory contamination. The impacted soil was properly manifested, transported, and disposed at an off-site facility. The excavation was backfilled with quarry stone and completed with concrete surface restoration.

Based on the above information, no further investigation or remediation was warranted, and the NYSDEC approved the IRM Construction Completion Report on July 8, 2021.

### **2.3.8 Remedial Action Work Plan (May 2021)**

The *Remedial Action Work Plan (RAWP)*, prepared by VERTEX and dated May 13, 2021, was submitted to evaluate and recommend remedial actions and applicable technology to address impacts identified at the Site, as reported in the RIR (VERTEX, June 2020). The selected remedial action for the Site included the following: soil excavation at sample RF-9, installation of an active SSDS, and implementation of land and groundwater use restrictions. The Decision Document and RAWP approval was issued by the NYSDEC on April 21, 2021.

### **2.3.9 Limited Soil Investigation Work Plan (September 2021)**

The *Limited Soil Investigation Work Plan*, prepared by VERTEX and dated September 29, 2021, was submitted in response to the NYSDEC's comments to Progress Report No. 21 (June 2021), which reported elevated PCE soil concentrations at two SSDS extraction point sample locations

(VTX-113 and VTX-114), located in the eastern portion of the Site building. Soil analytical results identified detections of PCE at, 19 milligrams per kilogram (mg/kg) and 16 mg/kg, which are well below the NYSDEC Restricted Use Soil Cleanup Objective for Commercial Use (RUSCO-C) of 150 mg/kg; however, the concentrations exceeded the NYSDEC Restricted Use Soil Cleanup Objective for the Protection of Groundwater (RUSCO-GW) of 1.3 mg/kg.

On September 2, 2021, the NYSDEC requested additional soil delineation below the southeast portion of the Site building. The work plan scope of work included the following: installation of nine soil borings (B-1 to B-9), field screening of the soils, and the collection and analysis of soil samples for VOCs.

#### **2.3.10 Limited Soil Investigation Report (December 2021)**

The objective of the Limited Soil Investigation Report, prepared by VERTEX and dated December 28, 2021, was to document the additional soil characterization completed to assess whether a CVOC source area was present at the Site. A total of nine soil borings (B-1 to B-9) were installed beneath the southeast portion of the Site building, and a total of 18 soil samples were analyzed for VOCs. Samples were collected at depths ranging from 0.5 to 14.5 feet below the basement slab. None of the soil samples contained CVOC concentrations exceeding the NYSDEC SCOs. A total of two sample locations (B-2 and B-5) contained acetone exceeding the UUSCO only. Sample B-2, collected at 14.5-15.0 feet below the basement slab, and sample B-5, collected at 0.5-1.0 feet below the basement slab, both contained an acetone concentration of 0.11 mg/kg, which exceeds the UUSCO of 0.05 mg/kg. Acetone is a typical laboratory contaminant, and the low-level detections are expected to be the result of laboratory contamination.

Based on the findings of the Limited Soil Investigation, no CVOC source area was identified at the Site. Horizontal and vertical sampling to delineate previous soil samples VTX-113 and VTX-114 with elevated PCE detections identified no exceedances to the SCOs. The previous soil sample locations were from areas immediately below the horizontal extraction points for the

active SSDS; therefore, it is expected that any previously detected residual impacts would have been remediated via the continued operation of the SSDS since July 2021, as the system will act as a soil vapor extraction system to strip the volatile organic compound(s) from the porous soils. Based on the findings, no further investigation was recommended. The NYSDEC approved the Limited Soil Investigation Report on January 19, 2022.

### **2.3.11 SSDS Effectiveness Testing Results (February 2022)**

In accordance with the NYSDEC-approved RAWP (VERTEX, May 2021), SSDS effectiveness testing (soil vapor, indoor air, and ambient air) was conducted during the heating season in November 2021. The scope of work included the collection of six sub-slab soil vapor samples, six co-located indoor air samples, and one ambient air sample. All samples were analyzed for the presence of VOCs by USEPA Method TO-15.

Evaluation of the soil vapor analytical data identified PCE at one location (VTX-SS5) in exceedance of the NYSDOH matrix sub-slab soil vapor concentration criteria. Review of the soil vapor result along with the co-located indoor air concentration (VTX-IA5) confirmed no further action was warranted in accordance with the NYSDOH Soil Vapor/Indoor Air Matrix Guidance (May 2017).

In addition, indoor air concentrations of 1,1,1-trichloroethane (1,1,1-TCA), carbon tetrachloride, and PCE were identified in exceedance of the NYSDOH indoor air concentration criteria. None of the detected indoor air concentrations were identified in exceedance of the Indoor Air Quality Guidance Values (Table 3.1 in the NYSDOH *Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York* dated October 2006 and updated in September 2013 and August 2015). Elevated 1,1,1-TCA was noted in one indoor air sample (VTX-IA1); however, review of the indoor air data along with the co-located sub-slab soil vapor sample (VTX-SS1) confirmed no further action warranted in accordance with the NYSDOH Soil Vapor/Indoor Air Matrix Guidance (May 2017). Elevated carbon tetrachloride was noted in all six indoor air sample locations, along with the ambient air sample; however, it was non-detect in all co-located sub-slab soil vapor sample



locations except VTX-SS10, where a concentration was detected but was below the lowest matrix value. Evaluation of the indoor air detections along with the co-located sub-slab soil vapor results confirmed no further action in accordance with the NYSDOH Soil Vapor/Indoor Air Matrix Guidance (May 2017). Furthermore, as indicated by the detection of similar concentration in the ambient air sample, the carbon tetrachloride detections in indoor air are likely attributed to ambient air and not vapor intrusion. Elevated PCE was noted in one indoor air sample (VTX-IA10); however, review of the indoor air data along with the co-located sub-slab soil vapor sample (VTX-SS10) confirmed no further action warranted in accordance with the NYSDOH Soil Vapor/Indoor Air Matrix Guidance (May 2017). PCE was also detected in the ambient air sample indicating that the indoor air detection can also likely be partially attributed to ambient air.

Overall, evaluation of the soil vapor data compared to the indoor air data using the NYSDOH Soil Vapor/Indoor Air Matrix Guidance (May 2017) identified no sample locations where the contaminant concentrations are elevated to such levels that further monitoring or mitigation, beyond the continued operation of the SSDS, of the vapor intrusion concern is warranted. All sample locations were identified as “No Further Action” with respect to the Soil Vapor/Indoor Air Matrices.

## **2.4 Remedial Action Objectives**

The Remedial Action Objectives (RAOs) for the Site as listed in the Decision Document dated April 2021 are as follows:

### **2.4.1 Groundwater**

#### RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.

#### RAO for Environmental Protection

- Remove the source of ground or surface water contamination.

### **2.4.2 Soil**

#### RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation exposure to contaminants volatilizing from soil.

#### RAO for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

### **2.4.3 Soil Vapor**

#### RAO for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into the Site building.

## 2.5 Remaining Contamination

Based on the remedial investigation findings, the primary COCs at the Site are CVOCs that were identified in soil, groundwater, and sub-slab soil vapor.

### 2.5.1 Soil

Two soil samples (VTX-113 and VTX-114) collected in May 2021 during the installation of the extraction points for the SSDS contained detections of PCE at 19 mg/kg and 16 mg/kg, which exceed the RUSCO-GW of 1.3 mg/kg. The samples were collected at 1.0-1.5 feet below the basement slab.

In October 2021, nine soil borings were advanced in the southeast portion of the Site building to further evaluate soil conditions and assess whether a CVOC source area was present. A total of 18 soil samples were analyzed for VOCs. Based on the findings of the Limited Soil Investigation, no CVOC source area was identified at the Site. Horizontal and vertical sampling to delineate previous soil samples VTX-113 and VTX-114 with elevated PCE detections identified no exceedances to the SCOs. The previous soil sample locations were from areas immediately below the horizontal extraction points for the active SSDS; therefore, it is expected that any previously detected residual impacts would be remediated via the continued operation of the SSDS since July 2021, as the system will act as a soil vapor extraction system to strip the VOCs from the porous soils.

A total of 19 soil samples were analyzed for pesticides and metals during the February 2019 remedial investigation activities. Six soil sample locations contained one or more pesticides (4,4'-DDD, 4,4'-DDE, 4,4'-DDT, and/or dieldrin) exceeding the SCOs and two locations (RF-2 and RF-4) contained metals (cadmium, copper and/or zinc) concentrations exceeding the SCOs.

**Table 2** and **Figure 6** summarize the results of all soil samples collected that exceed the Unrestricted Use and Protection of Groundwater SCOs at the Site after completion of remedial action.

### 2.5.2 Groundwater

A total of 23 groundwater samples have been collected at the Site via three temporary monitoring wells and 10 permanent monitoring wells. The CVOCs identified at concentrations exceeding the AWQS include PCE, trichloroethene (TCE), and cis-1,2-dichloroethene (cis-1,2-DCE). Concentrations of PCE exceeding the AWQS of 5 ug/L ranged from 17 to 420 ug/L. Concentrations of TCE exceeding the AWQS of 5 ug/L ranged from 5.8 to 11 ug/L. Concentrations of cis-1,2-DCE exceeding the AWQS of 5 ug/L ranged from 18 to 57 ug/L.

Groundwater flow direction was documented at the Site to be northwest (March and June 2019) and southwest (April 2020). CVOC impacts in groundwater were identified in the up-gradient monitoring wells on the Site (MW-1, MW-3, MW-8, and MW-10) and up-gradient off-site wells (MW-4 and MW-5). Review of the groundwater data for the down-gradient monitoring wells (MW-2, MW-6, MW-7, and MW-9) identified no CVOC concentrations exceeding the AWQS or Class GA standard. The groundwater impacts are delineated in the down-gradient direction and extend from up-gradient of the Site building to beneath the footprint of the Site building.

During the April 2020 groundwater sampling event, petroleum-related VOCs (1,2,4,5-tetramethylbenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, ethylbenzene, isopropylbenzene, n-propylbenzene, and naphthalene) were identified in monitoring wells MW-6, MW-9, and MW-10 at concentrations exceeding the AWQS. These compounds are not COCs associated with the former on-site dry-cleaning operations and are likely associated with degraded heating oil and could be associated with an off-site release. Review of the NYSDEC Bulk Storage Database identified the Site with unregulated/closed Petroleum Bulk Storage (PBS) No. 2-207845, with a closed/removed 1,500-gallon No. 2 heating oil underground storage tank (UST).

The steel tank was situated within a vault, and the location of the UST and vault is unknown. No closure documentation was available; however, there is no NYSDEC spill number associated with the former UST. The Site building is currently serviced by natural gas, and no anomalies indicative of USTs were identified during the geophysical evaluations completed at the Site.

**Table 3** and **Figure 7** summarize the result of all samples of groundwater that exceed the AWQS and/or Class GA after completion of the remedial action.

### **2.5.3 Soil Vapor**

Evaluation of the soil vapor analytical data identified concentrations of carbon tetrachloride, TCE, and PCE in exceedance of the NYSDOH matrix sub-slab soil vapor concentration criteria. The highest concentrations were identified in the southeast portion of the Site. As discussed in Sections 2.3.2 and 2.3.12, the evaluation of soil vapor data compared to the co-located indoor air data and ambient air data using the NYSDOH Soil Vapor/Indoor Air Matrix Guidance (May 2017), confirmed that no further monitoring or mitigation is warranted, beyond the continued operation of the active SSDS, to address the vapor intrusion concerns. All sample locations were identified as “No Further Action” with respect to the NYSDOH Soil Vapor/Indoor Air Matrices.

**Table 4** and **Figure 8** summarize the results of all samples of soil vapor that exceed standards, criteria, and guidance values (SCGs) after completion of the remedial action.

### 3.0 INSTITUTIONAL AND ENGINEERING CONTROL PLAN

#### 3.1 General

Since remaining contamination exists at the Site, ICs and ECs are required to protect human health and the environment. This IC/EC Plan describes the procedures for the implementation and management of all IC/ECs at the Site. The IC/EC Plan is one component of the SMP and is subject to revision by the NYSDEC case manager.

This plan provides:

- A description of all IC/ECs on the Site.
- The basic implementation and intended role of each IC/EC.
- A description of the key components of the ICs set forth in the Environmental Easement.
- A description of the controls to be evaluated during each required inspection and periodic review.
- A description of plans and procedures to be followed for implementation of IC/ECs, such as the implementation of the Excavation Work Plan (EWP) (as provided in **Appendix D**) for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the Site; and
- Any other provisions necessary to identify or establish methods for implementing the IC/ECs required by the Site remedy, as determined by the NYSDEC project manager.

#### 3.2 Institutional Controls

A series of ICs is required by the Decision Document to: (1) implement, maintain, and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination; and (3) limit the use and development of the Site to restricted residential, commercial, and industrial

uses only. Adherence to these ICs on the Site is required by the Environmental Easement and will be implemented under this SMP. ICs identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement. The IC boundaries are shown on **Figure 9**. These ICs are the following:

- The property may be used for restricted residential, commercial, and industrial use.
- All ECs must be operated and maintained as specified in this SMP.
- All ECs must be inspected at a frequency and in a manner defined in the SMP.
- The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the New York City Department of Health and Mental Hygiene to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department.
- Groundwater and other environmental or public health monitoring must be performed as defined in this SMP.
- Data and information pertinent to site management must be reported at the frequency and in a manner as defined in this SMP.
- All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP.
- Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP.
- Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in this SMP.
- Access to the Site must be provided to agents, employees, or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement.
- The potential for vapor intrusion must be evaluated for any buildings developed in the area within the IC boundaries noted on **Figure 9**, and any potential impacts that are

identified must be monitored or mitigated.

- Vegetable gardens and farming on the Site are prohibited.
- An evaluation shall be performed to determine the need for further investigation and remediation should large scale redevelopment occur, if any of the existing structures are demolished, or if the subsurface is otherwise made accessible.

### 3.3 Engineering Controls

#### 3.3.1 Cover (or Cap)

Exposure to remaining contamination at the Site is prevented by a cover system placed over the Site. This cover system is comprised of concrete sidewalk (approximately 4-inch-thick concrete and 2-inch base stone layer), brick-covered sidewalk (approximately 3.5-inch-thick brick and 2-inch base stone layer), and concrete building slab (approximately 4-inch-thick concrete). **Figure 9** presents the location of the cover system and applicable demarcation layers. The EWP provided in **Appendix D** outlines the procedures required to be implemented in the event the cover system is breached, penetrated, or temporarily removed. Procedures for the inspection of this cover are provided in the Monitoring and Sampling Plan included in Section 4.0 of this SMP. Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and associated Community Air Monitoring Plan (CAMP) prepared for the Site and provided in **Appendix E** and **Appendix F**, respectively. Any disturbance of the Site's cover system must be overseen by a qualified environmental professional as defined in 6 NYCRR Part 375, a Professional Engineer (PE) who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State.



### 3.3.2 Sub-Slab Depressurization System

The SSDS at the Site consists of 14 below-grade extraction points installed within horizontal trenches, which consist of five-foot lengths of two-inch diameter slotted poly vinyl chloride (PVC) well screen (0.020-inch slot size) with socks, set in ¾-inch clean stone, with caps at the ends of each piping run. One extraction point consists of a one-foot length of slotted PVC well screen. The below-grade horizontal piping runs consist of solid two-inch, three-inch, and four-inch Schedule 40 PVC pipe. Vertical piping consisting of four-inch diameter Schedule 40 steel transitions from the basement floor to the loading dock in the northeastern corner of the Site.

Three Dwyer Minihelic® 0-10 inches of water column pressure gauges are installed along the below grade piping runs to monitor vacuum and to act as sample points within the runs.

Three “valves” consisting of 12-inch sections of rubber hose in-line with the below-grade piping were installed to be able to adjust flow within the system. Air flow can be adjusted by pinching the hose if needed.

Flow is imparted with the use of one Dayton® high pressure, direct drive, radial blade blower (200 cubic feet per minute at five inches of water column). In accordance with NYSDOH guidance, the exhaust was located at least 10 feet from any operable openings or air intakes. The blower is connected electrically to its own circuit in an existing electrical panel and improved with an exhaust silencer for noise reduction.

Ten permanent, sub-slab monitoring points (Mini Vapor Pin®) were installed to be able to monitor below grade vacuum and contaminant concentrations.

An alarm (Radon Away™ Checkpoint IIA) was installed on the system to warn of a loss of system vacuum.

Procedures for operating and maintaining the SSDS are documented in the Operations and Maintenance Plan (Section 5.0 of this SMP). As-built drawings, signed and sealed by a PE who is licensed and registered in New York State, are included in **Appendix G** – Operations and Maintenance Manual. **Figure 10** shows the location of the SSDS installed at the Site.

### **3.3.3 Criteria for Completion of Remediation/Termination of Remedial Systems**

Generally, remedial processes are considered completed when monitoring indicates that the remedy has achieved the remedial action objectives identified by the Decision Document. The framework for determining when remedial processes are complete is provided in Section 6.4 of NYSDEC DER-10. Unless waived by the NYSDEC, confirmation samples of applicable environmental media are required before terminating any remedial actions at the Site. Confirmation samples require Category B deliverables and a Data Usability Summary Report (DUSR).

As discussed below, the NYSDEC may approve termination of a groundwater monitoring program. When a remedial party receives this approval, the remedial party will decommission all Site-related monitoring, injection, and recovery wells as per the NYSDEC CP-43 policy.

The remedial party will also conduct any needed site restoration activities, such as asphalt patching and decommissioning treatment system equipment. In addition, the remedial party will conduct any necessary restoration of vegetation coverage, trees and wetlands, and will comply with NYSDEC and United States Army Corps of Engineers regulations and guidance. Also, the remedial party will ensure that no ongoing erosion is occurring at the Site.

#### **3.3.3.1 Cover (or Cap)**

The composite cover system is a permanent control, and the quality and integrity of this system will be inspected at defined, regular intervals in accordance with this SMP in perpetuity.

The entirety of the Site is covered with impervious surface (building footprint, concrete sidewalks, and brick). As depicted on **Figure 9**, the composite cover system at the Site consists of the following:

- **Building Footprint** – The Site building footprint consists of an approximately 4-inch concrete slab overlaid on native soils.
- **Concrete Sidewalks** – Concrete sidewalks are located to the east of the Site building (along 83<sup>rd</sup> Street), west of the Site building (along 82<sup>nd</sup> Street), and to the south of the Site building (along 37<sup>th</sup> Avenue). The concrete sidewalks consist of an approximately 4-inch layer of concrete overlaid on an approximately 2-inch stone foundation layer.
- **Brick Sidewalk** – A small area of sidewalk, at the intersection of 37<sup>th</sup> Avenue and 82<sup>nd</sup> Street, is improved with brick pavers. In addition, each tree planting bed on 37<sup>th</sup> Avenue, 83<sup>rd</sup> Street, and 82<sup>nd</sup> Street is improved with brick surface cover. The brick sidewalk consists of an approximately 3.5-inch brick overlaid on an approximately 2-inch stone foundation layer.

### **3.3.3.2 Sub-Slab Depressurization System (SSDS)**

The active SSDS will not be discontinued unless prior written approval is granted by the NYSDEC and the NYSDOH project managers. If groundwater, sub slab vapor, and indoor air monitoring data indicates that the SSDS may no longer be required, a proposal to discontinue the SSDS will be submitted by the remedial party to the NYSDEC and NYSDOH project managers.

### **3.3.3.3 Wells Associated with Groundwater Sampling**

Groundwater sampling activities will continue, as determined by the NYSDEC project manager in consultation with NYSDOH project manager, until residual groundwater concentrations are found to be consistently below ambient water quality standards, the site SCGs, or have become asymptotic at an acceptable level over an extended period. In the event that sampling data indicated that sampling may no longer be required, a proposal to discontinue sampling will be submitted by the remedial party. In addition, as part of the NYSDEC regular review of the project, the NYSDEC will assess whether groundwater sampling needs to continue. Sampling will continue until permission to discontinue is granted in writing by the NYSDEC project manager. If groundwater contaminant levels become asymptotic at a level that not acceptable to the NYSDEC, additional source removal, treatment, and/or control measures will be evaluated.

## 4.0 MONITORING AND SAMPLING PLAN

### 4.1 General

This Monitoring and Sampling Plan describes the measures for evaluating the overall performance and effectiveness of the remedy. This Monitoring and Sampling Plan may only be revised with the approval of the NYSDEC project manager. Details regarding the sampling procedures, data usability objectives, analytical methods, etc. for all samples collected as part of the site management for the Site are included in the Quality Assurance Project Plan provided in **Appendix H**.

This Monitoring and Sampling Plan describes the methods to be used for:

- Sampling and analysis of all appropriate media (e.g., groundwater, indoor air, soil vapor, soils).
- Assessing compliance with applicable NYSDEC SCGs, particularly groundwater standards and Part 375 SCOs for soil; and
- Evaluating Site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment.

To adequately address these issues, the Monitoring and Sampling Plan provides information on:

- Sampling locations, protocol, and frequency.
- Information on all designed monitoring systems.
- Analytical sampling program requirements.
- Inspection and maintenance requirements for monitoring wells.
- Monitoring well decommissioning procedures; and
- Annual inspection and periodic certification.

Reporting requirements are provided in Section 7.0 of this SMP.

#### 4.2 Site-Wide Inspection

Site-wide inspections will be performed once per year. These periodic inspections must be conducted when the ground surface is visible (i.e., no snow cover). Site-wide inspections will be performed by a qualified environmental professional as defined in 6 NYCRR Part 375, a PE who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State. Modifications to the frequency or duration of the inspections will require approval from the NYSDEC project manager. Site-wide inspections will also be performed after all severe weather conditions that may affect ECs or monitoring devices. During these inspections, an inspection form will be completed as provided in **Appendix I – Site Management Forms**. The form will compile sufficient information to assess the following:

- Compliance with all ICs, including Site usage.
- An evaluation of the condition and continued effectiveness of ECs.
- General Site conditions at the time of the inspection.
- Whether stormwater management systems, such as basins and outfalls, are working as designed.
- The site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection; and
- Confirm that site records are up to date.

Inspections of all remedial components installed at the Site will be conducted. A comprehensive site-wide inspection will be conducted and documented according to the SMP schedule, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- Whether ECs continue to perform as designed.
- If these controls continue to be protective of human health and the environment.
- Compliance with requirements of this SMP and the Environmental Easement.
- Achievement of remedial performance criteria; and
- If site records are complete and up to date.

Reporting requirements are outlined in Section 7.0 of this plan.

Inspections will also be performed in the event of an emergency. If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs that reduces or has the potential to reduce the effectiveness of ECs in place at the Site, verbal notice to the NYSDEC project manager must be given by noon of the following day. In addition, an inspection of the Site will be conducted within 5 days of the event to verify the effectiveness of the IC/ECs implemented at the Site by a qualified professional, as defined in 6 NYCRR Part 375. Written confirmation must be provided to the NYSDEC project manager within 7 days of the event that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

### **4.3 Treatment System Monitoring and Sampling**

#### **4.3.1 Remedial System Monitoring**

Monitoring of the SSDS will be performed on a routine basis, as identified in **Table 5** Remedial System Monitoring Requirements and Schedule (see below). The monitoring of remedial systems must be conducted by a qualified environmental professional as defined in 6 NYCRR Part 375, a PE who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State. Modification to the frequency or sampling requirements will require approval from the NYSDEC project manager. A visual inspection of the

complete system will be conducted during each monitoring event. Unscheduled inspections and/or sampling may take place when a suspected failure of the SSDS has been reported or an emergency occurs that is deemed likely to affect the operation of the system. SSDS components to be monitored include, but are not limited to, the components included in **Table 5** below.

**Table 5 – Remedial System Monitoring Requirements and Schedule**

SSDS Component	Monitoring Parameter	Operating Range	Monitoring Schedule
Blower	On or Off	--	Annual
Blower	Flow Rate	100 - 200 CFM	Annual
Magnehelic Meter	Vacuum	1 – 4 in. W.C.	Annual
Alarm	Operation, On or Off	--	Quarterly <sup>1</sup>
General Piping (System Leaks)	Audible/Visual	--	Quarterly <sup>1</sup>
Sub-Slab	Vacuum	0.003 to 1 in. W.C.	Annual

<sup>1</sup> = More frequent monitoring will be performed by facility personnel.

A complete list of components to be inspected is provided in the Inspection Checklist, provided in **Appendix I – Site Management Forms**. If any equipment readings are not within their specified range, any equipment is observed to be malfunctioning, or the system is not performing within specifications; maintenance and repair, as per the Operations and Maintenance Plan (**Appendix G**), is required immediately.



#### 4.4 Post-Remediation Media Monitoring and Sampling

Samples shall be collected from the groundwater, indoor air, and ambient air on a periodic basis. Sampling locations, required analytical parameters, and schedule are provided in **Table 6 – Post Remediation Sampling Requirements and Schedule** below. Modifications to the frequency and sampling requirements will require approval from the NYSDEC project manager.

**Table 6 – Post-Remediation Sampling/Monitoring Requirements and Schedule**

Sampling Location	Analytical Parameters	Schedule
Monitoring Wells (MW-1, MW-2, MW-3, MW-8, and MW-10)	VOCs via USEPA Method 8260	Annual
Sub-Slab Soil Vapor <sup>1</sup>	Monitoring Only for Vacuum	Annual for 3 heating seasons
Indoor Air <sup>1</sup>	VOCs via USEPA Method TO-15	Annual for 3 heating seasons
Ambient Air <sup>1</sup>	VOCs via USEPA Method TO-15	Annual for 3 heating seasons

<sup>1</sup> = Following the three sampling events, a comparison of the collected operational parameters will be made to the exhaust blower operational parameters (air flow, riser vacuum) such that moving forward only blower operational parameters are needed to be collected as sampling is not recommended if the system has been installed properly and is maintaining a vacuum beneath the slab. Further sampling for contaminants should no longer be necessary if the blower is operating within 10% of its baseline operational condition (vacuum/flow).

For the collection of groundwater samples from permanent monitoring wells by VERTEX, the wells will be purged with disposable polyethylene tubing and a stainless-steel submersible pump. Three well volumes will be purged using the volume averaged sampling method. Following purging, a grab groundwater sample will be collected using a polyethylene disposable bailer.

For the collection of post-remedial indoor air and ambient air samples, stainless-steel 6-Liter Summa canister sampling will be performed over an 8-hour sample duration. The canisters will

be placed in a location to collect breathing height air (three to five feet above ground surface) and will not be placed immediately adjacent to recently completed interior finish materials.

Detailed sample collection and analytical procedures and protocols are provided in **Appendix J – Field Activities Plan** and **Appendix H – Quality Assurance Project Plan**.

#### **4.4.1 Groundwater Sampling**

Groundwater monitoring will be performed annually to assess the performance of the natural attenuation remedy, to determine if an off-site source remains and is increasing or decreasing in concentration, and to determine if the operation of the SSDS is affecting the groundwater concentrations. Modification to the frequency or sampling requirements will require approval from the NYSDEC project manager.

The network of monitoring wells has been installed to monitor up-gradient, on-site, and down-gradient groundwater conditions at the Site. The monitoring well locations are depicted on **Figure 7**. The network of on-site and off-site wells has been designed based on the following criteria:

- Based on surveyed groundwater elevations at the Site, groundwater flow at the Site was identified as northwest (March and June 2019) and southwest (April 2020).
- Each monitoring well is constructed with a 10-foot screen interval to intersect the groundwater interface.
- On-site monitoring well MW-1 is installed in a cross-gradient location.
- On-site monitoring wells MW-3, MW-8, and MW-10 are installed in an up-gradient location.
- On-site monitoring well MW-2 is installed in a down-gradient location.

**Table 7** summarizes the well identification number, as well as the purpose, location, depths, diameter, and screen interval of the wells. As part of the groundwater monitoring, two up-gradient wells and one down-gradient well are sampled to evaluate the effectiveness of the remedial system. The remedial party will measure depth to water table for each monitoring well in the network before sampling.

**Table 7 – Monitoring Well Construction Details**

Monitoring Well ID	Well Location	Coordinates <sup>(1)</sup> (longitude/latitude)	Well Diameter (inches)	Elevation (above mean sea level)			
				Casing	Surface	Screen Top	Screen Bottom
MW-1	Cross-gradient, On-site	73.88364 / 40.74961	1	58.62	58.85	14.84	24.84
MW-2	Down-gradient, On-site	73.88430 / 40.75001	1	60.18	60.36	32.19	22.19
MW-3	Up-gradient, On-site	73.88350 / 40.75015	1	58.78	58.96	30.46	20.46
MW-8	Up-gradient, On-site	73.88346 / 40.74995	2	58.22	58.60	30.25	20.25
MW-10	Up-gradient, On-site	73.88358 / 40.75016	2	49.07	49.35	9.86	19.86

<sup>(1)</sup> World Geodetic System (WGS) 1984 geographic coordinate system (datum)

For the collection of groundwater samples from permanent monitoring wells, the wells will be purged with disposable polyethylene tubing and a stainless-steel submersible pump. Three well volumes will be purged using the volume averaged sampling method. Following purging, a grab groundwater sample will be collected using a polyethylene disposable bailer. Groundwater samples will be analyzed for VOCs via USEPA Method 8260.

All sampling will be conducted in accordance with NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, dated May 3, 2010, and Sampling Guidelines and Protocols, dated March 1991.

Monitoring well construction logs are included in **Appendix C** of this document.

If biofouling or silt accumulation occurs in the on-site and/or off-site monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced if an event renders the wells unusable.

Repairs and/or replacement of the wells in the monitoring well network will be performed based on assessment of structural integrity and overall performance.

The NYSDEC project manager will be notified prior to any repair or decommissioning of any monitoring well for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent Periodic Review Report. Well decommissioning without replacement will be done only with the prior approval of the NYSDEC project manager. Well abandonment will be performed in accordance with NYSDEC's guidance entitled "CP-43: Groundwater Monitoring Well Decommissioning Procedures." Monitoring wells that are decommissioned because they have been rendered unusable will be replaced in kind in the nearest available location, unless otherwise approved by the NYSDEC project manager.

The sampling frequency may only be modified with the approval of the NSYDEC project manager. This SMP will be modified to reflect changes in the sampling plans approved by the NYSDEC project manager. Deliverables for the groundwater monitoring program are specified in Section 7.0 – Reporting Requirements.

#### **4.4.2 Soil Vapor Monitoring**

Sub-slab soil vapor monitoring will be performed annually for two years, as sampling is not recommended if the system has been installed properly and is maintaining a vacuum beneath the slab. Monitoring of the induced vacuum will be performed during the next two heating seasons to assess the performance of the remedy. Upon confirmation of the sub-slab induced vacuum baseline operating conditions as compared to the operational flow and vacuum of the

system header and blower sub-slab measurements should no longer be necessary if the blower is operating within 10% of its baseline condition. Modification to the frequency or sampling requirements will require approval from the NYSDEC project manager.

The network of on-site soil vapor sample locations has been designed based on the following criteria:

- During the installation of the active SSDS, 10 permanent, sub-slab monitoring points (Mini Vapor Pin<sup>®</sup>) were installed. The locations of the sub-slab monitoring points are depicted on **Figure 10**.
- The sub-slab monitoring points are positioned to evaluate sub-slab soil vapor conditions across the entire Site building footprint.

The monitoring frequency may only be modified with the approval of the NYSDEC project manager. This SMP will be modified to reflect changes in sampling plans approved by the NYSDEC project manager.

Deliverables for the soil vapor sampling program are specified in Section 7.0 – Reporting Requirements.

#### **4.4.3 Soil Vapor Intrusion Sampling**

Soil vapor intrusion sampling (i.e., indoor and ambient air sampling) will be performed annually during the next three heating seasons to assess the performance of the remedy. Modification to the frequency or sampling requirements will require approval from the NYSDEC project manager.

The network of on-site soil vapor intrusion sample locations has been designed based on the following criteria:

- Indoor air samples will be co-located with the six permanent sub-slab soil vapor monitoring points (sampling points 1, 3, 5, 7, 9, and 10, as noted on **Figure 10**) and former sampling locations.
- The indoor air samples are positioned to evaluate indoor air quality conditions across the entire Site building footprint.

For the collection of post-remedial indoor air and ambient air samples, stainless-steel 6-Liter Summa canister sampling will be performed over an 8-hour sample duration. The canisters will be placed in a location to collect breathing height air (three to five feet above ground surface) and will not be placed immediately adjacent to recently completed interior finish materials.

All sampling will be conducted in accordance with NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, dated May 3, 2010, NYSDEC Sampling Guidelines and Protocols, dated March 1991, and the NYSDOH document Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006.

The sampling frequency may only be modified with the approval of the NYSDEC project manager. This SMP will be modified to reflect changes in sampling plans approved by the NYSDEC project manager.

Deliverables for the soil vapor sampling program are specified in Section 7.0 – Reporting Requirements.

#### **4.4.4 Monitoring and Sampling Protocol**

All sampling activities will be recorded in a field book and associated sampling log as provided in **Appendix I** – Site Management Forms. Other observations (e.g., groundwater monitoring well

integrity) will be noted on the sampling log. The sampling log will serve as the inspection form for the monitoring network. Additional detail regarding monitoring and sampling protocols are provided in the Site-specific Field Activities Plan provided as **Appendix J** of this document.

## 5.0 OPERATION AND MAINTENANCE PLAN

### 5.1 General

This Operations and Maintenance Plan provides a brief description of the measure necessary to operate, monitor, and maintain the mechanical components of the remedy selected for the Site.

The Operation and Maintenance Plan:

- Includes the procedures necessary to allow individuals unfamiliar with the Site to operate and maintain the SSDS.
- Will be updated as needed to reflect changes in Site conditions or the manner in which the SSDS is operated and maintained.

Further details regarding the Operation and Maintenance of the SSDS is provided in **Appendix G** – Operation and Maintenance Manual. A copy of this Operation and Maintenance Manual, along with the complete SMP, is to be maintained at the Site. This Operation and Maintenance Plan is not to be used as a stand-alone document, but as a component of this SMP.

### 5.2 Remedial System Performance Criteria

The following table (**Table 8**) contains the minimum operating requirements for the major components of the SSDS. The system did not require permits, except for standard building and electrical permits from the New York City Department of Buildings and Asbestos Control Program (ACP)5 from the New York City Department of Environmental Protection.



**Table 8 – Minimum Operating Requirements of SSDS**

SSDS Component	Monitoring Parameter	Operating Range
Blower	Flow Rate	100 - 200 CFM
Magnehelic Meter	Vacuum at Riser	1 – 4 in. W.C.
Alarm	On or Off	alarms at loss of vacuum
General Piping (System Leaks)	Audible/Visual	--
Sub-Slab	Vacuum	0.003 to 1" W.C.

### 5.3 Operation and Maintenance of SSDS

The following sections provide a description of the operations and maintenance of the SSDS. Cut sheets and as-built drawings for the SSDS are provided in **Appendix G – Operations and Maintenance Manual**.

#### 5.3.1 System Start-Up and Testing

After the system was installed, power was connected to the system blower and was checked for effectiveness by the following:

- Balancing the system by closing/opening valves and/or raising or lowering fan power to extract air at the optimum flow and pressure rates indicated in the pilot test described above.
- Conducting negative pressure tests using a differential pressure gauge to evaluate the induced vacuum below the building slab during normal operation.
- Conduct smoke tests to evaluate crack or leaks in the building floor/foundation that may need to be sealed to increase SSDS efficiency; and
- Complete indoor air screening/testing to evaluate concentrations of COCs in indoor air, as detailed in the SSDS Effectiveness Testing report dated February 2, 2022.

Once operational and functioning within the designed parameters, operation maintenance and monitoring of the SSDS will be conducted annually and will include quarterly visual inspections of the SSDS piping, recording system pressure gauge values, and confirming that the SSDS is operating as designed. Upon loss of vacuum, the system visual alarm beacon will light, and an audible alarm will sound. The alarm is located within the elevator machine room.

The system testing described above will be conducted if, in the source of the SSDS lifetime, the system goes down or significant changes are made to the system and the system must be restarted.

### **5.3.2 Routine System Operations and Maintenance**

The SSDS does not require any routine maintenance or adjustments. The mechanical components require no lubrication or adjusting.

Once operational and functioning with the designed parameters, monitoring of the SSDS will be conducted by on-site personnel and will include periodic visual inspections of the SSDS alarm. Operational maintenance will include evaluation of site conditions (i.e., tenant operations, concrete slab, etc.); inspection of the blower, system piping and flexible fittings, exhaust silencer, exhaust stack, and pressure gauges; and confirming that the SSDS is operating as designed. Routine maintenance should be completed at a minimum every 12 months.

A copy of the SSDS Operations and Maintenance (O&M) Manual is provided in **Appendix G**.

**Table 5** provides a summary and schedule of routine maintenance.

### **5.3.3 Non-Routine Operation and Maintenance**

Non-routine maintenance may be required during the operation of the SSDS. These situations may include the following: the building owner/tenant report that the SSDS is not operating properly; the SSDS becomes damaged during normal building operations; or the building has undergone renovations that may reduce the effectiveness of the SSDS.

Activities conducted during non-routine maintenance may include evaluation of the building for structural or HVAC system changes; evaluation for other changes to the building including new combustion appliance or deterioration of concrete slab; and ensure proper operation of the blower. Repair or adjustments will be made to the SSDS, as appropriate.

### **5.3.4 System Monitoring Devices and Alarms**

The SSDS has a warning device (Radon Away™ Checkpoint IIA) to indicate that the system is not operating properly. An alarm signal will illuminate and sound if the system experiences a loss of vacuum. In the event that warning device is activated, applicable maintenance and repair will be conducted, as specified in the Operations and Maintenance Plan, and the SSDS will be restarted. Operational problems will be noted in the Periodic Review Report to be prepared for that reporting period.

## 6.0 PERIODIC ASSESSMENTS/EVALUATIONS

### 6.1 Climate Change Vulnerability Assessment

Increases in both the severity and frequency of storms/weather events, an increase in sea level elevations along with accompanying flooding impacts, shifts precipitation patterns, and wide temperature fluctuations, resulting from global climatic change and instability, have the potential to significantly impact the performance, effectiveness, and protectiveness of a given Site and associated remedial systems. Vulnerability assessments provide information so that the Site and associated remedial systems are prepared for the impacts of the increasing frequency and intensity of severe storms/weather events and associated flooding.

This section provides a summary of vulnerability assessments that will be conducted for the Site during periodic assessments, and briefly summarizes the vulnerability of the Site and/or engineering controls to severe storms/weather events and associated flooding.

- **Flood Plain:** According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), the site is located in Zone X, which is an area of minimal flood hazard. There are no low-lying or low-groundwater recharge areas located on the Site.
- **Site Drainage and Storm Water Management:** The Site building footprint covers the entire property, and is surrounded to the south, east, and west by public sidewalks and roadways and to the north are residential structures. Stormwater management is via overland flow to municipal stormwater drains located in surrounding roadways. Groundwater was encountered approximately 17.5 to 21.5 feet below the basement slab. In the event the SSDS extraction points flood, the system would return to normal operation upon the water receding.
- **Erosion:** No remedial systems are susceptible to erosion during periods of severe rain events.

- **High Wind:** The majority of the SSDS components, including the blower, are located on the Site building interior or are protected from the elements and not susceptible to high wind damage. Exhaust piping and the exhaust silencer are located on the exterior of the building and secured beneath an overhang on the parking deck. These components are moderately susceptible to high wind damage. In the event the components are compromised, the equipment would require repair or replacement.
- **Electricity:** The SSDS blower and alarm are susceptible to power loss or surges/spikes in voltage during severe weather events. Electricity to the Site is provided by Con Edison and is generally reliable and not susceptible to outages or surges/spikes. In the event the system is compromised, the equipment would require repair or replacement.
- **Spill/Containment Release:** No remedial systems are susceptible to a spill or other contaminant release due to storm-related damage caused by flooding, erosion, high winds, loss of power etc.

## 6.2 Green Remediation Evaluation

NYSDEC's DER-31 Green Remediation requires that green remediation concepts and techniques be considered during all stages of the remedial program including Site management, with the goal of improving the sustainability of the cleanup and summarizing the net environmental benefit of any implemented green technology. This section of the SMP provides a summary of any green remediation evaluations to be completed for the Site during site management, and as reported in the Periodic Review Report.

The Green Remediation evaluation includes a discussion of the items listed below.

- **Waste Generation:** The site remedy included a limited soil excavation, which reduced truck traffic (transportation and disposal) and volume of waste generated from the Site. Soil, groundwater, soil vapor, and air sampling generated minimal waste (disposable

sampling equipment), and waste generation will be minimized to the greatest extent possible during future sampling events and Site inspections.

- **Energy Usage:** The single SSDS blower utilizes a lower horsepower direct drive radial fan versus typically higher horsepower regenerative blower or multiple low wattage inline fans that is often utilized for these systems, , thereby reducing overall long-term energy demand. Minimization of sampling events and sampling parameters reduces the energy demand and footprint to monitor the systems.
- **Emissions:** Purge development water generated during sampling events will be staged on-site until an entire load is available for disposal, reducing the number of vehicle trips for transportation and disposal. The SSDS was improved with an exhaust silencer for noise reduction. Emission of vapors are minimal, and the total flow rate of the single blower system is approximately 170 cfm.
- **Water Usage:** No water usage is expected in the long-term operation of the SSDS. Minimal water was be used for decontamination of sampling equipment during remedial investigation/remedial action activities. In addition, minimal water usage (for decontamination) will be incurred during future groundwater sampling events.
- **Land and/or Ecosystems:** A limited soil excavation and trenching for the installation of the SSDS horizontal piping was completed within the basement of the Site building. The disturbance was temporary as the building slab was restored. Continued operation of the SSDS has no impact on land and/or surrounding habitat.

### 6.2.1 Timing of Green Remediation Evaluations

For major remedial system components, green remediation evaluations and corresponding modifications will be undertaken as part of the formal Remedial System Optimization (RSO), or at any time the NYSDEC project manager feel appropriate, e.g., during significant maintenance events or in conjunction with storm recovery activities.

Modifications resulting from green remediation evaluations will be routinely implemented and scheduled to occur during planned/routine operation and maintenance activities. Reporting of these modifications will be presented in the Periodic Review Report (PRR).

### **6.2.2 Remedial Systems**

Remedial systems will be operated properly considering the current Site conditions to conserve materials and resources to the greatest extent possible. Consideration will be given to operating rates and use of reagent and consumables. Spent materials will be sent for recycling, as appropriate.

Remedial system types and associated parameters to be evaluated at the Site include, but are not limited to the following: SSDS venting system.

### **6.2.3 Building Operations**

Structures including buildings and sheds will be operated and maintained to provide for the most efficient operation of the remedy, while minimizing energy, waste generation, and water consumption.

No temporary or permanent structures are required, other than the existing Site building, for the selected Site remedy. Components to be evaluated should include but are not limited to the following: building occupancy and use, building renovations or changes to structural condition, and property management.

### **6.2.4 Frequency of System Checks, Sampling, and Other Periodic Activities**

Transportation to and from the Site, use of consumables in relation to visiting the Site in order to conduct system checks and/or collect samples, and shipping samples to a laboratory for analysis

have direct and/or inherent energy costs. The schedule and/or means of these periodic activities have been prepared so that these tasks can be accomplished in a manner that does not impact remedy protectiveness but reduces expenditure of energy or resources.

Consideration has been given to the following:

- Reduced sampling frequencies.
- Reduced Site visits and system checks.
- Installation of remote sensing/operations and telemetry.
- Coordination/consolidation of activities to maximize foreman/labor time.
- Use of mass transmit for Site visits.

### **6.2.5 Metric and Reporting**

As discussed in Section 7.0 and shown in **Appendix I – Site Management Forms**, information on energy usage, solid waste generation, transportation and shipping, water usage, and land use and ecosystems will be recorded to facilitate and document consistent implementation of green remediation during Site management, and it identify corresponding benefits. A set of metrics have been developed.

### **6.3 Remedial System Optimization**

A Remedial Site Optimization (RSO) study will be conducted any time that the NYSDEC project manager or the remedial party requests in writing that an in-depth evaluation of the remedy is needed. An RSO may be appropriate if any of the following occur:

- The remedial actions have not met or are not expected to meet RAOs in the time frame estimated in the Decision Document.



- The management and operation of the remedial system is exceeding the estimated costs.
- The remedial system is not performing as expected or as designed.
- Previously unidentified source material may be suspected.
- Plume shift has potentially occurred.
- Site conditions change due to development, change or use, change in groundwater use, etc.
- There is an anticipated transfer of the site management to another remedial party of agency; and
- A new and applicable remedial technology becomes available.

An RSO will provide a critique of the Site's conceptual model, give a summary of past performance, document current cleanup practices, summarize progress made toward the Site's cleanup goals, gather additional performance or media specific data and information, and provide recommendations for improvements to enhance the ability of the present system to reach RAOs or to provide a basis for changing the remedial strategy.

The RSO study will focus on overall Site cleanup strategy, process optimization and management with the intent of identifying impediments to cleanup and improvements to Site operations to increase efficiency, cost effectiveness and remedial time frames. Green remediation technology and principals are to be considered when performing the RSO.

## 7.0 REPORTING REQUIREMENTS

### 7.1 Site Management Reports

All site management inspection, maintenance, and monitoring events will be recorded on the appropriate site management forms provided in **Appendix I**. These forms are subject to NYSDEC revision. All site management inspection, maintenance, and monitoring events will be conducted by a qualified environmental professional as defined in 6 NYCRR Part 375, a PE licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State.

All applicable inspection forms and other records, including media sampling data and system maintenance reports, generated for the site during the reporting period will be provided in electronic format to the NYSDEC in accordance with the requirements of **Table 9** and summarized in the Periodic Review Report.

**Table 9 – Schedule of Interim Monitoring/Inspection Reports**

Task/Report	Reporting Frequency <sup>(1)</sup>
Periodic Review Report	Annually, or as otherwise determined by the NYSDEC

(1) The frequency of events will be conducted as specified until otherwise approved by the NYSDEC.

All interim monitoring/inspections reports will include, at a minimum:

- Date of event or reporting period.
- Name, company, and position of person(s) conducting monitoring/inspection activities.
- Description of activities performed.
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet).

- Type of samples collected (e.g., sub-slab vapor, indoor air, outdoor air, etc.).
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.).
- Sampling results in comparison to appropriate standards/criteria.
- A figure illustrating sample type and sampling locations.
- Copies of all laboratory data sheets, and the required laboratory data deliverables required for all points sampled (to be submitted electronically in the NYSDEC-identified format).
- Any observations, conclusions, or recommendations; and
- A determination as to whether contaminant conditions have changed since the last reporting event.

Routine maintenance event reporting forms will include, at a minimum:

- Date of event.
- Name, company, and position of person(s) conducting maintenance activities.
- Description of maintenance activities performed.
- Any modifications to the system.
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet; and
- Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc., (attached to the checklist/form).

Non-routine maintenance event reporting forms will include, at a minimum:

- Date of event.
- Name, company, and position of person(s) conducting non-routine maintenance/repair

activities.

- Description of non-routine activities performed.
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet; and
- Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc., (attached to the checklist/form).

Data will be reported in digital format as determined by the NYSDEC. Currently, data is to be supplied electronically and submitted to the NYSDEC EQuIS™ database in accordance with the requirements found at this link <http://www.dec.ny.gov/chemical/62440.html>.

## **7.2 Periodic Review Report**

A PRR will be submitted to the NYSDEC project manager beginning sixteen (16) months after the Certificate of Completion is issued. After submittal of the initial PRR, the next PRR shall be submitted annually to the NYSDEC project manager or at another frequency as may be required by the NYSDEC project manager. In the event that the Site is subdivided into separate parcels with different ownership, a single PRR will be prepared that addresses the Site described in **Appendix A – Environmental Easement**. The report will be prepared in accordance with NYSDEC's DER-10 and submitted within 30 days of the end of each certification period. Media sampling results will also be incorporated into the PRR. The report will include:

- Identification, assessment, and certification of all EC/ICs required by the remedy for the Site.
- Results of the required annual Site inspections, fire inspections, and severe conditions inspections, if applicable.
- All applicable Site management forms and other records generated for the Site during the

reporting period in the NYSDEC-approved electronic format, if not previously submitted.

- Identification of any wastes generated during the reporting period, along with waste characterization data, manifests, and disposal documentation.
- A summary of any discharge monitoring data and/or information generated during the reporting period, with comments and conclusions.
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor, etc.), which include a listing of all compounds analyzed, along with applicable standards, with all exceedances highlighted. These tables and figures will include a presentation of past data as part of an evaluation of contaminant concentration trends, including, but not limited to:
  - Trend monitoring graphs that present groundwater contaminant levels from before the start of the remedy implementation to the most current sampling data.
  - Trend monitoring graphs depicting system influent analytical data on a per event and cumulative basis.
  - O&M data summary tables.
  - A current plume map for site with remaining groundwater contamination; and
  - A groundwater elevation contour map for each gauging event.
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted in digital format as determined by the NYSDEC. Currently, data is to be supplied electronically and submitted to the NYSDEC EQulS™ database in accordance with the requirements found at this link <http://www.dec.ny.gov/chemical/62440.html>.
- A site evaluation, which includes the following:
  - The compliance of the remedy with the requirements of the Site-specific RAWP, Record of Decision (ROD), or Decision Document.
  - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications.
  - Any new conclusions or observations regarding Site contamination based on

inspections or data generated by the Monitoring and Sampling Plan for media being monitored.

- Recommendations regarding any necessary changes to the remedy and/or Monitoring and Sampling Plan.
- An evaluation of trends in contaminant levels in the affected media to determine if the remedy continues to be effective in achieving remedial goals as specified by the RAWP, ROD, or Decision Document; and
- The overall performance and effectiveness of the remedy.
- A performance summary for all treatment systems at the Site during the calendar year, including information such as:
  - The number of days the system operated for the reporting period.
  - The average, high, and low flows per day.
  - The contaminant mass removed and the cost per pound of mass removed during the certification period and during the lift of the treatment system.
  - A description of breakdowns and/or repairs along with an explanation for the any significant downtime.
  - A description of the resolution of performance problems.
  - Alarm conditions.
  - Trend in equipment failure.
  - A summary of performance, effluent and/or effectiveness monitoring; and
  - Comments, conclusions, and recommendations based on data evaluation. Recommendations must address how receptors would be impacted. Recommendations can include:
    - Proposals to address efficiency and costs such as: instituting remote operation, system changes to decrease maintenance costs and downtime, and system changes to decrease energy use; and
    - Proposals to modify or shut down a treatment system due to remediation completion, system performance, or changed conditions. System

shutdowns are addressed in Section 6.4 of DER-10.

### 7.2.1 Certification of Institutional and Engineering Controls

Following the last inspection of the reporting period, a PE licensed to practice and registered in New York State will prepare, and include in the PRR, the following certification as per the requirement of NYSDEC DER-10:

*For each institutional or engineering control identified for the Site, I certify that all of the following statements are true:*

- The inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction.
- The institutional control and/or engineering control employed at this Site is unchanged from the date the control was put in place, or last approved by the Department.
- Nothing has occurred that would impair the ability of the control to protect the public health and environment.
- Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control.
- Access to the Site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control.
- If a financial assurance mechanism is required under the oversight document for the Site, the mechanism remains valid and sufficient for the intended purpose under the document.
- Use of the Site is compliance with the Environmental Easement.
- The engineering control systems are performing as designed and are effective.
- To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program and

general accepted engineering practices; and

- The information presented in this report is accurate and complete.

*I certify that all information and statement in this certification form are true. I understand that a false statement made herein is punishable as a Class “A” misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [NAME], of [BUSINESS ADDRESS], am certifying as Owner’s Designated Site Representative and have been authorized and designated by all site owners to sign this certification for the Site.*

*I certify that the New York State Education Department has granted a Certificate of Authorization to provide Professional Engineering services to the firm that prepared this Periodic Review Report.*

For BCP projects, every five years the following certification will be added:

*The assumptions made in the qualitative exposure assessment remain valid.*

The signed certification will be included in the PRR. The PRR will be submitted, in electronic format, to the NYSDEC project manager and the NYSDOH project manager. The PRR may also need to be submitted in hard-copy format if requested by the NYSDEC project manager.

### **7.3 Corrective Measures Work Plan**

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to failure of an institutional or engineering control or failure to conduct site management activities, a Corrective Measures Work Plan will be submitted to the NYSDEC project manager for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition



exists, no work will be performed pursuant to the Corrective Measures Work Plan until it has been approved by the NYSDEC project manager.

## 7.4 Remedial Site Optimization Report

If an RSO is to be performed (see Section 6.3), upon completion of an RSO, an RSO report must be submitted to the NYSDEC project manager for approval. A general outline for the RSO report is provided in **Appendix K**. The RSO report will document the research/investigation and data gathering that was conducted, evaluate the results and facts obtained, present a revised conceptual site model, and present recommendations. RSO recommendations are to be implemented upon approval from the NYSDEC. Additional work plans, design documents, HASPs, etc., may still be required to implement the recommendations, based upon the actions that need to be taken. A final engineering report and update to the SMP may also be required.

The RSO report will be submitted, in electronic format, to the NYSDEC project manager and the NYSDOH project manager.

## 8.0 REFERENCES

6 NYCRR Part 375, Environmental Remediation Programs. December 14, 2006.

NYSDEC DER-10 – “Technical Guidance for Site Investigation and Remediation”.

NYSDEC, 1998. Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1. June 1998 (April 2000 addendum).

NYSDOH, Center for Environmental Health, Bureau of Environmental Exposure Investigation. Guidance for Evaluating Soil Vapor Intrusion in the State of New York. October 2006 and updates.

Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM).

Draft Phase I Environmental Site Assessment (ESA), 82-01/21 37<sup>th</sup> Avenue AKA 35-57/65 82<sup>nd</sup> Street & 35-64 83<sup>rd</sup> Street, Jackson Heights, Queens, New York 11363, prepared by Merritt Environmental Consulting Corp. and dated November 20, 2017.

Phase II Focused Subsurface Investigation, Commercial Building & Parking Garage, 82-01/21 37<sup>th</sup> Avenue, 35-57/65 82<sup>nd</sup> Street, and 35-64 83<sup>rd</sup> Street, Jackson Heights, Queens County, New York 11363, prepared by The Vertex Companies, Inc. and dated March 15, 2018.

Remedial Investigation Work Plan, Rockfarmer 37<sup>th</sup> Avenue, 82-13 37<sup>th</sup> Avenue, Jackson Heights, Queens County, New York 11372, Block 1456, Lots 35 & 41, NYSDEC Site No. C241212, prepared by Vertex Engineering, PC and dated February 7, 2019.

Interim Remedial Measures Work Plan, Rockfarmer 37<sup>th</sup> Avenue, 82-13 37<sup>th</sup> Avenue, Jackson Heights, Queens County, New York 11372, Block 1456, Lots 35 & 41, NYSDEC Site No. C241212, prepared by Vertex Engineering, PC and dated November 12, 2019.

Supplemental Remedial Investigation Work Plan, Rockfarmer 37<sup>th</sup> Avenue, 82-13 37<sup>th</sup> Avenue, Jackson Heights, Queens County, New York 11372, Block 1456, Lots 35 & 41, NYSDEC Site No. C241212, prepared by Vertex Engineering, PC and dated February 14, 2020.

Remedial Investigation Report, Rockfarmer 37<sup>th</sup> Avenue, 82-13 37<sup>th</sup> Avenue, Jackson Heights, Queens County, New York 11372, Block 1456, Lots 35 & 41, NYSDEC Site No. C241212, prepared by Vertex Engineering, PC and dated June 11, 2020.

Supplemental Pre-Design Investigation Work Plan, Rockfarmer 37<sup>th</sup> Avenue, 82-13 37<sup>th</sup> Avenue, Jackson Heights, Queens County, New York 11372, Block 1456, Lots 35 & 41, NYSDEC Site No. C241212, prepared by Vertex Engineering, PC and dated September 16, 2020.

Interim Remedial Measure Construction Completion Report, Rockfarmer 37<sup>th</sup> Avenue, 82-13 37<sup>th</sup> Avenue, Jackson Heights, Queens County, New York 11372, Block 1456, Lots 35 & 41, NYSDEC Site No. C241212, prepared by Vertex Engineering, PC and dated January 29, 2021.

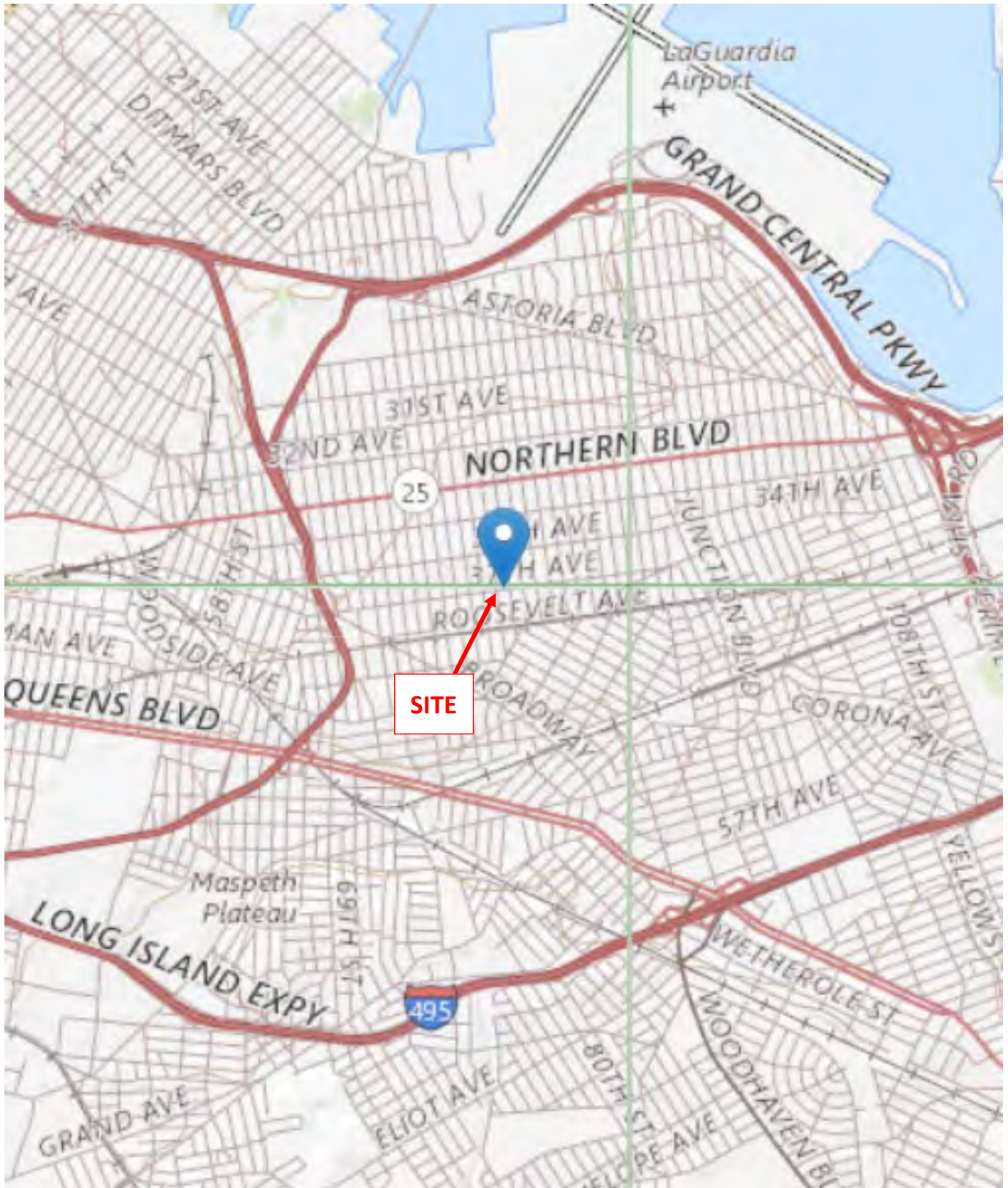
Remedial Action Work Plan, Rockfarmer 37<sup>th</sup> Avenue, 82-13 37<sup>th</sup> Avenue, Jackson Heights, Queens County, New York 11372, Block 1456, Lots 35 & 41, NYSDEC Site No. C241212, prepared by Vertex Engineering, PC and dated May 13, 2021.

Limited Soil Investigation Work Plan, Rockfarmer 37<sup>th</sup> Avenue, 82-13 37<sup>th</sup> Avenue, Jackson Heights, Queens County, New York 11372, Block 1456, Lots 35 & 41, NYSDEC Site No. C241212, prepared by Vertex Engineering, PC and dated September 29, 2021.

Limited Soil Investigation Report, Rockfarmer 37<sup>th</sup> Avenue, 82-13 37<sup>th</sup> Avenue, Jackson Heights, Queens County, New York 11372, Block 1456, Lots 35 & 41, NYSDEC Site No. C241212, prepared by Vertex Engineering, PC and dated December 28, 2021.

SSDS Effectiveness Testing Results, Rockfarmer 37<sup>th</sup> Avenue, 82-13 37<sup>th</sup> Avenue, Jackson Heights, Queens County, New York 11372, Block 1456, Lots 35 & 41, NYSDEC Site No. C241212, prepared by Vertex Engineering, PC and dated February 2, 2022.

# FIGURES



**SITE LOCATION MAP**

82-13 37th Avenue  
 Jackson Heights, Queens County, New York

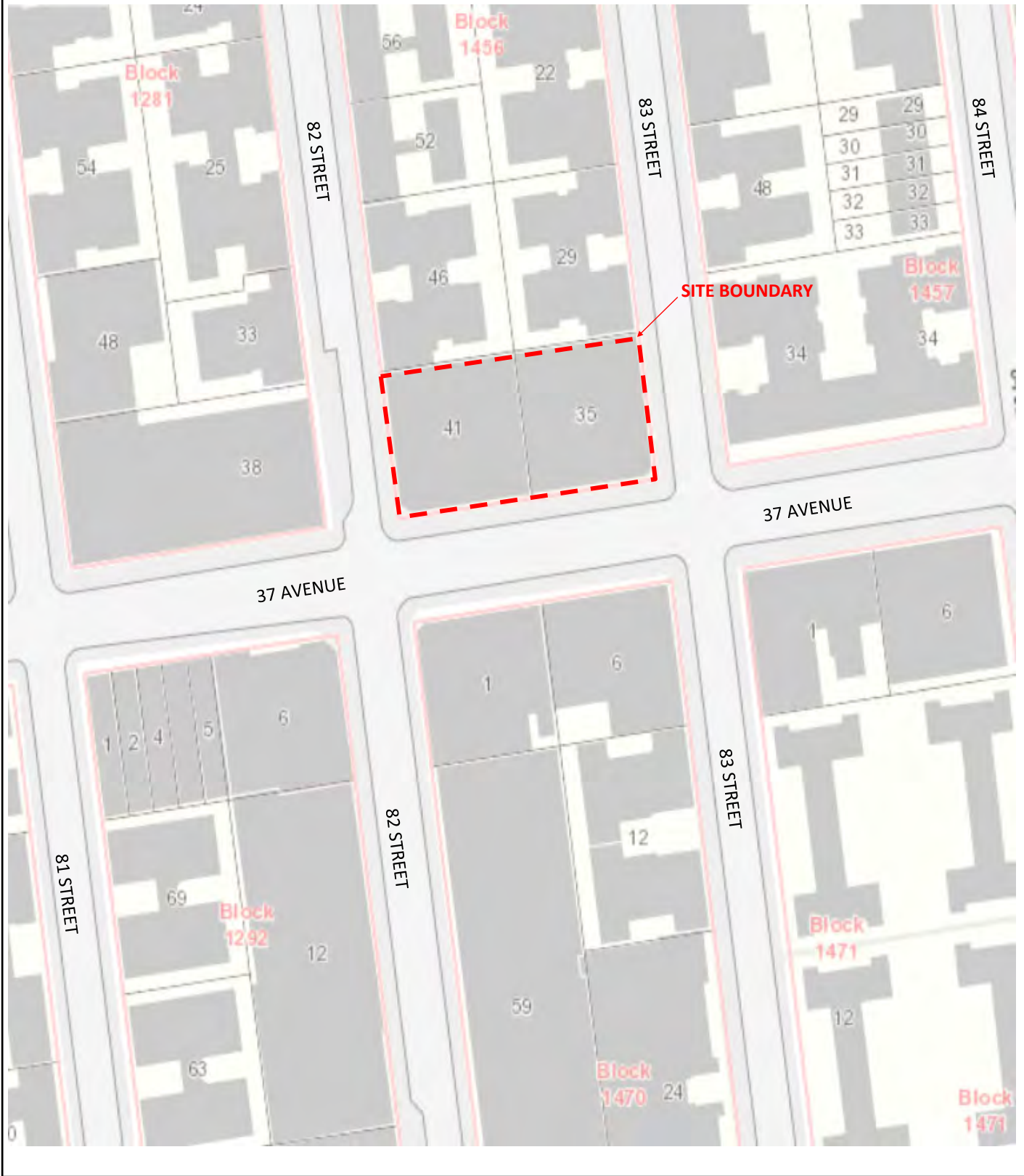
VERTEX Project No. 48122

VERTEX ENGINEERING, PC  
 147 West 35th Street, 19th Floor  
 New York, New York 10001


**FIGURE NO. 1**



Source: USGS, 2013  
 Brooklyn, NY Quadrangle  
 Contour Interval: 50 feet



Source: NYC Oasis online mapping program



**TAX MAP**

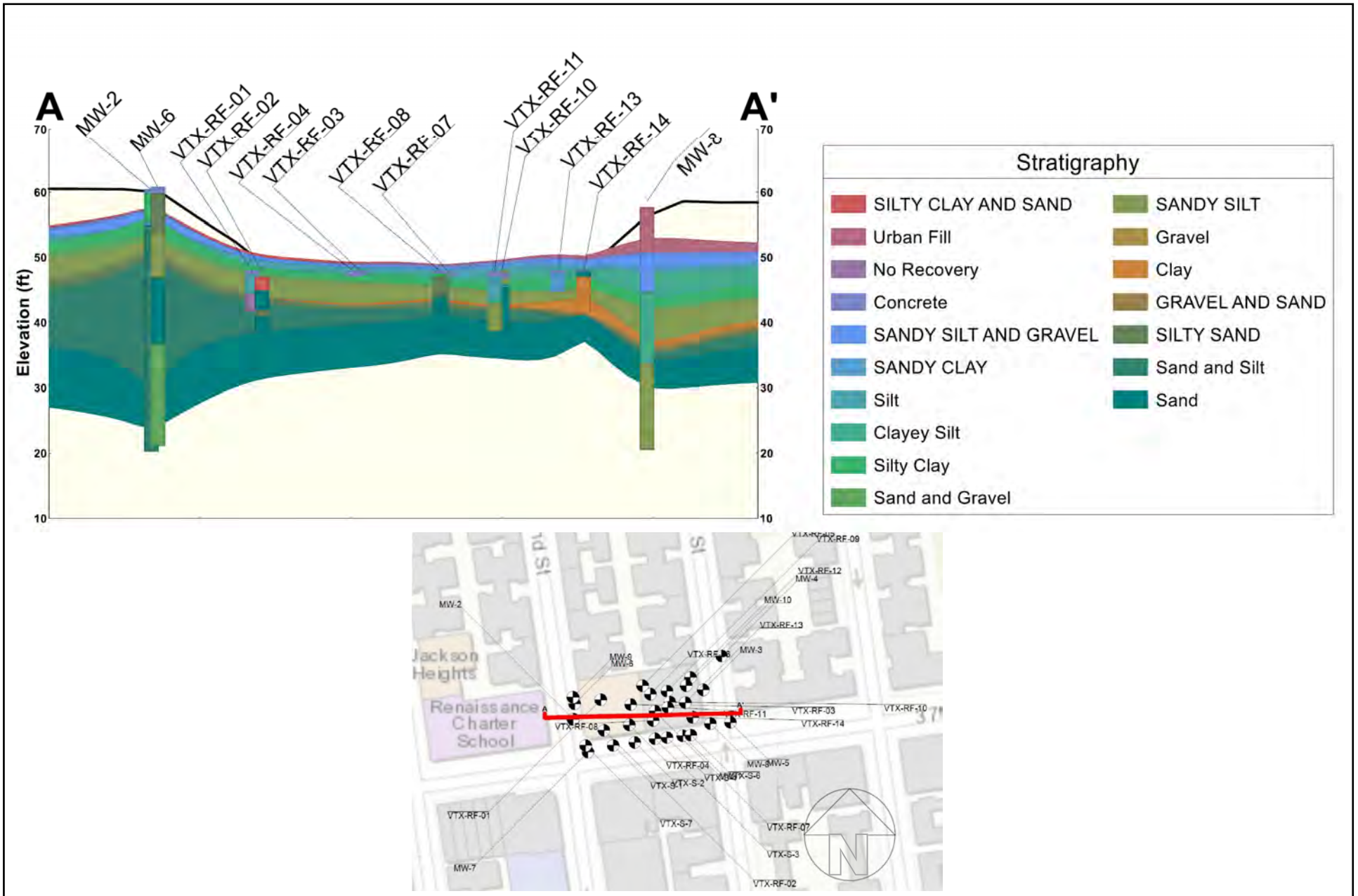
82-13 37th Avenue  
Jackson Heights, New York

VERTEX Project No. 48122

VERTEX ENGINEERING, PC  
147 WEST 35TH STREET, 19TH FLOOR  
NEW YORK, NEW YORK 10001

**FIGURE NO. 2**



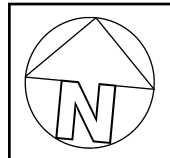
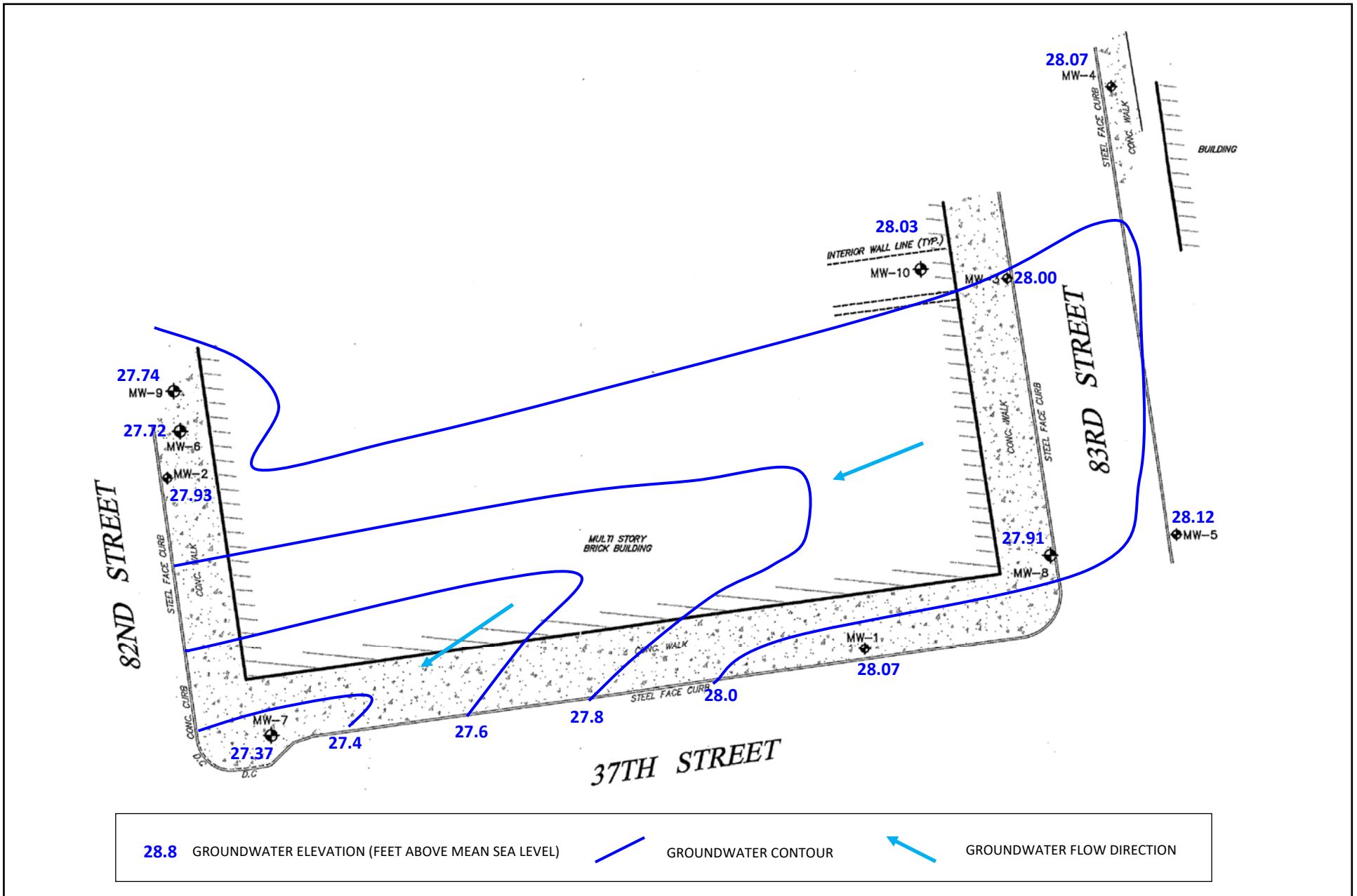


**GEOLOGIC CROSS SECTION**  
 82-13 37TH AVENUE  
 JACKSON HEIGHTS, QUEENS COUNTY, NEW YORK

VERTEX ENGINEERING, PC  
 147 WEST 35TH STREET, 19TH FLOOR  
 NEW YORK, NEW YORK 10001

**FIGURE NO. 3**

VERTEX Project Number  
 48122



**GROUNDWATER CONTOUR MAP—APRIL 9, 2020**

82-13 37TH AVENUE  
 JACKSON HEIGHTS, QUEENS COUNTY, NEW YORK

VERTEX ENGINEERING, PC  
 147 WEST 35TH STREET, 19TH FLOOR  
 NEW YORK, NEW YORK 10001

**FIGURE NO. 4**

VERTEX Project Number  
 48122



MAP SOURCE: 1951 FIRE INSURANCE MAP



### FORMER DRYCLEANER LOCATIONS

82-13 37TH AVENUE  
 JACKSON HEIGHTS, QUEENS, NEW YORK

VERTEX ENGINEERING, PC

### FIGURE NO. 5

VERTEX Project Number  
 48122

		UUSCO	RUSCO-GW
VC	Vinyl chloride	0.02	0.02
trans-1,2-DCE	trans-1,2-Dichloroethene	0.19	0.19
cis-1,2-DCE	cis-1,2-Dichloroethene	0.25	0.25
Carbon Tetra	Carbon tetrachloride	0.76	0.76
TCE	Trichloroethene	0.47	0.47
PCE	Tetrachloroethene	1.3	1.3
4,4'-DDD	4,4'-DDD	0.0033	14
4,4'-DDE	4,4'-DDE	0.0033	17
4,4'-DDT	4,4'-DDT	0.0033	136
Dieldrin	Dieldrin	0.005	0.1
Cadmium	Cadmium	2.5	7.5
Copper	Copper	50	1,720
Zinc	Zinc	109	2,480

All concentrations in milligrams per kilogram (mg/kg)  
**Bold & Highlighted** = Concentration exceeds NYSDEC soil cleanup objective  
 Note: For soil samples collected below the building footprint, sample depth is feet below basement slab.  
 For soil samples collected on building exterior, sample depth is feet below ground surface.

RF-1	
2/25/2019	
2.0-6.0	
VC	ND
trans-1,2-DCE	ND
cis-1,2-DCE	ND
Carbon Tetra	ND
TCE	ND
PCE	0.0031
4,4'-DDD	0.00763
4,4'-DDE	0.0148
4,4'-DDT	0.0444
Dieldrin	0.0205
Cadmium	0.117
Copper	14
Zinc	31.4

RF-10	
2/22/2019	
2.0-2.5	
VC	ND
trans-1,2-DCE	ND
cis-1,2-DCE	ND
Carbon Tetra	ND
TCE	ND
PCE	0.006
4,4'-DDD	ND
4,4'-DDE	0.0026
4,4'-DDT	0.00922
Dieldrin	ND
Cadmium	ND
Copper	13.9
Zinc	21.3

RF-2	
2/25/2019	
1.0-2.0	
VC	ND
trans-1,2-DCE	ND
cis-1,2-DCE	ND
Carbon Tetra	ND
TCE	0.00016
PCE	0.0084
4,4'-DDD	0.00389
4,4'-DDE	0.0236
4,4'-DDT	0.0574
Dieldrin	0.12
Cadmium	3.68
Copper	25.7
Zinc	286

RF-4	
2/25/2019	
9.0-9.5	
VC	ND
trans-1,2-DCE	ND
cis-1,2-DCE	ND
Carbon Tetra	ND
TCE	ND
PCE	0.0026
4,4'-DDD	ND
4,4'-DDE	0.0209
4,4'-DDT	0.0177
Dieldrin	ND
Cadmium	ND
Copper	56
Zinc	35.4

RF-11	
2/22/2019	
10.5-11.0	
VC	ND
trans-1,2-DCE	ND
cis-1,2-DCE	ND
Carbon Tetra	ND
TCE	ND
PCE	ND
4,4'-DDD	ND
4,4'-DDE	0.00337
4,4'-DDT	ND
Dieldrin	ND
Cadmium	ND
Copper	27.3
Zinc	11.9

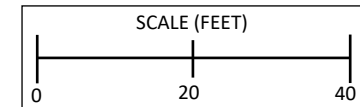
RF-14	
2/21/2019	
6.5-7.0	
VC	ND
trans-1,2-DCE	ND
cis-1,2-DCE	ND
Carbon Tetra	0.0024
TCE	0.00025
PCE	0.033
4,4'-DDD	ND
4,4'-DDE	0.00604
4,4'-DDT	0.00151
Dieldrin	ND
Cadmium	ND
Copper	12.8
Zinc	19.2

VTX-113	
5/11/2021	
1.0-1.5	
VC	ND
trans-1,2-DCE	ND
cis-1,2-DCE	ND
Carbon Tetra	0.1
TCE	0.12
PCE	19
4,4'-DDD	—
4,4'-DDE	—
4,4'-DDT	—
Dieldrin	—
Cadmium	—
Copper	—
Zinc	—

VTX-114	
5/11/2021	
1.0-1.5	
VC	ND
trans-1,2-DCE	ND
cis-1,2-DCE	ND
Carbon Tetra	0.4
TCE	0.051
PCE	16
4,4'-DDD	—
4,4'-DDE	—
4,4'-DDT	—
Dieldrin	—
Cadmium	—
Copper	—
Zinc	—



Map Source: Existing Basement Floor Plan, Existing Conditions Surveys Inc., 11/30/2017



SOIL SAMPLE (SEPTEMBER 2020 & MAY 2021)  
 SOIL SAMPLE (MARCH 2018)  
 SOIL SAMPLE (FEBRUARY 2019)  
 SOIL SAMPLE ID  
 SOIL SAMPLE (OCTOBER 2021)  
 FORMER DRYCLEANER LOCATION

**SOIL EXCEEDANCES TO UNRESTRICTED USE AND PROTECTION OF GROUNDWATER SCOs**  
 82-13 37th AVENUE  
 JACKSON HEIGHTS, QUEENS COUNTY, NEW YORK

VERTEX ENGINEERING, PC  
 147 WEST 35TH STREET, 19TH FLOOR  
 NEW YORK, NEW YORK 10001

**FIGURE NO. 6**  
 VERTEX Project No. 48122

		AWQS/Class GA
1,2,4,5-TMB	1,2,4,5-Tetramethylbenzene	5
1,2,4-TMB	1,2,4-Trimethylbenzene	5
1,3,5-TMB	1,3,5-Trimethylbenzene	5
Carbon Tetra	Carbon Tetrachloride	5
cis-1,2-DCE	cis-1,2-Dichloroethene	5
Ethylbenzene	Ethylbenzene	5
IsopropylB	Isopropylbenzene	5
n-propylB	n-Propylbenzene	5
Naphthalene	Naphthalene	10
PCE	Tetrachloroethene	5
trans-1,2-DCE	Trans-1,2-Dichloroethene	5
TCE	Trichloroethene	5
VC	Vinyl Chloride	2

CONCENTRATIONS PROVIDED IN MICROGRAMS PER LITER (UG/L)  
**BOLD & HIGHLIGHTED = CONCENTRATION EXCEEDS NYSDEC STANDARD**

MW-9	
	4/9/2020
1,2,4,5-TMB	21
1,2,4-TMB	ND
1,3,5-TMB	ND
Carbon Tetra	ND
cis-1,2-DCE	ND
Ethylbenzene	29
IsopropylB	6.9
n-propylB	12
Naphthalene	63
PCE	0.33
trans-1,2-DCE	ND
TCE	ND
VC	0.09

MW-6	
	4/9/2020
1,2,4,5-TMB	16
1,2,4-TMB	ND
1,3,5-TMB	ND
Carbon Tetra	ND
cis-1,2-DCE	ND
Ethylbenzene	ND
IsopropylB	2.6
n-propylB	5.3
Naphthalene	21
PCE	0.58
trans-1,2-DCE	ND
TCE	ND
VC	ND

**GROUNDWATER FLOW DIRECTION (MARCH AND JUNE 2019)**

**GROUNDWATER FLOW DIRECTION (APRIL 2020)**

MW-10	
	4/9/2020
1,2,4,5-TMB	14
1,2,4-TMB	46
1,3,5-TMB	17
Carbon Tetra	0.3
cis-1,2-DCE	ND
Ethylbenzene	ND
IsopropylB	ND
n-propylB	ND
Naphthalene	11
PCE	24
trans-1,2-DCE	ND
TCE	0.68
VC	ND

MW-4			
	3/13/2019	6/12/2019	4/9/2020
1,2,4,5-TMB	ND	ND	ND
1,2,4-TMB	ND	ND	ND
1,3,5-TMB	ND	ND	ND
Carbon Tetra	ND	ND	ND
cis-1,2-DCE	ND	ND	ND
Ethylbenzene	ND	ND	ND
IsopropylB	ND	ND	ND
n-propylB	ND	ND	ND
Naphthalene	ND	ND	ND
PCE	38	35	17
trans-1,2-DCE	ND	ND	ND
TCE	0.96	1	0.9
VC	ND	ND	ND

MW-3			VTW-3		
	3/13/2019	6/12/2019	4/9/2020		2/15/2018
1,2,4,5-TMB	ND	ND	ND	1,2,4,5-TMB	ND
1,2,4-TMB	ND	ND	ND	1,2,4-TMB	ND
1,3,5-TMB	ND	ND	ND	1,3,5-TMB	ND
Carbon Tetra	ND	0.36	0.28	Carbon Tetra	ND
cis-1,2-DCE	2.6	1.9	1.7	cis-1,2-DCE	2.8
Ethylbenzene	ND	ND	ND	Ethylbenzene	ND
IsopropylB	ND	ND	ND	IsopropylB	ND
n-propylB	ND	ND	ND	n-propylB	ND
Naphthalene	ND	ND	ND	Naphthalene	ND
PCE	110	70	50	PCE	90
trans-1,2-DCE	ND	ND	ND	trans-1,2-DCE	ND
TCE	2.4	1.9	1.8	TCE	ND
VC	ND	ND	ND	VC	ND

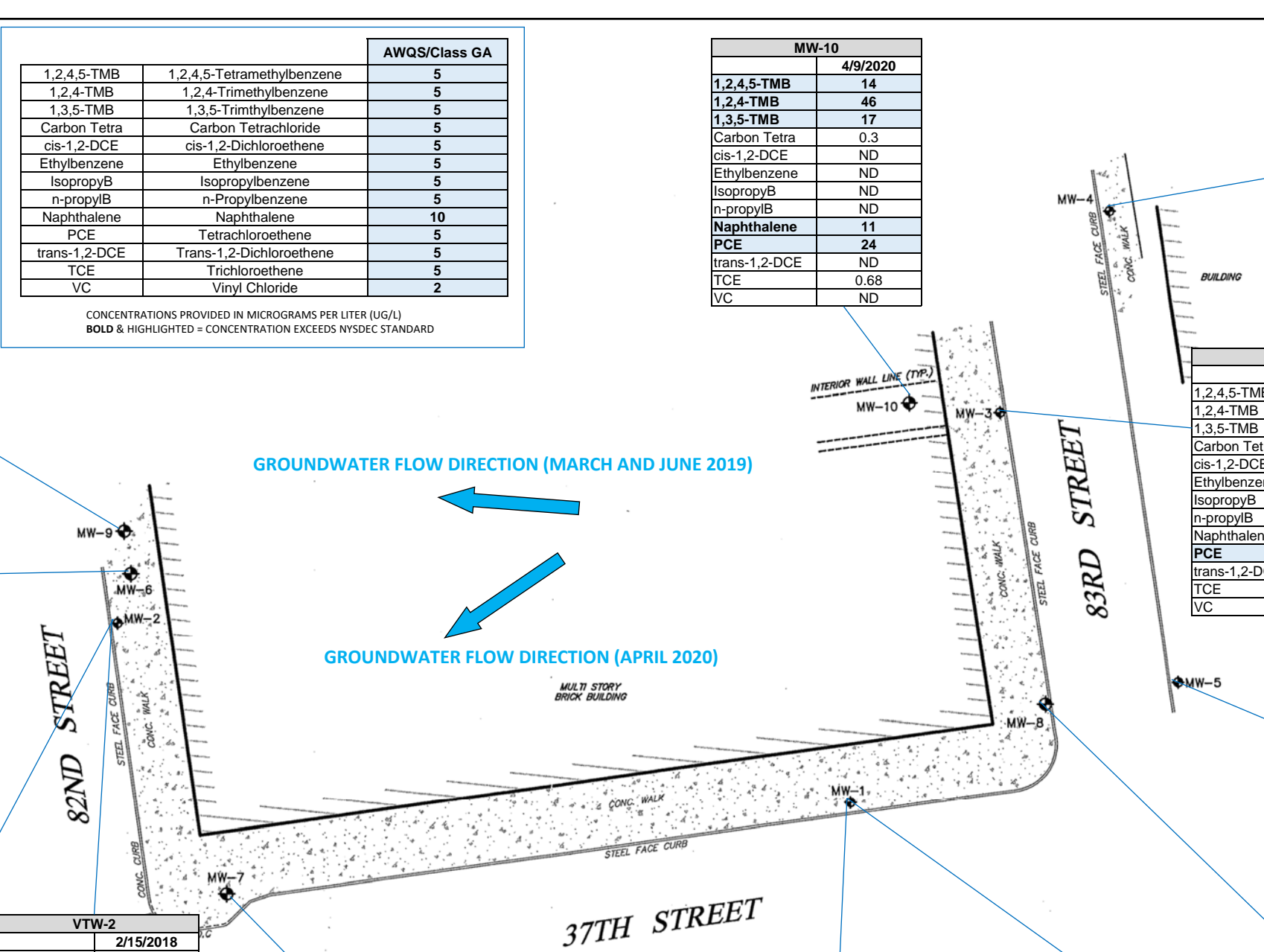
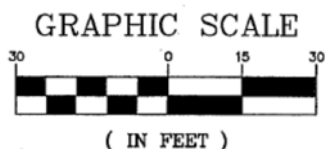
MW-5			
	3/13/2019	6/12/2019	4/9/2020
1,2,4,5-TMB	ND	ND	ND
1,2,4-TMB	ND	ND	ND
1,3,5-TMB	ND	ND	ND
Carbon Tetra	ND	ND	ND
cis-1,2-DCE	1.7	2.5	2.8
Ethylbenzene	ND	ND	ND
IsopropylB	ND	ND	ND
n-propylB	ND	ND	ND
Naphthalene	ND	ND	ND
PCE	76	100	87
trans-1,2-DCE	ND	ND	ND
TCE	1.6	2.6	2.5
VC	ND	ND	ND

MW-2			VTW-2		
	3/13/2019	6/12/2019	4/9/2020		2/15/2018
1,2,4,5-TMB	ND	ND	ND	1,2,4,5-TMB	ND
1,2,4-TMB	ND	ND	ND	1,2,4-TMB	ND
1,3,5-TMB	ND	ND	ND	1,3,5-TMB	ND
Carbon Tetra	ND	ND	ND	Carbon Tetra	ND
cis-1,2-DCE	ND	ND	ND	cis-1,2-DCE	ND
Ethylbenzene	ND	ND	ND	Ethylbenzene	ND
IsopropylB	ND	ND	ND	IsopropylB	ND
n-propylB	ND	ND	ND	n-propylB	ND
Naphthalene	ND	ND	ND	Naphthalene	ND
PCE	0.56	0.62	3.5	PCE	0.4
trans-1,2-DCE	ND	ND	ND	trans-1,2-DCE	ND
TCE	ND	ND	ND	TCE	ND
VC	ND	ND	ND	VC	ND

MW-7	
	4/9/2020
1,2,4,5-TMB	ND
1,2,4-TMB	ND
1,3,5-TMB	ND
Carbon Tetra	ND
cis-1,2-DCE	ND
Ethylbenzene	ND
IsopropylB	ND
n-propylB	ND
Naphthalene	1.1
PCE	1.2
trans-1,2-DCE	ND
TCE	ND
VC	ND

MW-1			VTW-1		
	3/13/2019	6/12/2019	4/9/2020		2/15/2018
1,2,4,5-TMB	ND	ND	ND	1,2,4,5-TMB	ND
1,2,4-TMB	ND	ND	ND	1,2,4-TMB	ND
1,3,5-TMB	ND	ND	ND	1,3,5-TMB	ND
Carbon Tetra	ND	ND	ND	Carbon Tetra	ND
cis-1,2-DCE	57	42	18	cis-1,2-DCE	2.2
Ethylbenzene	ND	ND	ND	Ethylbenzene	ND
IsopropylB	ND	ND	ND	IsopropylB	ND
n-propylB	ND	ND	ND	n-propylB	ND
Naphthalene	ND	ND	ND	Naphthalene	ND
PCE	420	310	140	PCE	17
trans-1,2-DCE	ND	ND	ND	trans-1,2-DCE	ND
TCE	11	11	5.8	TCE	ND
VC	ND	ND	ND	VC	ND

MW-8	
	4/9/2020
1,2,4,5-TMB	ND
1,2,4-TMB	ND
1,3,5-TMB	ND
Carbon Tetra	ND
cis-1,2-DCE	3.5
Ethylbenzene	ND
IsopropylB	ND
n-propylB	ND
Naphthalene	ND
PCE	130
trans-1,2-DCE	ND
TCE	3.6
VC	ND



VTX-SS1		VTX-IA1	
11/17/2021		11/16/2021	
VC	ND	VC	ND
trans-1,2-DCE	ND	trans-1,2-DCE	ND
cis-1,2-DCE	ND	cis-1,2-DCE	ND
Carbon Tetra	ND	<b>Carbon Tetra</b>	<b>0.478</b>
TCE	ND	TCE	ND
PCE	12.2	PCE	2.75

SS-5		IA-5	
2/22/2018		2/22/2018	
VC	ND	VC	ND
trans-1,2-DCE	ND	trans-1,2-DCE	ND
cis-1,2-DCE	ND	cis-1,2-DCE	ND
Carbon Tetra	ND	Carbon Tetra	0.447
TCE	<b>12.1</b>	TCE	0.107
PCE	<b>1760</b>	PCE	3.82

SS-7		IA-7	
2/22/2018		2/22/2018	
VC	ND	VC	ND
trans-1,2-DCE	ND	trans-1,2-DCE	ND
cis-1,2-DCE	ND	cis-1,2-DCE	ND
Carbon Tetra	ND	Carbon Tetra	0.44
TCE	ND	TCE	0.113
PCE	<b>3800</b>	PCE	1.82

SS-9		IA-9	
2/22/2018		2/22/2018	
VC	ND	VC	ND
trans-1,2-DCE	ND	trans-1,2-DCE	ND
cis-1,2-DCE	ND	cis-1,2-DCE	ND
Carbon Tetra	ND	Carbon Tetra	0.556
TCE	<b>15.7</b>	TCE	0.107
PCE	<b>2210</b>	PCE	2.58

VTX-SS5		VTX-IA5	
11/17/2021		11/16/2021	
VC	ND	VC	ND
trans-1,2-DCE	ND	trans-1,2-DCE	ND
cis-1,2-DCE	ND	cis-1,2-DCE	ND
Carbon Tetra	ND	<b>Carbon Tetra</b>	<b>0.459</b>
TCE	1.49	TCE	ND
PCE	<b>127</b>	PCE	2.14

SS-3		IA-3	
12/14/2017		12/14/2017	
VC	ND	VC	ND
trans-1,2-DCE	ND	trans-1,2-DCE	ND
cis-1,2-DCE	ND	cis-1,2-DCE	ND
Carbon Tetra	<b>20.4</b>	Carbon Tetra	0.541
TCE	2.88	TCE	ND
PCE	<b>1000</b>	PCE	0.393

VTX-AA1	
11/16/2021	
VC	ND
trans-1,2-DCE	ND
cis-1,2-DCE	ND
Carbon Tetra	<b>0.409</b>
TCE	ND
PCE	1.99

SS-4		IA-4	
2/22/2018		2/22/2018	
VC	ND	VC	ND
trans-1,2-DCE	ND	trans-1,2-DCE	ND
cis-1,2-DCE	ND	cis-1,2-DCE	ND
Carbon Tetra	ND	Carbon Tetra	0.56
TCE	4.78	TCE	0.145
PCE	<b>607</b>	PCE	2.43

VTX-SS3		VTX-IA3	
11/17/2021		11/16/2021	
VC	ND	VC	ND
trans-1,2-DCE	ND	trans-1,2-DCE	ND
cis-1,2-DCE	ND	cis-1,2-DCE	ND
Carbon Tetra	ND	<b>Carbon Tetra</b>	<b>0.635</b>
TCE	1.09	TCE	ND
PCE	43.5	PCE	2.98

IA-11	
2/22/2018	
VC	ND
trans-1,2-DCE	ND
cis-1,2-DCE	ND
Carbon Tetra	0.52
TCE	ND
PCE	0.909

IA-12	
2/22/2018	
VC	ND
trans-1,2-DCE	ND
cis-1,2-DCE	ND
Carbon Tetra	0.409
TCE	ND
PCE	0.997

SS-1		IA-1	
12/14/2017		12/14/2017	
VC	ND	VC	ND
trans-1,2-DCE	ND	trans-1,2-DCE	ND
cis-1,2-DCE	ND	cis-1,2-DCE	ND
Carbon Tetra	<b>15.5</b>	Carbon Tetra	0.591
TCE	<b>19</b>	TCE	0.113
PCE	<b>2370</b>	PCE	10.5

SS-6		IA-6	
2/22/2018		2/22/2018	
VC	ND	VC	ND
trans-1,2-DCE	ND	trans-1,2-DCE	ND
cis-1,2-DCE	ND	cis-1,2-DCE	ND
Carbon Tetra	ND	Carbon Tetra	0.465
TCE	ND	TCE	ND
PCE	<b>1230</b>	PCE	4.52

VTX-SS7		VTX-IA7	
11/17/2021		11/16/2021	
VC	ND	VC	ND
trans-1,2-DCE	ND	trans-1,2-DCE	ND
cis-1,2-DCE	ND	cis-1,2-DCE	ND
Carbon Tetra	ND	<b>Carbon Tetra</b>	<b>0.692</b>
TCE	ND	TCE	ND
PCE	3.52	PCE	2.87

SS-8		IA-8	
2/22/2018		2/22/2018	
VC	ND	VC	ND
trans-1,2-DCE	ND	trans-1,2-DCE	ND
cis-1,2-DCE	ND	cis-1,2-DCE	ND
Carbon Tetra	ND	Carbon Tetra	0.654
TCE	<b>24.1</b>	TCE	0.183
PCE	<b>5490</b>	PCE	6.04

SS-2		IA-2	
12/14/2017		12/14/2017	
VC	ND	VC	ND
trans-1,2-DCE	ND	trans-1,2-DCE	ND
cis-1,2-DCE	ND	cis-1,2-DCE	ND
Carbon Tetra	<b>767</b>	Carbon Tetra	1.1
TCE	<b>26.1</b>	TCE	ND
PCE	<b>10100</b>	PCE	2.92

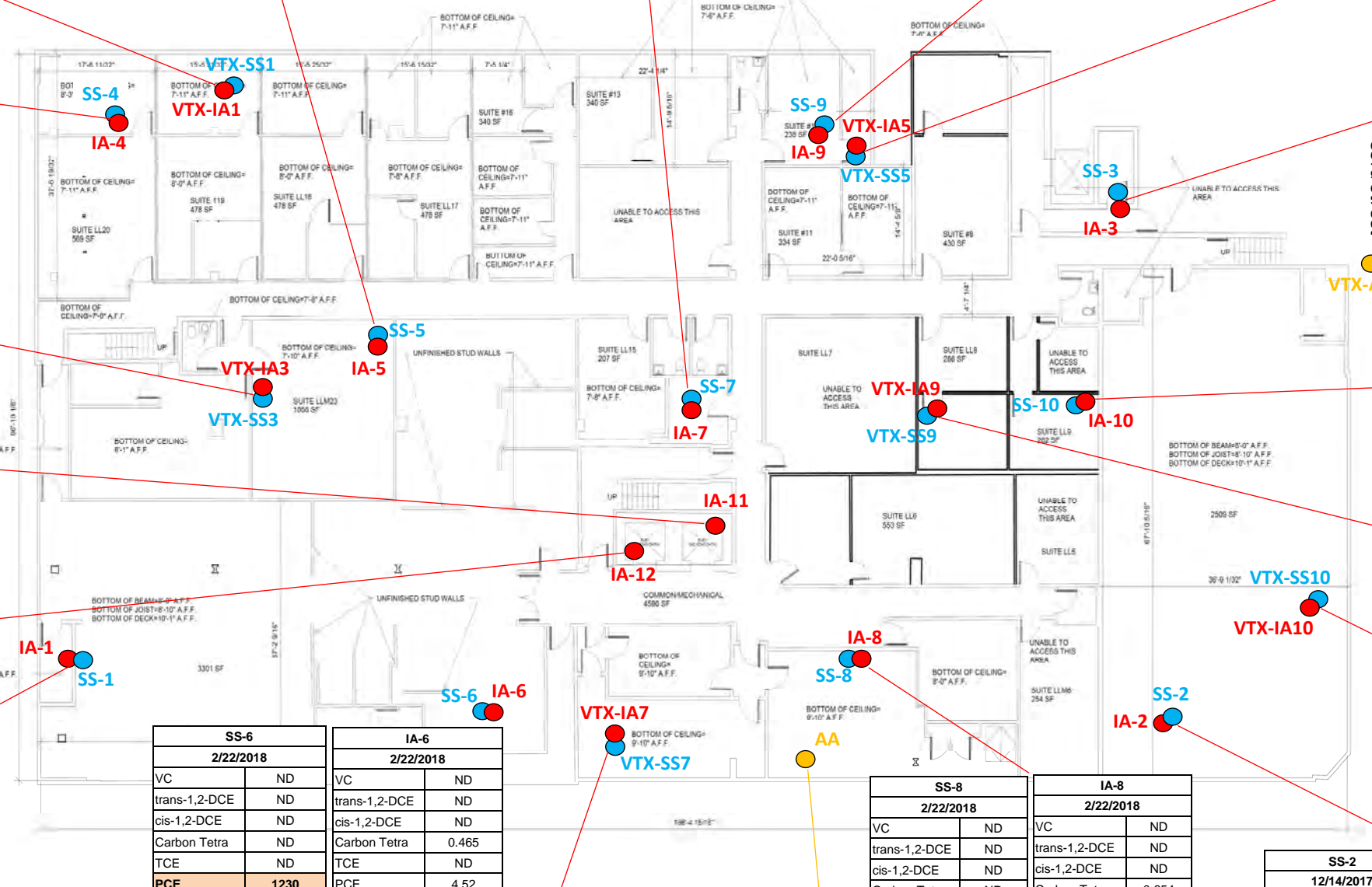
VTX-SS10		VTX-IA10	
11/17/2021		11/16/2021	
VC	ND	VC	ND
trans-1,2-DCE	ND	trans-1,2-DCE	ND
cis-1,2-DCE	ND	cis-1,2-DCE	ND
Carbon Tetra	2.53	<b>Carbon Tetra</b>	<b>0.409</b>
TCE	ND	TCE	ND
PCE	85.4	PCE	<b>4.66</b>

SOIL VAPOR		
		Criteria (ug/m3)
VC	Vinyl chloride	<b>6</b>
trans-1,2-DCE	trans-1,2-Dichloroethene	<b>NS</b>
cis-1,2-DCE	cis-1,2-Dichloroethene	<b>6</b>
Carbon Tetra	Carbon tetrachloride	<b>6</b>
TCE	Trichloroethene	<b>6</b>
PCE	Tetrachloroethene	<b>100</b>

INDOOR AIR		
		Criteria (ug/m3)
VC	Vinyl chloride	<b>NS</b>
trans-1,2-DCE	trans-1,2-Dichloroethene	<b>NS</b>
cis-1,2-DCE	cis-1,2-Dichloroethene	<b>NS</b>
Carbon Tetra	Carbon tetrachloride	<b>NS</b>
TCE	Trichloroethene	<b>2</b>
PCE	Tetrachloroethene	<b>30</b>

AA		AA	
12/14/2017		2/22/2018	
VC	ND	VC	ND
trans-1,2-DCE	ND	trans-1,2-DCE	ND
cis-1,2-DCE	ND	cis-1,2-DCE	ND
Carbon Tetra	0.541	Carbon Tetra	0.359
TCE	ND	TCE	ND
PCE	0.414	PCE	0.387

- Indoor Air Sample Location
- Sub-Slab Soil Vapor Sample Location
- Ambient Air Sample Location (3rd floor parking deck-2018 and sidewalk-2021)



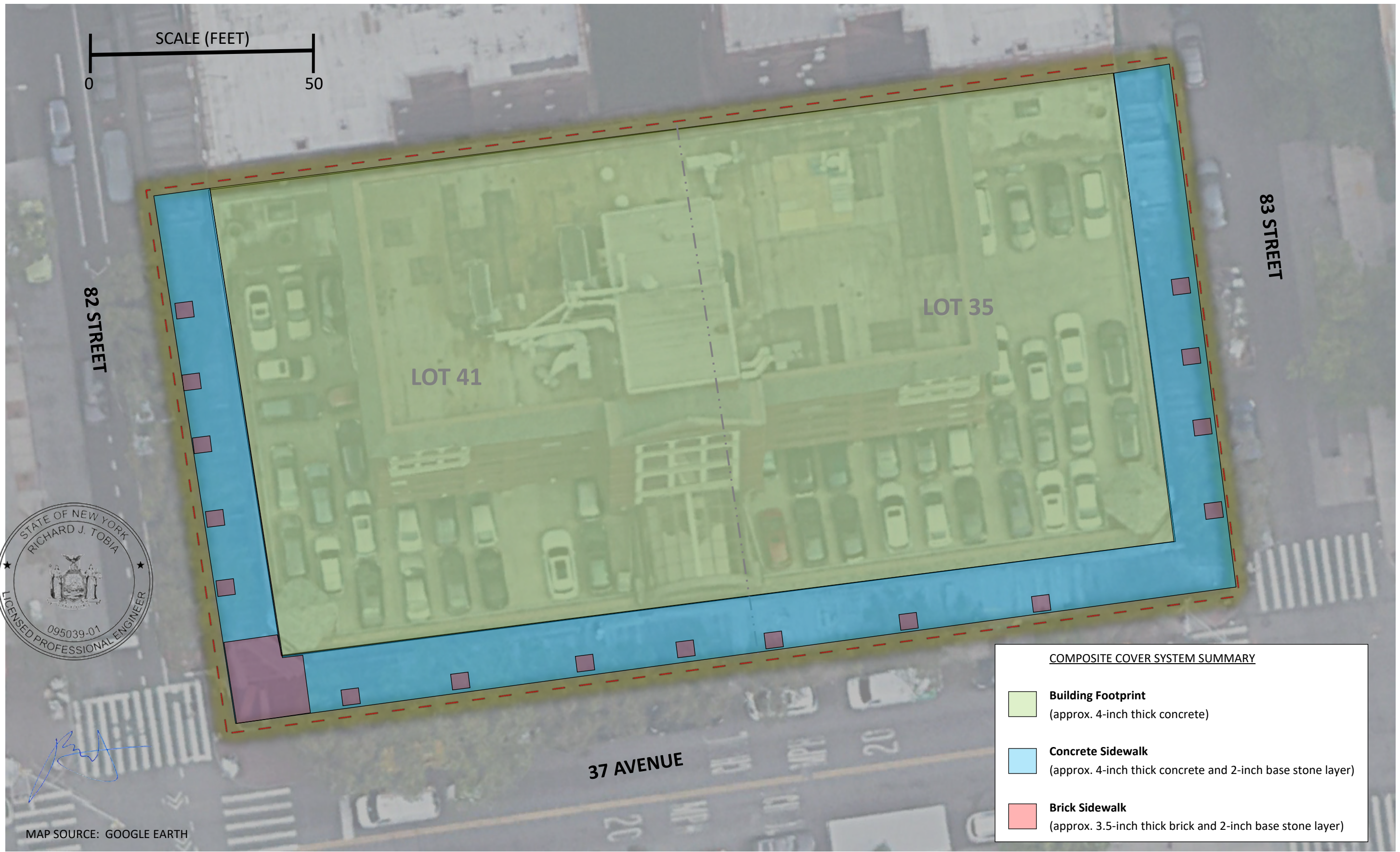
### SUB-SLAB SOIL VAPOR AND INDOOR AIR SAMPLE RESULTS MAP

82-13 37TH AVENUE  
JACKSON HEIGHTS, QUEENS COUNTY, NEW YORK

VERTEX ENGINEERING, PC

### FIGURE NO. 8

VERTEX Project No. 48122

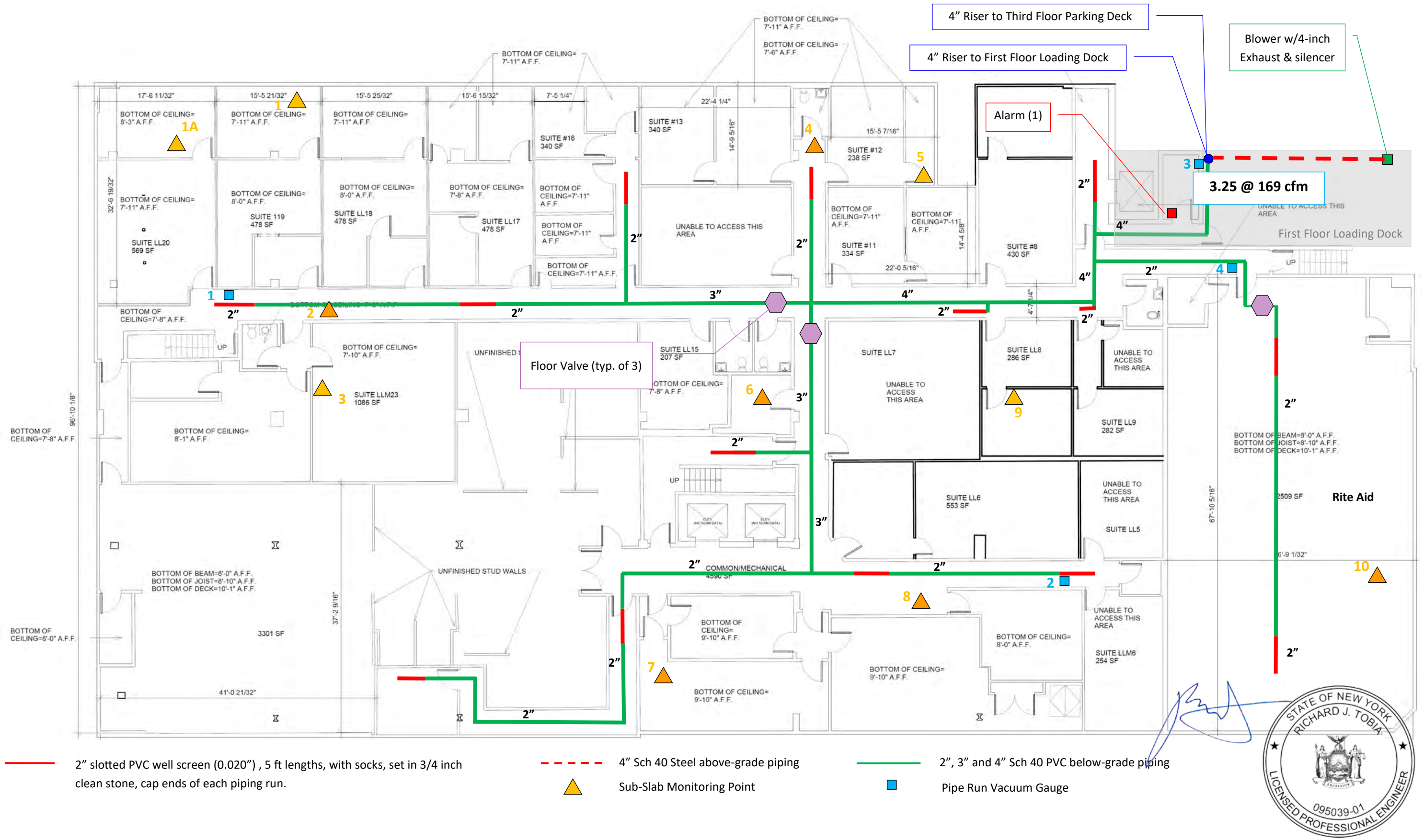


	Site Boundary
	Institutional Control Boundary

**INSTITUTIONAL AND ENGINEERING CONTROLS MAP**  
 82-13 37th Avenue  
 Jackson Heights, Queens County, New York

VERTEX ENGINEERING, PC  
 147 WEST 35TH STREET, 19TH FLOOR  
 NEW YORK, NEW YORK 10001

**FIGURE NO. 9**  
 VERTEX Project No. 48122



Map Source: Existing Basement Floor Plan, Existing Conditions Surveys Inc., 11/30/2017

SCALE: 1" = 13.5' when printed 11"x17"

### SUB-SLAB DEPRESSURIZATION SYSTEM LAYOUT

82-13 37th Avenue  
Jackson Heights, Queens County, New York

VERTEX ENGINEERING, PC  
147 WEST 35TH STREET, 19TH FLOOR  
NEW YORK, NEW YORK 10001

FIGURE 10

VERTEX Project No. 48122



# TABLES

**TABLE 1**  
**GROUNDWATER ELEVATION INFORMATION**  
 Rockfarmer 37th Avenue - NYSDEC Site No. C241212

Monitoring Well	Latitude <sup>(1)</sup>	Longitude <sup>(1)</sup>	Total Well Depth feet bgs	Screened Interval feet bgs	Top of Casing Elevation feet amsl	Sampling Dates					
						3/13/2019		6/12/2019		4/9/2020	
						Depth to Water	GW Elevation	Depth to Water	GW Elevation	Depth to Water	GW Elevation
MW-1	40.74898	73.88363	33.78	23.78 - 33.78	58.62	30.03	28.59	29.62	29.00	30.55	28.07
MW-2	40.74997	73.88429	37.99	27.99 - 37.99	60.18	32.71	27.47	31.37	28.81	32.25	27.93
MW-3	40.75010	73.88350	38.23	28.23 - 38.23	58.78	30.24	28.54	29.83	28.95	30.78	28.00
MW-4	40.75026	73.99339	37.32	27.32 - 37.32	59.68	31.09	28.59	30.68	29.00	31.61	28.07
MW-5	40.74996	73.88334	38.80	28.80 - 38.80	58.19	29.52	28.67	29.11	29.08	30.07	28.12
MW-6	40.75004	73.88428	39.50	29.50 - 39.50	60.25	---	---	---	---	32.53	27.72
MW-7	40.74982	73.88420	40.49	30.49 - 40.49	59.19	---	---	---	---	31.82	27.37
MW-8	40.74995	73.88346	37.97	27.97 - 39.97	58.22	---	---	---	---	30.31	27.91
MW-9	40.75007	73.88429	39.66	29.66 - 39.66	60.57	---	---	---	---	32.83	27.74
MW-10	40.75016	73.88358	29.21	19.21 - 29.21	49.07	---	---	---	---	21.04	28.03

**Notes:**

- (1) Word Geodetic System (WGS) 1984 geographic system (datum)
- feet bgs Feet Below Ground Surface
- feet amsl Feet Above Mean Sea Level









**TABLE 3**  
**GROUNDWATER EXCEEDANCES SUMMARY - VOCs**  
 Rockfarmer 37th Avenue - NYSDEC Site No. C241212

Compound	AWQS	VTW-01	VTW-02	VTW-03	MW-1			MW-2			MW-3		
		2/14/2018	2/15/2018	2/15/2018	3/13/2019	6/12/2019	4/9/2020	3/13/2019	6/12/2019	4/9/2020	3/13/2019	6/12/2019	4/9/2020
<b>Volatile Organic Compounds (VOCs) - ug/L</b>													
1,2,4,5-Tetramethylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.36	0.28
cis-1,2-Dichloroethene	5	ND	ND	2.8	<b>57</b>	<b>42</b>	<b>18</b>	ND	ND	ND	2.6	1.9	1.7
Ethylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene (PCE)	5	<b>17</b>	0.4	<b>90</b>	<b>420</b>	<b>310</b>	<b>140</b>	0.56	0.62	3.5	<b>110</b>	<b>70</b>	<b>50</b>
Trans-1,2-Dichloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene (TCE)	5	0.85	ND	2.4	<b>11</b>	<b>11</b>	<b>5.8</b>	ND	ND	ND	2.4	1.9	1.8
Vinyl Chloride	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

ug/L - Micrograms per liter

AWQS - NYSDEC Ambient Groundwater Quality Standard

ND - Not detected

**Bold & Highlighted** - Concentration exceeds NYSDEC standard

**TABLE 3**  
**GROUNDWATER EXCEEDANCES SUMMARY - VOCs**  
 Rockfarmer 37th Avenue - NYSDEC Site No. C241212

Compound	AWQS	MW-4			MW-5			MW-6	MW-7	MW-8	MW-9	MW-10
		3/13/2019	6/12/2019	4/9/2020	3/13/2019	6/12/2019	4/9/2020	4/9/2020	4/9/2020	4/9/2020	4/9/2020	4/9/2020
<b>Volatile Organic Compounds (VOCs) - ug/L</b>												
1,2,4,5-Tetramethylbenzene	5	ND	ND	ND	ND	ND	ND	<b>16</b>	ND	ND	<b>21</b>	<b>14</b>
1,2,4-Trimethylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.7	<b>46</b>
1,3,5-Trimethylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<b>17</b>
Carbon Tetrachloride	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.3
cis-1,2-Dichloroethene	5	ND	ND	ND	1.7	2.5	2.8	ND	ND	3.5	ND	ND
Ethylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	<b>29</b>	ND
Isopropylbenzene	5	ND	ND	ND	ND	ND	ND	2.6	ND	ND	<b>6.9</b>	ND
n-Propylbenzene	5	ND	ND	ND	ND	ND	ND	<b>5.3</b>	ND	ND	<b>12</b>	ND
Naphthalene	10	ND	ND	ND	ND	ND	ND	<b>21</b>	1.1	ND	<b>63</b>	<b>11</b>
Tetrachloroethene (PCE)	5	<b>38</b>	<b>35</b>	<b>17</b>	<b>76</b>	<b>100</b>	<b>87</b>	0.58	1.2	<b>130</b>	0.33	<b>24</b>
Trans-1,2-Dichloroethene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene (TCE)	5	0.96	1	0.9	1.6	2.6	2.5	ND	ND	3.6	ND	0.68
Vinyl Chloride	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.09	ND

Notes:  
 ug/L - Micrograms per liter  
 AWQS - NYSDEC Ambient Groundwater Quality Standard  
 ND - Not detected  
**Bold & Highlighted** - Concentration exceeds NYSDEC standard



**TABLE 4**  
**NYSDOH Soil Vapor/Indoor Air/Ambient Air Matrix Evaluation Summary**  
82-13 37th Avenue  
Jackson Heights, Queens County, New York

Analyte	Matrix Criteria		Collocated Sample Concentrations (ug/m3)									
			SS-1 / IA-1		SS-2 / IA-2		SS-3 / IA-3		SS-4 / IA-4		SS-5 / IA-5	
			12/14/2017	12/14/2017	12/14/2017	12/14/2017	12/14/2017	12/14/2017	2/22/2018	2/22/2018	2/22/2018	2/22/2018
SSSV	IA	SSSV	IA	SSSV	IA	SSSV	IA	SSSV	IA	SSSV	IA	
1,1,1-Trichloroethane	100	3	ND	0.376	ND	ND	ND	ND	ND	1.15	ND	0.355
1,1-Dichloroethene	6	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	6	0.2	15.5	0.591	767	1.1	20.4	0.541	ND	0.56	ND	0.447
cis-1,2-Dichloroethene	6	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	100	3	ND	2.2	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	100	3	2370	10.5	10100	2.92	1000	0.393	607	2.43	1760	3.82
Trichloroethene	6	0.2	19	0.113	26.1	ND	2.88	ND	4.78	0.145	12.1	0.107
Vinyl Chloride	6	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

- SSSV Sub-Slab Soil Vapor
- IA Indoor Air
- AA Ambient Air
- ug/m3 Micrograms per cubic meter

Matrix Criteria from NYSDOH Soil Vapor/Indoor Air Decision Matrices (Updated May 2017)

Bold & Highlighted = Concentrations exceeds Soil Vapor or Indoor Air Matrix Criteria

**TABLE 4**  
**NYSDOH Soil Vapor/Indoor Air/Ambient Air Matrix Evaluation Summary**  
82-13 37th Avenue  
Jackson Heights, Queens County, New York

Analyte	Matrix Criteria		Collocated Sample Concentrations (ug/m3)									
			SS-6 / IA-6		SS-7 / IA-7		SS-8 / IA-8		SS-9 / IA-9		SS-10 / IA-10	
			2/22/2018	2/22/2018	2/22/2018	2/22/2018	2/22/2018	2/22/2018	2/22/2018	2/22/2018	2/22/2018	2/22/2018
SSSV	IA	SSSV	IA	SSSV	IA	SSSV	IA	SSSV	IA	SSSV	IA	
1,1,1-Trichloroethane	100	3	ND	0.29	ND	0.475	ND	0.235	ND	0.12	ND	0.169
1,1-Dichloroethene	6	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	6	0.2	ND	0.465	ND	0.44	ND	0.654	ND	0.566	7.17	0.66
cis-1,2-Dichloroethene	6	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	100	3	ND	ND	ND	2.77	ND	ND	ND	ND	ND	ND
Tetrachloroethene	100	3	1230	4.52	3800	1.82	5490	6.04	2210	2.58	2100	5.59
Trichloroethene	6	0.2	ND	ND	ND	0.113	24.1	0.183	15.7	0.107	15.6	0.15
Vinyl Chloride	6	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

- SSSV Sub-Slab Soil Vapor
- IA Indoor Air
- AA Ambient Air
- ug/m3 Micrograms per cubic meter

Matrix Criteria from NYSDOH Soil Vapor/Indoor Air Decision Matrices (Updated May 2017)

Bold & Highlighted = Concentrations exceeds Soil Vapor or Indoor Air Matrix Criteria

**TABLE 4**  
**NYSDOH Soil Vapor/Indoor Air/Ambient Air Matrix Evaluation Summary**  
82-13 37th Avenue  
Jackson Heights, Queens County, New York

Analyte	Matrix Criteria		Collocated Sample Concentrations (ug/m3)									
			IA-11		IA-12		VTX-SS1 / VTX-IA1		VTX-SS3 / VTX-IA3		VTX-SS5 / VTX-IA5	
	SSSV	IA	2/22/2018	2/22/2018	11/17/2021	11/16/2021	11/17/2021	11/16/2021	11/17/2021	11/16/2021	11/17/2021	11/16/2021
1,1,1-Trichloroethane	100	3	0.178	ND	5.17	<b>6.71</b>	1.82	1.59	ND	1.48	1.69	1.16
1,1-Dichloroethene	6	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	6	0.2	<b>0.52</b>	<b>0.409</b>	ND	<b>0.478</b>	ND	<b>0.635</b>	ND	<b>0.459</b>	ND	<b>0.692</b>
cis-1,2-Dichloroethene	6	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	100	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	100	3	0.909	0.997	12.2	2.75	43.5	2.98	<b>127</b>	2.14	3.52	2.87
Trichloroethene	6	0.2	ND	ND	ND	ND	1.09	ND	1.49	ND	ND	ND
Vinyl Chloride	6	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

- SSSV Sub-Slab Soil Vapor
- IA Indoor Air
- AA Ambient Air
- ug/m3 Micrograms per cubic meter

Matrix Criteria from NYSDOH Soil Vapor/Indoor Air Decision Matrices (Updated May 2017)

Bold & Highlighted = Concentrations exceeds Soil Vapor or Indoor Air Matrix Criteria

**TABLE 4**  
**NYSDOH Soil Vapor/Indoor Air/Ambient Air Matrix Evaluation Summary**

82-13 37th Avenue  
 Jackson Heights, Queens County, New York

Analyte	Matrix Criteria		Collocated Sample Concentrations (ug/m3)						
			VTX-SS9 / VTX-IA9		VTX-SS10 / VTX-IA10		AA	AA	VTX-AA1
	SSSV	IA	11/17/2021	11/16/2021	11/17/2021	11/16/2021	12/14/2017	2/22/2018	11/16/2021
1,1,1-Trichloroethane	100	3	ND	0.18	ND	0.186	ND	ND	ND
1,1-Dichloroethene	6	0.2	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	6	0.2	ND	0.465	2.53	0.409	0.541	0.359	0.409
cis-1,2-Dichloroethene	6	0.2	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	100	3	ND	ND	ND	ND	ND	1.8	ND
Tetrachloroethene	100	3	88.8	2.43	85.4	4.66	0.414	0.387	1.99
Trichloroethene	6	0.2	1.55	ND	ND	ND	ND	ND	ND
Vinyl Chloride	6	0.2	ND	ND	ND	ND	ND	ND	ND

Notes:

- SSSV Sub-Slab Soil Vapor
- IA Indoor Air
- AA Ambient Air
- ug/m3 Micrograms per cubic meter

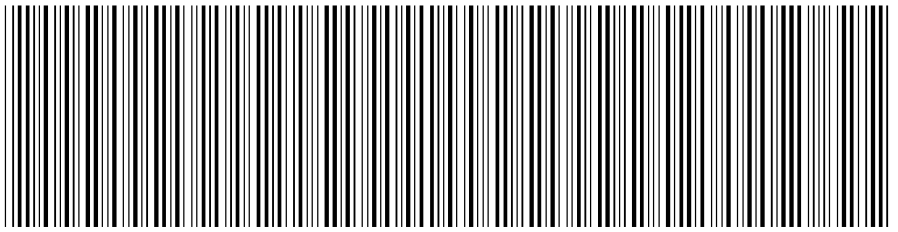
Matrix Criteria from NYSDOH Soil Vapor/Indoor Air Decision Matrices (Updated May 2017)

Bold & Highlighted = Concentrations exceeds Soil Vapor or Indoor Air Matrix Criteria

# **APPENDIX A: ENVIRONMENTAL EASEMENT**

**NYC DEPARTMENT OF FINANCE  
OFFICE OF THE CITY REGISTER**

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**RECORDING AND ENDORSEMENT COVER PAGE**

**PAGE 1 OF 13**

**Document ID: 2020120801268001**

Document Date: 10-06-2020

Preparation Date: 12-14-2020

Document Type: EASEMENT

Document Page Count: 11

**PRESENTER:**

ROYAL REGISTERED PROPERTY REPORTS  
(183229)MB  
125 PARK AVENUE, SUITE 1610  
NEW YORK, NY 10017  
212-376-0900  
MBASALATAN@ROYALABSTRACT.COM

**RETURN TO:**

ROYAL REGISTERED PROPERTY REPORTS  
(183229)MB  
125 PARK AVENUE, SUITE 1610  
NEW YORK, NY 10017  
212-376-0900  
MBASALATAN@ROYALABSTRACT.COM

**PROPERTY DATA**

Borough	Block	Lot	Unit	Address
QUEENS	1456	35	Entire Lot	82-11 37TH AVENUE

**Property Type:** COMMERCIAL REAL ESTATE

Borough	Block	Lot	Unit	Address
QUEENS	1456	41	Entire Lot	82-01 37TH AVENUE

**Property Type:** COMMERCIAL REAL ESTATE

**CROSS REFERENCE DATA**

CRFN \_\_\_\_\_ or DocumentID \_\_\_\_\_ or \_\_\_\_\_ Year \_\_\_\_\_ Reel \_\_\_\_\_ Page \_\_\_\_\_ or File Number \_\_\_\_\_

**PARTIES**

**GRANTOR/SELLER:**

HORIZON 37TH AVE, LLC  
42-15 235TH STREET, C/O ROCKFARMER  
PROPERTIES  
DOUGLSTON, NY 11355

**GRANTEE/BUYER:**

PEOPLE OF THE STATE OF NEW YORK  
625 BROADWAY  
ALBANY, NY 12233

Additional Parties Listed on Continuation Page

**FEES AND TAXES**

**Mortgage :**

Mortgage Amount: \$ 0.00

Taxable Mortgage Amount: \$ 0.00

Exemption:

TAXES: County (Basic): \$ 0.00

City (Additional): \$ 0.00

Spec (Additional): \$ 0.00

TASF: \$ 0.00

MTA: \$ 0.00

NYCTA: \$ 0.00

Additional MRT: \$ 0.00

**TOTAL:** \$ 0.00

Recording Fee: \$ 95.00

Affidavit Fee: \$ 0.00

**Filing Fee:**

\$ 0.00

NYC Real Property Transfer Tax:

\$ 0.00

NYS Real Estate Transfer Tax:

\$ 0.00

**RECORDED OR FILED IN THE OFFICE  
OF THE CITY REGISTER OF THE**

**CITY OF NEW YORK**

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City Register File No.(CRFN):

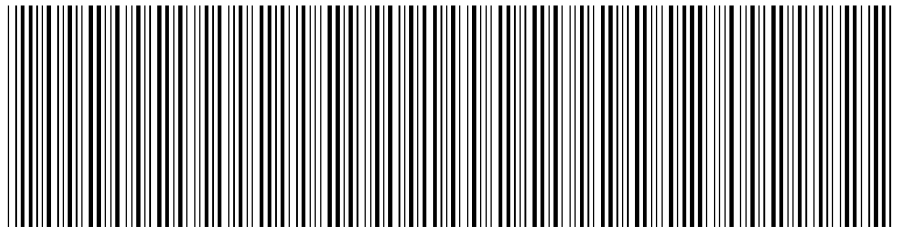
**2020000355292**



*Annette McMill*

**City Register Official Signature**

NYC DEPARTMENT OF FINANCE  
OFFICE OF THE CITY REGISTER



2020120801268001004C20B7

**RECORDING AND ENDORSEMENT COVER PAGE (CONTINUATION)**

**PAGE 2 OF 13**

**Document ID: 2020120801268001**  
Document Type: EASEMENT

Document Date: 10-06-2020

Preparation Date: 12-14-2020

**PARTIES**

**GRANTOR/SELLER:**

RFC KETCHAM 37TH AVE, LLC  
C/O ROCKFARMER PROPERTIES, 42-15 235TH  
STREET  
DOUGLASTON, NY 11355

**GRANTOR/SELLER:**

HORIZON 37TH AVE, LLC  
C/O ROCKFARMER PROPERTIES, 42-15 235TH  
STREET  
DOUGLASTON, NY 11355

ENVIRONMENTAL EASEMENT GRANTED PURSUANT TO ARTICLE 71, TITLE 36  
OF THE NEW YORK STATE ENVIRONMENTAL CONSERVATION LAW

THIS INDENTURE made <sup>as of</sup> this 6<sup>th</sup> day of October, 2020, between Owners, 37th Avenue Owner LLC, RFC Ketcham 37th Ave, LLC and Horizon 37th Ave, LLC, having an office at c/o Rockfarmer Properties, 42-15 235th Street, Douglaston, New York 11355, County of Queens, State of New York (the "Grantor"), and The People of the State of New York (the "Grantee."), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233,

**WHEREAS**, the Legislature of the State of New York has declared that it is in the public interest to encourage the remediation of abandoned and likely contaminated properties ("sites") that threaten the health and vitality of the communities they burden while at the same time ensuring the protection of public health and the environment; and

**WHEREAS**, the Legislature of the State of New York has declared that it is in the public interest to establish within the Department a statutory environmental remediation program that includes the use of Environmental Easements as an enforceable means of ensuring the performance of operation, maintenance, and/or monitoring requirements and the restriction of future uses of the land, when an environmental remediation project leaves residual contamination at levels that have been determined to be safe for a specific use, but not all uses, or which includes engineered structures that must be maintained or protected against damage to perform properly and be effective, or which requires groundwater use or soil management restrictions; and

**WHEREAS**, the Legislature of the State of New York has declared that Environmental Easement shall mean an interest in real property, created under and subject to the provisions of Article 71, Title 36 of the New York State Environmental Conservation Law ("ECL") which contains a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls which are intended to ensure the long term effectiveness of a site remedial program or eliminate potential exposure pathways to hazardous waste or petroleum; and

**WHEREAS**, Grantor, is the owner of real property located at the address of 82-11 37th Avenue in the City of New York, County of Queens and State of New York, known and designated on the tax map of the New York City Department of Finance as tax map parcel number: Block 1456 Lot 35, being a portion of the property conveyed to Grantor by deed dated July 26, 2018 and recorded in the City Register of the City of New York as CRFN #2018000247768; and

**WHEREAS**, Grantor, is the owner of real property located at the address of 82-01 37th Avenue in the City of New York, County of Queens and State of New York, known and designated on the tax map of the New York City Department of Finance as tax map parcel number: Block 1456 Lot 41, being a portion of the property conveyed to Grantor by deed dated July 26, 2018 and recorded in the City Register of the City of New York as CRFN #2018000247768; and



**WHEREAS**, the property subject to this Environmental Easement (the "Controlled Property") comprises approximately 0.459 +/- acres, and is hereinafter more fully described in the Land Title Survey dated August 18, 2020 prepared by William T. Whimple, L.L.S. of Control Point Associates, Inc. PC, which will be attached to the Site Management Plan. The Controlled Property description is set forth in and attached hereto as Schedule A; and

**WHEREAS**, the Department accepts this Environmental Easement in order to ensure the protection of public health and the environment and to achieve the requirements for remediation established for the Controlled Property until such time as this Environmental Easement is extinguished pursuant to ECL Article 71, Title 36; and

**NOW THEREFORE**, in consideration of the mutual covenants contained herein and the terms and conditions of Brownfield Cleanup Agreement Index Number: C241212-07-18, Grantor conveys to Grantee a permanent Environmental Easement pursuant to ECL Article 71, Title 36 in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement").

1. Purposes. Grantor and Grantee acknowledge that the Purposes of this Environmental Easement are: to convey to Grantee real property rights and interests that will run with the land in perpetuity in order to provide an effective and enforceable means of encouraging the reuse and redevelopment of this Controlled Property at a level that has been determined to be safe for a specific use while ensuring the performance of operation, maintenance, and/or monitoring requirements; and to ensure the restriction of future uses of the land that are inconsistent with the above-stated purpose.

2. Institutional and Engineering Controls. The controls and requirements listed in the Department approved Site Management Plan ("SMP") including any and all Department approved amendments to the SMP are incorporated into and made part of this Environmental Easement. These controls and requirements apply to the use of the Controlled Property, run with the land, are binding on the Grantor and the Grantor's successors and assigns, and are enforceable in law or equity against any owner of the Controlled Property, any lessees and any person using the Controlled Property.

A. (1) The Controlled Property may be used for:

**Restricted Residential as described in 6 NYCRR Part 375-1.8(g)(2)(ii),  
Commercial as described in 6 NYCRR Part 375-1.8(g)(2)(iii) and Industrial  
as described in 6 NYCRR Part 375-1.8(g)(2)(iv)**

(2) All Engineering Controls must be operated and maintained as specified in the Site Management Plan (SMP);

(3) All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP;

(4) The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the New York City Department of Health and Mental Hygiene to render it safe for use as drinking water or for

industrial purposes, and the user must first notify and obtain written approval to do so from the Department;

(5) Groundwater and other environmental or public health monitoring must be performed as defined in the SMP;

(6) Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;

(7) All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP;

(8) Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP;

(9) Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy shall be performed as defined in the SMP;

(10) Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by this Environmental Easement.

B. The Controlled Property shall not be used for Residential purposes as defined in 6NYCRR 375-1.8(g)(2)(i), and the above-stated engineering controls may not be discontinued without an amendment or extinguishment of this Environmental Easement.

C. The SMP describes obligations that the Grantor assumes on behalf of Grantor, its successors and assigns. The Grantor's assumption of the obligations contained in the SMP which may include sampling, monitoring, and/or operating a treatment system, and providing certified reports to the NYSDEC, is and remains a fundamental element of the Department's determination that the Controlled Property is safe for a specific use, but not all uses. The SMP may be modified in accordance with the Department's statutory and regulatory authority. The Grantor and all successors and assigns, assume the burden of complying with the SMP and obtaining an up-to-date version of the SMP from:

Site Control Section  
Division of Environmental Remediation  
NYSDEC  
625 Broadway  
Albany, New York 12233  
Phone: (518) 402-9553

D. Grantor must provide all persons who acquire any interest in the Controlled Property a true and complete copy of the SMP that the Department approves for the Controlled Property and all Department-approved amendments to that SMP.

E. Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of ECL Article 71, Title 36 of the ECL, the property deed and all subsequent instruments of conveyance relating to the Controlled Property

shall state in at least fifteen-point bold-faced type:

This property is subject to an Environmental Easement held by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the Environmental Conservation Law.

F. Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.

G. Grantor covenants and agrees that it shall, at such time as NYSDEC may require, submit to NYSDEC a written statement by an expert the NYSDEC may find acceptable certifying under penalty of perjury, in such form and manner as the Department may require, that:

(1) the inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under the direction of the individual set forth at 6 NYCRR Part 375-1.8(h)(3).

(2) the institutional controls and/or engineering controls employed at such site:  
(i) are in-place;  
(ii) are unchanged from the previous certification, or that any identified changes to the controls employed were approved by the NYSDEC and that all controls are in the Department-approved format; and

(iii) that nothing has occurred that would impair the ability of such control to protect the public health and environment;

(3) the owner will continue to allow access to such real property to evaluate the continued maintenance of such controls;

(4) nothing has occurred that would constitute a violation or failure to comply with any site management plan for such controls;

(5) the report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

(6) to the best of his/her knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and

(7) the information presented is accurate and complete.

3. Right to Enter and Inspect. Grantee, its agents, employees, or other representatives of the State may enter and inspect the Controlled Property in a reasonable manner and at reasonable times to assure compliance with the above-stated restrictions.

4. Reserved Grantor's Rights. Grantor reserves for itself, its assigns, representatives, and successors in interest with respect to the Property, all rights as fee owner of the Property, including:

A. Use of the Controlled Property for all purposes not inconsistent with, or limited by the terms of this Environmental Easement;

B. The right to give, sell, assign, or otherwise transfer part or all of the underlying fee interest to the Controlled Property, subject and subordinate to this Environmental Easement;

5. Enforcement

A. This Environmental Easement is enforceable in law or equity in perpetuity by Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a defense in any action to enforce this Environmental Easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

B. If any person violates this Environmental Easement, the Grantee may revoke the Certificate of Completion with respect to the Controlled Property.

C. Grantee shall notify Grantor of a breach or suspected breach of any of the terms of this Environmental Easement. Such notice shall set forth how Grantor can cure such breach or suspected breach and give Grantor a reasonable amount of time from the date of receipt of notice in which to cure. At the expiration of such period of time to cure, or any extensions granted by Grantee, the Grantee shall notify Grantor of any failure to adequately cure the breach or suspected breach, and Grantee may take any other appropriate action reasonably necessary to remedy any breach of this Environmental Easement, including the commencement of any proceedings in accordance with applicable law.

D. The failure of Grantee to enforce any of the terms contained herein shall not be deemed a waiver of any such term nor bar any enforcement rights.

6. Notice. Whenever notice to the Grantee (other than the annual certification) or approval from the Grantee is required, the Party providing such notice or seeking such approval shall identify the Controlled Property by referencing the following information:

County, NYSDEC Site Number, NYSDEC Brownfield Cleanup Agreement, State Assistance Contract or Order Number, and the County tax map number or the Liber and Page or computerized system identification number.

Parties shall address correspondence to:      Site Number: C241212  
Office of General Counsel  
NYSDEC  
625 Broadway  
Albany New York 12233-5500

With a copy to: \_\_\_\_\_ Site Control Section  
Division of Environmental Remediation

NYSDEC  
625 Broadway  
Albany, NY 12233

All notices and correspondence shall be delivered by hand, by registered mail or by Certified mail and return receipt requested. The Parties may provide for other means of receiving and communicating notices and responses to requests for approval.

7. Recordation. Grantor shall record this instrument, within thirty (30) days of execution of this instrument by the Commissioner or her/his authorized representative in the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

8. Amendment. Any amendment to this Environmental Easement may only be executed by the Commissioner of the New York State Department of Environmental Conservation or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

9. Extinguishment. This Environmental Easement may be extinguished only by a release by the Commissioner of the New York State Department of Environmental Conservation, or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

10. Joint Obligation. If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

11. Consistency with the SMP. To the extent there is any conflict or inconsistency between the terms of this Environmental Easement and the SMP, regarding matters specifically addressed by the SMP, the terms of the SMP will control.

**Remainder of Page Intentionally Left Blank**

IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

37th Avenue Owner LLC:

By: [Signature]

Print Name: John Petras

Title: Authorized Signatory Date: \_\_\_\_\_

**Grantor's Acknowledgment**

STATE OF NEW YORK )  
 ) ss:  
COUNTY OF Queens )

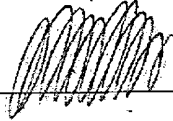
On the 3<sup>rd</sup> day of September, in the year 2020, before me, the undersigned, personally appeared JOHN PETRAS, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

[Signature]  
Notary Public - State of New York

STEFANOS BOUDOURAKIS  
Notary Public, State of New York  
No. 1E06162969  
Qualified in Queens County  
Commission Expires March, 2021

IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

RFC Ketcham 37th Ave, LLC:

By: 


Print Name: John Petras

Title: Authorized Signatory Date: \_\_\_\_\_

**Grantor's Acknowledgment**

STATE OF NEW YORK )  
 ) ss:  
COUNTY OF QUEENS )

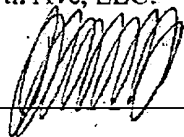
On the 30<sup>th</sup> day of SEPTEMBER, in the year 20 20, before me, the undersigned, personally appeared JOHN PETRAS, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

  
Notary Public - State of New York

STEFANOS BOUDOURAKIS  
Notary Public, State of New York  
No. 1B06162969  
Qualified in Queens County  
Commission Expires March, 20 21

IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

Horizon 37th Ave, LLC:

By: 

Print Name: John Petras

Title: Authorized Signatory Date: 9/30/20

**Grantor's Acknowledgment**

STATE OF NEW YORK )  
 ) ss:  
COUNTY OF QUEENS )

On the 30<sup>th</sup> day of SEPTEMBER, in the year 2020, before me, the undersigned, personally appeared JOHN PETRAS, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

  
Notary Public - State of New York

STEFANOS BOUDOURAKIS  
Notary Public, State of New York  
No. 1B06162969  
Qualified in Queens County  
Commission Expires March, 2021



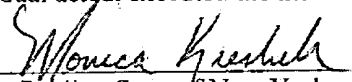
**THIS ENVIRONMENTAL EASEMENT IS HEREBY ACCEPTED BY THE PEOPLE OF THE STATE OF NEW YORK, Acting By and Through the Department of Environmental Conservation as Designee of the Commissioner,**

By:   
Michael J. Ryan, Director  
Division of Environmental Remediation

**Grantee's Acknowledgment**

STATE OF NEW YORK     )  
  ) ss:  
COUNTY OF ALBANY     )

On the 6<sup>th</sup> day of OCTOBER, in the year 2020 before me, the undersigned, personally appeared Michael J. Ryan, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/ executed the same in his/her/ capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

  
Notary Public - State of New York

MONICA KRESHIK, ESO.  
Notary Public, State of New York  
No. 02KR6314859  
Qualified in Rensselaer County  
Commission Expires 11/17/2022

**SCHEDULE "A" PROPERTY DESCRIPTION**

**Legal Description – Environmental Easement**

ALL that certain plot, piece or parcel of land, with the buildings and improvements thereon erected, situate, lying and being in the Borough and County of Queens, City and State of New York, bounded and described as follows:

BEGINNING at the corner formed by the intersection of the northerly side of 37th Avenue with the westerly side of 83rd Street;

RUNNING THENCE northerly, along the westerly side of 83rd Street, 100 feet;

THENCE westerly, parallel with 37th Avenue, 200 feet to the easterly side of 82nd Street;

THENCE southerly, along the easterly side of 82nd Street, 100 feet to the northerly side of 37th Avenue;

THENCE easterly, along the northerly side of 37th Avenue, 200 feet to the easterly side of 83rd Street, to the point or place of BEGINNING.

Containing 20,000 square feet or 0.459 acres more or less.

# **APPENDIX B: SITE CONTACT LIST**

**APPENDIX B  
LIST OF SITE CONTACTS**

TITLE	NAME	CONTACT
Site Owner and Remedial Party	John Petras 37th Owner LLC; Horizon 37th Ave, LLC; and RFC Ketcham 37th Ave, LLC	(718) 229-4488 <a href="mailto:jpetras@rockfarmerproperties.com">jpetras@rockfarmerproperties.com</a>
Qualified Environmental Professional	Timothy Biercz The Vertex Companies, Inc.	(908) 333-4317 <a href="mailto:tbiercz@vertexeng.com">tbiercz@vertexeng.com</a>
Remedial Engineer	Richard Tobia, P.E. Vertex Engineering, PC	(908) 458-9604 <a href="mailto:rtobia@vertexeng.com">rtobia@vertexeng.com</a>
NYSDEC Project Manager	Sadique Ahmed, P.E.	(518) 402-9656 <a href="mailto:sadique.ahmed@dec.ny.gov">sadique.ahmed@dec.ny.gov</a>
NYSDEC Project Manager Supervisor	William Bennett	(518) 402-9659 <a href="mailto:william.bennett@dec.ny.gov">william.bennett@dec.ny.gov</a>
NYSDEC Site Control Section Chief	Kelly Lewandowski	(518) 402-9569 <a href="mailto:kelly.lewandowski@dec.ny.gov">kelly.lewandowski@dec.ny.gov</a>
NYSDOH Project Manager	Kristen Kulow	(607) 353-4335 <a href="mailto:kristin.kulow@health.ny.gov">kristin.kulow@health.ny.gov</a>
Remedial Party Attorney	Scott Furman Sive, Paget & Riesel P.C.	(212) 421-2150 <a href="mailto:sfurman@sprlaw.com">sfurman@sprlaw.com</a>

# **APPENDIX C: BORING LOGS**

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **82-11 37th Street Phase II**  
 LOCATION: **82-11 37th Street, Jackson Heights, New York**  
 Date Start: 2/14/2018 Date Finish: 2/14/2018

PROJECT NO.: **48122** BORING NO.: **VTX-01**  
 DRILLER: **Hawk Drilling** WELL: **VTW-01**  
 INSPECTOR: **D.Cron**

SAMPLER		CASING		CORE		GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data	
TYPE	Geoprobe 6610					RISER ELEV.:	NA	Datum:	
SIZE (ID)	2"					DATE:	2/14/2018		
HAMMER (LB.)	NA					TIME:	11:00	Elevation (ft):	
FALL (IN.)	NA					DEPTH (ft):	32.65'		

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)			
1				4.4	0-0.5': Concrete		
					0.5-1.0': Brown sand and gravel		
2	0'-5'	5/3'		10.3	1.0-2.0': Ash		
3				15.7	2.0-3.0': Brown silt, damp		
4				30.1	3.0-4.0': Orange brown silty sand, damp		
5				35.9	4.0-5.0': Orange brown fine sand, damp		
6	5'-10'	5/4'		114	5.0-10.0': Brown medium sand, trace fines, trace fine gravel, moist		
7				260			
8				295			
9							
10				97.1			
11	10'-15'	5/4'		389	10.0-15.0': Brown medium sand, trace fines, trace fine gravel, moist		
12				338			
13							
14				273			
15				39.5			
16	15'-20'	5/4'		683	15.0-15.5': Perched water and gravel		
17				1830	15.5-20.0': Tan brown medium sand, trace gravel, damp, hard		
18				456			
19				414			
20				330			

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS		
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)			
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen	
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser	
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete	
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite	
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native Sand	
<b>Note(s):</b>						Hard	>30	Grout

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	40.05'	SCREEN INTERVAL:	30.05'-40.05'	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	1"	LENGTH OF RISER:	30.05'	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	PVC	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	0.01"	DEPTH/TYPE SEAL:	NA						

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **82-11 37th Street Phase II**  
 LOCATION: **82-11 37th Street, Jackson Heights, New York**  
 Date Start: 2/14/2018 Date Finish: 2/14/2018

PROJECT NO.: **48122** BORING NO.: **VTX-01**  
 DRILLER: **Hawk Drilling** WELL: **VTW-01**  
 INSPECTOR: **D.Cron**

SAMPLER		CASING		CORE		GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data	
TYPE	Geoprobe 6610					RISER ELEV.:	NA	Datum:	
SIZE (ID)	2"					DATE:	2/14/2018		
HAMMER (L.B.)	NA					TIME:	11:00	Elevation (ft):	
FALL (IN.)	NA					DEPTH (ft):	32.65'		

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)			
21					20.0-23.0': Tan brown medium sand, trace gravel, damp, hard		
22				450			
23	20'-25'	5/3'	NA				
24					23.0-25.0': Brown fine sand and gravel, white stone		
25				294			
26				9.8			
27					25.0-30.0': Brown fine sand and medium sand, damp		
28	25'-30'	5/4'	NA	15.6			
29				35			
30				30			
31					30.0-34.0': Brown fine sand and medium sand, damp		
32				0.6			
33	30'-35'	5/3'	NA				
34				0			
35				0	34.0-35.0': Brown medium sand, wet		
36					35.0': Gray silt, wet		
37				0	35.0-38.0': Brown medium sand, wet		
38	35'-40'	5/4'	NA	0			
39				0	38.0-40.0': Brown sand and fines, tight, damp		
40				3.5			
41					Boring terminated at 40.0' bgs. No odors observed. Sample VTX-01(17.0-17.5) collected at 10:50 at elevated PID. Sample VTX-01(34.0-34.5) collected at 10:55 at groundwater interface. Sample VTW-01 collected at 12:10		

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native Sand
<b>Note(s):</b>				Hard	>30		Grout

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	40.05'	SCREEN INTERVAL:	30.05'-40.05'	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	1"	LENGTH OF RISER:	30.05'	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	PVC	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	0.01"	DEPTH/TYPE SEAL:	NA						

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **82-11 37th Street Phase II**  
 LOCATION: **82-11 37th Street, Jackson Heights, New York**  
 Date Start: 2/15/2018 Date Finish: 2/15/2018

PROJECT NO.: **48122** BORING NO.: **VTX-02**  
 DRILLER: **Hawk Drilling** WELL: **VTW-02**  
 INSPECTOR: **D.Cron**

SAMPLER		CASING		CORE	GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data	
TYPE	Geoprobe 6610				RISER ELEV.:	NA	Datum:	
SIZE (ID)	2"				DATE:	2/15/2018		
HAMMER (LB.)	NA				TIME:	10:45	Elevation (ft):	
FALL (IN.)	NA				DEPTH (ft):	34.19'		

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)			
1				0	0.0'-0.5': Concrete		
				0			
2				0	0.5'-2.0': Lite brown silty CLAY		
				0			
3	0'-5'	5/3'	NA	17.9	2.0'-4.0': Dark brown silty CLAY		
				10			
4				49.8			
				65.8			
5				27.1	4.0'-5.0': Lite brown silty CLAY		
				18			
6	5'-10'	5/4'	NA	8.8	5.0'-5.5': Brown sandy CLAY		
				4.3			
7				14.6			
				23.3			
8				17.8			
				28.6			
9				23.3			
				27.8			
10				106			
				98.6			
11	10'-15'	5/4'	NA	14.3	10.0'-15.0': Lite brown/orange silty coarse to fine SAND with coarse to fine gravel		
				8.8			
12				19			
				16.5			
13				12.7			
				95			
14				74.2			
				321			
15				184			
				177			
16	15'-20'	5/4.5'	NA	10.8	15.0'-20.0': Lite brown/orange/yellow/white silty coarse to fine SAND with coarse to fine gravel		
				98.2			
17				13.3			
				12.7			
18				46.3			
				63.4			
19				12.4			
				11.7			
20				5			
				129			

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native Sand
<b>Note(s):</b>							Grout

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	40.5'	SCREEN INTERVAL:	30.5'-40.5'	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	1"	LENGTH OF RISER:	30.5'	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	PVC	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	0.01"	DEPTH/TYPE SEAL:	NA						



**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **82-11 37th Street Phase II**  
 LOCATION: **82-11 37th Street, Jackson Heights, New York**  
 Date Start: 2/15/2018 Date Finish: 2/15/2018

PROJECT NO.: **48122** BORING NO.: **VTX-02**  
 DRILLER: **Hawk Drilling** WELL: **VTW-02**  
 INSPECTOR: **D.Cron**

SAMPLER		CASING		CORE	GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data	
TYPE	Geoprobe 6610				RISER ELEV.:	NA	Datum:	
SIZE (ID)	2"				DATE:	2/15/2018		
HAMMER (LB.)	NA				TIME:	10:45	Elevation (ft):	
FALL (IN.)	NA				DEPTH (ft):	34.19'		

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)			
21	20'-25'	5/5'	NA	195	20.0'-25.0': Lite brown/orange/yellow/white silty coarse to fine SAND with coarse to fine gravel		
				36			
22				20.1			
				137			
23				26.1			
				67.1			
24				1194			
				71.6			
25				9.2			
				13.7			
26	25'-30'	5/3'	NA	201	25.0'-30.0': Lite brown/orange/yellow/white silty coarse to fine SAND with coarse to fine gravel		
				686			
27				172			
				1111			
28				533			
				477			
29				192			
				143			
30				187			
				229			
31	30'-35'	5/3'	NA	98.4	30.0'-35.0': Lite brown/orange/yellow/white silty coarse to fine SAND with coarse to fine gravel		
				116			
32				111			
				234			
33				224			
				197			
34				209			
				433			
35				811			
				940			
36	35'-40'	5/3'	NA	NA	35.0'-40.0': Lite brown silty coarse to fine SAND with some clay		
				NA			
37				NA			
				NA			
38				NA			
				NA			
39				NA			
				NA			
40				NA			
				NA			
41					Boring terminated at 40.0' bgs. Sample VTX-02(26.5-27.0) collected at 10:25 at elevated PID. Sample VTX-02(34.0-34.5) collected at 10:35 at groundwater interface. Sample VTW-02 collected at 11:15		

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native Sand
<b>Note(s):</b>							Grout

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	40.5'	SCREEN INTERVAL:	30.5'-40.5'	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	1"	LENGTH OF RISER:	30.5'	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	PVC	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	0.01"	DEPTH/TYPE SEAL:	NA						

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **82-11 37th Street Phase II**  
 LOCATION: **82-11 37th Street, Jackson Heights, New York**  
 Date Start: 2/15/2018 Date Finish: 2/15/2018

PROJECT NO.: **48122** BORING NO.: **VTX-03**  
 DRILLER: **Hawk Drilling** WELL: **VTW-03**  
 INSPECTOR: **D.Cron**

SAMPLER		CASING		CORE	GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data	
TYPE	Geoprobe 6610				RISER ELEV.:	NA	Datum:	
SIZE (ID)	2"				DATE:	2/15/2018		
HAMMER (LB.)	NA				TIME:	13:15	Elevation (ft):	
FALL (IN.)	NA				DEPTH (ft):	32.78'		

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)			
1	0'-5'	5/3'	NA	0	0.0'-1.0': Concrete		
				0			
2				6.9	1.0'-2.0': Lite brown silty coarse SAND with coarse to fine gravel, asphalt, and brick		
			5				
3			1.9	2.0'-3.5': Dark brown silty CLAY			
			0				
4			0				
			0	3.5'-5.0': Lite brown/yellow silty CLAY			
5			0				
			0				
6	5'-10'	5/4'	NA	5.7	5.0'-6.0': Lite brown/yellow/grey silty CLAY		
				24.4			
7				8.4	6.0'-6.5': Concrete		
				11.7			
8				7.1			
				33.8	6.5'-9.0': Lite brown/orange/yellow silty coarse to fine SAND		
9				13.6			
				30.2			
10				22.1	9.0'-10.0': Lite brown silty coarse to fine SAND		
				44.3			
11	10'-15'	5/4.5'	NA	33.9	10.0'-11.5': Lite brown silty coarse to fine SAND		
				36.2			
12				134			
				54.1			
13				29.2			
				72.3	11.5'-15.0': Lite brown silty coarse to fine SAND with coarse to fine gravel		
14				74.6			
				159			
15				23.9			
				72.4			
16	15'-20'	5/4.5'	NA	1428	15.0'-18.0': Lite brown silty CLAY with some coarse to fine sand		
				132			
17				48.8			
				91.8			
18				56.8			
				120			
19				108			
				26.2	18.0'-20.0': Lite brown silty coarse to fine SAND		
20				11.9			
				12.7			

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native Sand
<b>Note(s):</b>				Hard	>30		Grout

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	39.25'	SCREEN INTERVAL:	29.25'-39.25'	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	1"	LENGTH OF RISER:	29.25'	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	PVC	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	0.01'	DEPTH/TYPE SEAL:	NA						

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **82-11 37th Street Phase II**  
 LOCATION: **82-11 37th Street, Jackson Heights, New York**  
 Date Start: 2/15/2018 Date Finish: 2/15/2018

PROJECT NO.: **48122** BORING NO.: **VTX-03**  
 DRILLER: **Hawk Drilling** WELL: **VTW-03**  
 INSPECTOR: **D.Cron**

SAMPLER		CASING		CORE	GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data	
TYPE	Geoprobe 6610				RISER ELEV.:	NA	Datum:	
SIZE (ID)	2"				DATE:	2/15/2018		
HAMMER (L.B.)	NA				TIME:	13:15	Elevation (ft):	
FALL (IN.)	NA				DEPTH (ft):	32.78'		

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)			
21	20'-25'	5 1/4'	NA	14.5	20.0'-25.0': Lite brown silty coarse to fine SAND with some clay (moist and firm)		
				6.9			
22				6.6			
				5.6			
23				4.1			
				4.1			
24				36.2			
				16.2			
25				18.5			
				21.3			
26	25'-30'	5/4'	NA	92.8	25.0'-27.0': Lite brown silty coarse to fine SAND with some clay (moist and firm)		
				137			
27				48.1			
				128			
28				57			
				27.9			
29				22.3			
				27.4			
30				30.2			
				28.1			
31	30'-35'	5/4'	NA	50	30.0'-35.0': Lite brown/red/white coarse to fine SAND (wet @ 34.5)		
				67.4			
32				53.2			
				47.1			
33				144			
				175			
34				137			
				178			
35				197			
				255			
36	35'-40'	5/3.5'	NA	117	35.0'-40.0': Lite brown/red/white coarse to fine SAND (wet)		
				45.2			
37				248			
				132			
38				145			
				182			
39				93.4			
				110			
40				84.7			
				101			
41					Boring terminated at 40.0' bgs. Sample VTX-03(15.0-15.5) collected at 13:05 at elevated PID. Sample VTW-03 collected at 13:35		

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native Sand
<b>Note(s):</b>							Grout

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	39.25'	SCREEN INTERVAL:	29.25'-39.25'	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	1"	LENGTH OF RISER:	29.25'	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	PVC	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	0.01'	DEPTH/TYPE SEAL:	NA						

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **RockFarmer**  
 LOCATION: **82-13 37th Ave, Jackson Heights, Queens, NY**  
 Date Start: **2/25/2019** Date Finish: **2/25/2019**

PROJECT NO.: **48122** BORING NO.: **VTX-RF-01**  
 DRILLER: **ADT** WELL: **NA**  
 INSPECTOR: **T.ZAHN**

SAMPLER		CASING	CORE	GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data
TYPE	MICROCORE			RISER ELEV.:	NA	Datum:
SIZE (ID)	2-inch			DATE:	NA	
HAMMER (LB.)	NA			TIME:	NA	Elevation (ft):
FALL (IN.)	NA			DEPTH (ft):	NA	

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)			
1	0-3	3/2	NA	3.6	0.0' - 0.6': Concrete and sub-base		
				1.5			
2				2.6			
3				1.2	0.6'- 3.0': Brown/grey fine silt w/ trace rocks (rocks are red in color at 6.0')		
				1.0			
4				1.0			
5	3-6	3/0.5	NA	2.1	3.0'-3.5': Brown/grey fine silt w/ trace lightweight rocks		
				-			
6				-			
7	6-9	NA	NA	-	3.5'-6.0': No soil (empty core)		
				-			
8				-			
9				-	Boring refusal and termination @ 6.0' bgs VTX-RF-01 (2.0'-6.0') sample collected @ 13:30		
10							
11							
12	9-12	NA	NA				
13							
14	12-15	NA	NA				
15							

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native
				Hard	>30		Sand
							Grout

**Note(s):**  
 Poor recovery. Soil sample collected from larger interval.

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	NA	SCREEN INTERVAL:	NA	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	NA	LENGTH OF RISER:	NA	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	NA	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	NA	DEPTH/TYPE SEAL:	NA						

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **RockFarmer**  
 LOCATION: **82-13 37th Ave, Jackson Heights, Queens, NY**  
 Date Start: **2/25/2019** Date Finish: **2/25/2019**

PROJECT NO.: **48122** BORING NO.: **VTX-RF-02**  
 DRILLER: **ADT** WELL: **NA**  
 INSPECTOR: **T.ZAHN**

SAMPLER		CASING	CORE	GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data
TYPE	MICROCORE			RISER ELEV.:	NA	Datum:
SIZE (ID)	2-inch			DATE:	NA	
HAMMER (LB.)	NA			TIME:	NA	Elevation (ft):
FALL (IN.)	NA			DEPTH (ft):	NA	

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)			
1	0-3	3/2	NA	1.0	0.0'- 1.0': Concrete and sub-base		
				5.0			
2				3.0			
				2.3	1.0'- 3.0': Medium brown soft and silty clay + sand w/ trace stones (somewhat moist)		
3				1.8			
				1.5			
4	3-6	3/0.5	NA	1.9	3.0'-5.5': Light/medium brown fine silty sand w/ trace stones		
				1.8			
5				1.3			
				1.00			
6				0.8	5.5'- 6.0': Coarser light brown sand w/ trace large stones		
				0.9			
7				2.4			
	6-9	3/3	NA	0.9	6.0'- 7.0': Medium brown fine silty sand w/ trace stones		
				0.6			
8				0.4			
				0.4			
9				0.4	7.0'- 9.0': Coarse light brown/tan coarse sand		
10	9-12	NA	NA		Boring refusal and termination @ 9.0 bgs		
11							
12					VTX-RF-02 (1.0'-2.0') @ 11:30		
13	12-15	NA	NA				
14							
15							

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native
				Hard	>30		Sand
							Grout

Note(s):

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	NA	SCREEN INTERVAL:	NA	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	NA	LENGTH OF RISER:	NA	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	NA	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	NA	DEPTH/TYPE SEAL:	NA						

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **Rockfarmer**  
 LOCATION: **82-13 37th Ave, Jackson Heights, Queens, NY**  
 Date Start: **2/22/2019** Date Finish: **2/22/2019**

PROJECT NO.: **48122** BORING NO.: **VTX-RF-03**  
 DRILLER: **ADT** WELL: **NA**  
 INSPECTOR: **W.SWANSON**

SAMPLER		CASING	CORE	GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data
TYPE	MICROCORE			RISER ELEV.:	NA	Datum:
SIZE (ID)	2-inch			DATE:	NA	
HAMMER (LB.)	NA			TIME:	NA	Elevation (ft):
FALL (IN.)	NA			DEPTH (ft):	NA	

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS	
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)				
1	0-3	NA	NA		0.0'- 0.5': Concrete and sub-base			
2					Boring refusal and termination @ 1.0'			
3					Unable to obtain soil sample from this point			
4	3-6	NA	NA					
5								
6								
7	6-9	NA	NA					
8								
9								
10	9-12	NA	NA					
11								
12								
13	12-15	NA	NA					
14								
15								

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native
				Hard	>30		Sand
							Grout

Note(s):

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	NA	SCREEN INTERVAL:	NA	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	NA	LENGTH OF RISER:	NA	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	NA	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	NA	DEPTH/TYPE SEAL:	NA						

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **RockFarmer**  
 LOCATION: **82-13 37th Ave, Jackson Heights, Queens, NY**  
 Date Start: **2/25/2019** Date Finish: **2/25/2019**

PROJECT NO.: **48122** BORING NO.: **VTX-RF-04**  
 DRILLER: **ADT** WELL: **NA**  
 INSPECTOR: **T.ZAHN**

SAMPLER		CASING	CORE	GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data
TYPE	MICROCORE			RISER ELEV.:	NA	Datum:
SIZE (ID)	2-inch			DATE:	NA	
HAMMER (LB.)	NA			TIME:	NA	Elevation (ft):
FALL (IN.)	NA			DEPTH (ft):	NA	

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS								
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)											
1	0-3	NA	NA	0.0	0.0'- 0.7': Concrete and sub-base										
2				0.0											
3				0.0											
4	3-6	NA	NA	0.0				0.7'- 6.0': No recovery							
5				0.0											
6				0.0											
7	6-9	NA	NA	0.0							6.0'- 11.0': Brown/light brown silt and sand w/ trace stones				
8				0.0											
9				0.0											
10	9-12	2/1	NA	1.7											
11				1.2											
12				0.7											
13				0.6											
14	12-15	NA	NA		Boring refusal and termination @ 11.0' bgs										
15							VTX-RF-04 (9.0-9.5') collected @ 09:15								

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native
				Hard	>30		Sand
							Grout

**Note(s):**  
 Poor recovery in the top 6.0'

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	NA	SCREEN INTERVAL:	NA	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	NA	LENGTH OF RISER:	NA	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	NA	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	NA	DEPTH/TYPE SEAL:	NA						

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **Rockfarmer**  
 LOCATION: **82-13 37th Avenue, Jackson Heights, Queens, NY**  
 Date Start: **2/19/2019** Date Finish: **2/19/2019**

PROJECT NO.: **48122** BORING NO.: **VTX-RF-05**  
 DRILLER: **ADT** WELL: **NA**  
 INSPECTOR: **S. PAIGE**

SAMPLER		CASING	CORE	GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data
TYPE	MICROCORE			RISER ELEV.:	NA	Datum:
SIZE (ID)	2-inch			DATE:	NA	
HAMMER (LB.)	NA			TIME:	NA	Elevation (ft):
FALL (IN.)	NA			DEPTH (ft):	NA	

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS	
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)				
1	0-3	3/2	NA	0.0	0.0'- 0.7': Concrete and sub-base			
				0.0				
2				0.1				
	0.1							
3			0.1	0.7'- 5.0': Brown/dark brown low density clay w/ trace brick & fill				
			0					
4	3-6	3/2	NA					0.1
								0.1
5								0.3
			0.3					5.0'- 5.5': Very dense dark brown clay
6			0.3					
			4					
7	6-9	3/3	NA	4				5.5'- 9.0': Brown/dark brown low density clay
				4.7				
8				4				
			0.6					
9			2.1					
			0.1					
10	9-12	3/3	NA	0.3	9.0' - 10.0': Dark brown sandy clay			
				0.4				
11				0.2				
			0.1	10.0' - 12.0': Brown silty sand				
12			0.1					
			0.1					
13	12-15	NA	NA	0	Boring refusal and termination @ 12.0' bgs			
				0	VTX-RF-05 (10.0-11.0') collected @ 12:45			
14				0				
				0				
15				0				

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native
<b>Note(s):</b>							Sand
							Grout

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	NA	SCREEN INTERVAL:	NA	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	NA	LENGTH OF RISER:	NA	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	NA	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	NA	DEPTH/TYPE SEAL:	NA						



**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **Rockfarmer**  
 LOCATION: **82-13 37th Ave, Jackson Heights, Queens, NY**  
 Date Start: **2/21/2019** Date Finish: **2/21/2019**

PROJECT NO.: **48122** BORING NO.: **VTX-RF-06**  
 DRILLER: **ADT** WELL: **NA**  
 INSPECTOR: **S.PAIGE**

SAMPLER		CASING	CORE	GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data
TYPE	MICROCORE			RISER ELEV.:	NA	Datum:
SIZE (ID)	2-inch			DATE:	NA	
HAMMER (LB.)	NA			TIME:	NA	Elevation (ft):
FALL (IN.)	NA			DEPTH (ft):	NA	

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS		
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)					
1	0-3	3/1.5	NA	0	0.0' - 0.7': Concrete and sub-base  0.7' - 5.0': Brown sandy clay with trace fill materials present (brick and concrete)  5.0' - 9.0': Light brown silty sand (fine to medium grain size)				
				0					
				0					
2				0					
3				0					
4	3-6	3/3	NA	0					
				0					
				0					
5				0					
6				0					
7	6-9	3/3	NA	0					
				0					
				0					
8				0					
9				0					
10	9-12	NA	NA		Boring termination @ 9.0' bgs VTX-RF-06 (6.5' - 7.0') collected @ 09:30				
11									
12									
13	12-15	NA	NA						
14									
15									

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native
				Hard	>30		Sand
							Grout

**Note(s):**  
 Boring collapsed twice at approximately 7.0 ft bgs due to loose nature of constituent soil that resulted in shallow refusal.

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	NA	SCREEN INTERVAL:	NA	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	NA	LENGTH OF RISER:	NA	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	NA	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	NA	DEPTH/TYPE SEAL:	NA						

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **Rockfarmer**  
 LOCATION: **82-13 37th Ave, Jackson Heights, Queens, NY**  
 Date Start: **2/25/2019** Date Finish: **2/25/2019**

PROJECT NO.: **48122** BORING NO.: **VTX-RF-07**  
 DRILLER: **ADT** WELL: **NA**  
 INSPECTOR: **T.ZAHN**

SAMPLER		CASING	CORE	GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data
TYPE	MICROCORE			RISER ELEV.:	NA	Datum:
SIZE (ID)	2-inch			DATE:	NA	
HAMMER (LB.)	NA			TIME:	NA	Elevation (ft):
FALL (IN.)	NA			DEPTH (ft):	NA	

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)			
1	0-3	NA	NA		0.0' - 0.7': Concrete and sub-base		
2					Boring refusal and termination @ 1.5'		
3							
4	3-6	NA	NA				
5							
6							
7	6-9	NA	NA				
8							
9							
10	9-12	NA	NA				
11							
12							
13	12-15	NA	NA				
14							
15							

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native
				Hard	>30		Sand
							Grout

**Note(s):**  
 No recovery.

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	NA	SCREEN INTERVAL:	NA	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	NA	LENGTH OF RISER:	NA	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	NA	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	NA	DEPTH/TYPE SEAL:	NA						

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **Rockfarmer**  
 LOCATION: **82-13 37th Ave, Jackson Heights, Queens, NY**  
 Date Start: **2/22/2019** Date Finish: **2/22/2019**

PROJECT NO.: **48122** BORING NO.: **VTX-RF-8**  
 DRILLER: **ADT** WELL: **NA**  
 INSPECTOR: **W. SWANSON**

SAMPLER		CASING	CORE	GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data
TYPE	MICROCORE			RISER ELEV.:	NA	Datum:
SIZE (ID)	2-inch			DATE:	NA	
HAMMER (LB.)	NA			TIME:	NA	Elevation (ft):
FALL (IN.)	NA			DEPTH (ft):	NA	

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)			
1	0-3	3/1.5	NA	0	0.0'- 0.5': Concrete and sub-base		
				0	0.5'-1.0': Grey silty clay with trace stones		
2				0	1.0'-4.0': Brown damp medium to fine silty sand w/ trace stones		
3	0						
	0						
4	3-6	3/3	NA	0	4.0'-6.0': Light grey/brown fine sand (dry)		
				0			
5				0			
6	0						
	0						
	0						
7	6-9	NA	NA	0	6.0'-9.0': Light brown fine sand.		
				0			
8				0			
9	0						
	0						
	0						
10	9-12	NA	NA		Boring terminated @ 9.0' bgs (due to next sleeve being comprised of cave-in from 6.0')		
11					VTX-RF-08 (8.5'- 9.0') sample collected @ 14:50		
12							
13	12-15	NA	NA				
14							
15							

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native
				Hard	>30		Sand
							Grout

Note(s):

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	NA	SCREEN INTERVAL:	NA	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	NA	LENGTH OF RISER:	NA	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	NA	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	NA	DEPTH/TYPE SEAL:	NA						

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **Rockfarmer**  
 LOCATION: **82-13 37th Ave, Jackson Heights, Queens, NY**  
 Date Start: **2/20/2019** Date Finish: **2/20/2019**

PROJECT NO.: **48122** BORING NO.: **VTX-RF-09**  
 DRILLER: **ADT** WELL: **NA**  
 INSPECTOR: **S.PAIGE**

SAMPLER		CASING	CORE	GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data
TYPE	MICROCORE			RISER ELEV.:	NA	Datum:
SIZE (ID)	2-inch			DATE:	NA	
HAMMER (LB.)	NA			TIME:	NA	Elevation (ft):
FALL (IN.)	NA			DEPTH (ft):	NA	

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)			
1	0-3	3/1.5	NA	0.2	0.0' - 0.5': Concrete and sub-base		
2				0.2			
3				0.1			
4				0.1			
5	3-6	NA	NA		0.0' - 3.0': Dark brown/brown sandy clay with trace fill materials (brick and concrete)		
6							
7							
8	6-9	NA	NA		Boring refusal and termination @ 3.0' bgs VTX-RF-09 collected @ 15:10		
9							
10							
11	9-12	NA	NA				
12							
13							
14	12-15	NA	NA				
15							

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native
				Hard	>30		Sand
							Grout

Note(s):

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	NA	SCREEN INTERVAL:	NA	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	NA	LENGTH OF RISER:	NA	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	NA	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	NA	DEPTH/TYPE SEAL:	NA						

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **Rockfarmer**  
 LOCATION: **82-13 37th Ave, Jackson Heights, Queens, NY**  
 Date Start: **2/22/2019** Date Finish: **2/22/2019**

PROJECT NO.: **48122** BORING NO.: **VTX-RF-10**  
 DRILLER: **ADT** WELL: **NA**  
 INSPECTOR: **W. SWANSON**

SAMPLER		CASING	CORE	GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data
TYPE	MICROCORE			RISER ELEV.:	NA	Datum:
SIZE (ID)	2-inch			DATE:	NA	
HAMMER (LB.)	NA			TIME:	NA	Elevation (ft):
FALL (IN.)	NA			DEPTH (ft):	NA	

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)			
1	0-3	3/2	NA	0.0	0.0'-0.5': Concrete and sub-base		
				0.0			
2				0.9			
				1.2			
3	3-6	3/3	NA	7.2	2.0'-2.5': Brown silt		
				0.0			
4				0.0			
				0.2			
5	6-9	3/3	NA	0.0	3.0'-9.0': Brown/light brown coarse-fine sand w/ trace stone *6.0'-9.0': same material as 3.0'-6.0' due to cave-in		
				0.0			
6				0.0			
				0.0			
7	9-12	NA	NA	0.0	Boring terminated @ 9.0' bgs		
				0.0			
8				0.0			
				0.0			
9	12-15	NA	NA	0.0	VTX-RF-10 (2.0'-2.5') sample collected @ 10:55		
				0.0			
10				0.0			
				0.0			
11				0.0			
				0.0			
12				0.0			
				0.0			
13				0.0			
				0.0			
14				0.0			
				0.0			
15				0.0			

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native
				Hard	>30		Sand
							Grout

Note(s):

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED			
DEPTH (FT.):	NA	SCREEN INTERVAL:	NA	BACKFILL OVER SEAL:	NA	SAND:	NA
DIA. (IN.):	NA	LENGTH OF RISER:	NA	SURFACE SEAL:	NA	BENTONITE:	NA
MATERIAL:	NA	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA
SLOT SIZE:	NA	DEPTH/TYPE SEAL:	NA				

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **Rockfarmer**  
 LOCATION: **82-13 37th Ave, Jackson Heights, Queens, NY**  
 Date Start: **2/22/2019** Date Finish: **2/22/2019**

PROJECT NO.: **48122** BORING NO.: **VTX-RF-11**  
 DRILLER: **ADT** WELL: **NA**  
 INSPECTOR: **W. SWANSON**

SAMPLER		CASING	CORE	GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data
TYPE	MICROCORE			RISER ELEV.:	NA	Datum:
SIZE (ID)	2-inch			DATE:	NA	
HAMMER (LB.)	NA			TIME:	NA	Elevation (ft):
FALL (IN.)	NA			DEPTH (ft):	NA	

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)			
1	0-3	3/3	NA	0.7	0.0'-1.0': Concrete, stone		
				0.5			
2				0.2			
3	3-6	3/3	NA	0.0	1.0'-1.5': Dense brown silt and black silt w/ trace stones		
				0.0			
4				0.0			
5	6-9	3/3	NA	0.0	1.5'-4.0': Brown silt w/ trace stones		
				0.0			
6				0.0			
7	9-12	2/2	NA	0.0	4.0'-5.0': Brown/grey clayey silt		
				0.0			
8				0.0			
9	12-15	NA	NA	0.0	5.0'-9.0': Brown/light brown sandy silt w/ trace small stones *Slight cave-in material from 5.5'-6.0'		
				0.0			
10				0.0			
11	9-12	2/2	NA	0.0	9.0'-11.0': No recovery		
				0.0			
12				0.0			
13	12-15	NA	NA	0.0	Boring refusal and termination @ 11.0' bgs		
				0.0			
14				0.0			
15	12-15	NA	NA	0.0	VTX-RF-11 (10.5'-11.0') sample collected @ 12:00		
				0.0			
15				0.0			

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native
				Hard	>30		Sand
							Grout

Note(s):

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	NA	SCREEN INTERVAL:	NA	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	NA	LENGTH OF RISER:	NA	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	NA	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	NA	DEPTH/TYPE SEAL:	NA						

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **Rockfarmer**  
 LOCATION: **82-13 37th Ave, Jackson Heights, Queens, NY**  
 Date Start: **2/21/2019** Date Finish: **2/21/2019**

PROJECT NO.: **48122** BORING NO.: **VTX-RF-12**  
 DRILLER: **ADT** WELL: **NA**  
 INSPECTOR: **S.PAIGE**

SAMPLER		CASING	CORE	GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data
TYPE	MICROCORE			RISER ELEV.:	NA	Datum:
SIZE (ID)	2-inch			DATE:	NA	
HAMMER (LB.)	NA			TIME:	NA	Elevation (ft):
FALL (IN.)	NA			DEPTH (ft):	NA	

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS						
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)									
1	0-3	3/2	NA	0.0	0.0'- 0.7': Concrete and sub-base								
				0.0									
2				0.1									
	0.1												
3			0.0										
			0.0										
4	3-6	3/1.5	NA	0.0				0.7'-8.0': Dark red-brown sandy clay w/ trace fill material (brick and concrete)					
				0.0									
5				0.0									
				0.0									
6				0.0									
				0.0									
7	6-9	3/1	NA	0.0							Boring terminated @ 8.5' bgs		
				0.0									
8		1/1		0.0									
				0.0									
9		NA											
10	9-12	NA	NA		VTX-RF-12 sample collected @ 11:30								
11													
12													
13	12-15	NA	NA										
14													
15													

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native
				Hard	>30		Sand
							Grout

Note(s):

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	NA	SCREEN INTERVAL:	NA	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	NA	LENGTH OF RISER:	NA	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	NA	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	NA	DEPTH/TYPE SEAL:	NA						

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **Rockfarmer**  
 LOCATION: **82-13 37th Ave, Jackson Heights, Queens, NY**  
 Date Start: **2/21/2019** Date Finish: **2/21/2019**

PROJECT NO.: **48122** BORING NO.: **VTX-RF-13**  
 DRILLER: **ADT** WELL: **NA**  
 INSPECTOR: **S.PAIGE**

SAMPLER		CASING	CORE	GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data
TYPE	MICROCORE			RISER ELEV.:	NA	Datum:
SIZE (ID)	2-inch			DATE:	NA	
HAMMER (LB.)	NA			TIME:	NA	Elevation (ft):
FALL (IN.)	NA			DEPTH (ft):	NA	

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)			
1	0-3	3/1.5	NA	0.0	0.0' - 0.5': Concrete and sub-base		
				0.0			
2				0.0			
	0.0						
3			0.0				
			0.0				
4	3-6	NA	NA		0.5' - 3.0': Red-brown, medium density sandy clay		
5							
6							
7	6-9	NA	NA		Boring refusal and termination @ 3.0' bgs VTX-RF-13 (2.5-3.0') collected @ 14:45		
8							
9							
10	9-12	NA	NA				
11							
12							
13	12-15	NA	NA				
14							
15							

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native
				Hard	>30		Sand
							Grout

Note(s):

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	NA	SCREEN INTERVAL:	NA	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	NA	LENGTH OF RISER:	NA	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	NA	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	NA	DEPTH/TYPE SEAL:	NA						



**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **Rockfarmer**  
 LOCATION: **82-13 37th Ave, Jackson Heights, Queens, NY**  
 Date Start: **2/21/2019** Date Finish: **2/21/2019**

PROJECT NO.: **48122** BORING NO.: **VTX-RF-14**  
 DRILLER: **ADT** WELL: **NA**  
 INSPECTOR: **S.PAIGE**

SAMPLER		CASING	CORE	GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data
TYPE	MICROCORE			RISER ELEV.:	NA	Datum:
SIZE (ID)	2-inch			DATE:	NA	
HAMMER (LB.)	NA			TIME:	NA	Elevation (ft):
FALL (IN.)	NA			DEPTH (ft):	NA	

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS	
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)				
1	0-3	3/1.5	NA	0.0	0.0' - 0.5': Concrete and sub-base			
				0.1	0.5' - 1.0': Black/grey medium grain sand			
2				0.0	1.0' - 3.0': Red-brown, medium density clay			
				0.1				
3				0.0				
				0.0	3.0' - 3.5': Yellow sandy clay			
4	3-6	3/3	NA	0.0				
				0.0				
5				0.0				3.5' - 6.5': Red-brown, medium density clay (slightly moist)
				0.0				
6				0.7				
7				6-9	NA			NA
8		Boring refusal and termination @ 7.0' bgs						
		VTX-RF-14 (6.0-7.0') collected @ 12:25						
9								
10	9-12	NA	NA					
11								
12								
13	12-15	NA	NA					
14								
15								

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native
				Hard	>30		Sand
							Grout

Note(s):

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	NA	SCREEN INTERVAL:	NA	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	NA	LENGTH OF RISER:	NA	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	NA	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	NA	DEPTH/TYPE SEAL:	NA						

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **82-11 37th Street Phase II**  
 LOCATION: **82-11 37th Street, Jackson Heights, New York**  
 Date Start: **2/22/2019** Date Finish: **2/22/2019**

PROJECT NO.: **48122** BORING NO.: **VTX-S-1**  
 DRILLER: **ADT-Tony & Patrick** WELL:  
 INSPECTOR: **N. Carey**

SAMPLER		CASING		CORE		GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data	
TYPE	Geoprobe 6620DT					RISER ELEV.:		Datum:	
SIZE (ID)	2"					DATE:			
HAMMER (L.B.)	NA					TIME:		Elevation (ft):	
FALL (IN.)	NA					DEPTH (ft):			

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)			
1	0'-5'	5/1.5'		0	0-0.5': Concrete, gravel		
2				0	0.5-5.0': Brown silty sand, damp		
3				0			
4				0			
5				0			
6	5'-10'	5/3.5'		0			
7				0	6.0-11.0': Medium brown silty sand, damp		
8				0			
9				0			
10				0			
11	10'-15'	5/3.5'		0			
12				0	11.0-12.0': Medium brown sand, damp		
13				0	12.0-13.0': Gravel and schist		
14				0	13.0-15.0': Medium brown silty sand		
15				0			
16	15'-20'	5/1.5'		0	15.0-20.0': Medium brown sand, low recovery		
17				0			
18				0			
19				0			
20				0			

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native
Note(s):				Hard	>30		Sand
							Grout

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	40.05'	SCREEN INTERVAL:	30.05'-40.05'	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	1"	LENGTH OF RISER:	30.05'	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	PVC	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	0.01"	DEPTH/TYPE SEAL:	NA						

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **82-11 37th Street Phase II**  
 LOCATION: **82-11 37th Street, Jackson Heights, New York**  
 Date Start: **2/22/2019** Date Finish: **2/22/2019**

PROJECT NO.: **48122** BORING NO.: **VTX-S-1**  
 DRILLER: **ADT-Tony & Patrick** WELL:  
 INSPECTOR: **N. Carey**

SAMPLER		CASING		CORE		GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data	
TYPE	Geoprobe 6620DT					RISER ELEV.:		Datum:	
SIZE (ID)	2"					DATE:			
HAMMER (L.B.)	NA					TIME:		Elevation (ft):	
FALL (IN.)	NA					DEPTH (ft):			

SAMPLE INFORMATION					SOIL DESCRIPTION		WELL CONST		WELL DETAILS	
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)						
21	20'-25'	5/3.5'	NA	0	20.0-22.0': Brown medium sand, damp					
22				0						
23				0						
24				0						
25				0						
26	25'-30'	5/3.5'	NA	0	25.0-26.5': Brown-red medium sand, trace fines, trace gravel, damp					
27				0						
28				0						
29				0						
30				0						
31	30'-35'	5/5'	NA	0	30.0-32.0': Brown fine sand, some fines, damp/moist					
32				0						
33				0						
34				0						
35				0						
36	35'-40'	NA	NA							
37										
38										
39										
40										
41					Boring terminated at 35.0' bgs. No odors observed. Sample VTX-S-1(31.5-32.0) collected at 9:35 at above groundwater interface.					

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native
<b>Note(s):</b>							Sand
							Grout

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	40.05'	SCREEN INTERVAL:	30.05'-40.05'	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	1"	LENGTH OF RISER:	30.05'	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	PVC	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	0.01"	DEPTH/TYPE SEAL:	NA						

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **82-11 37th Street Phase II**  
 LOCATION: **82-11 37th Street, Jackson Heights, New York**  
 Date Start: **2/22/2019** Date Finish: **2/22/2019**

PROJECT NO.: **48122** BORING NO.: **VTX-S-2**  
 DRILLER: **ADT-Tony & Patrick** WELL:  
 INSPECTOR: **N. Carey**

SAMPLER		CASING		CORE		GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data	
TYPE	Geoprobe 6620DT					RISER ELEV.:		Datum:	
SIZE (ID)	2"					DATE:			
HAMMER (L.B.)	NA					TIME:		Elevation (ft):	
FALL (IN.)	NA					DEPTH (ft):			

SAMPLE INFORMATION					SOIL DESCRIPTION		WELL CONST		WELL DETAILS	
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)						
1	0'-5'	5/3		0	0-0.5': Concrete, gravel					
2				0	0.5-1.5': Black sand and gravel					
3				0	1.5-5.0': Medium brown silty sand					
4				0						
5				0						
6	0									
7	0									
8	5'-10'	5/0.5		0	5.0-10.0': Gravel, low recovery due to gravel in shoe,					
9				0						
10				0						
11				0						
12	10'-15'	5/1.5		0	10.0-12.0': Brown sand and schist, damp					
13				0						
14				0	12.0-15.0': Medium brown silty sand, damp					
15				0						
16	15'-20'	5/1		0	15.0-20.0': Brown medium silty sand, gravel, low recovery					
17				0						
18				0						
19				0						
20				0						

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		
Note(s):				Hard	>30		

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	40.05'	SCREEN INTERVAL:	30.05'-40.05'	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	1"	LENGTH OF RISER:	30.05'	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	PVC	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	0.01"	DEPTH/TYPE SEAL:	NA						

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **82-11 37th Street Phase II**  
 LOCATION: **82-11 37th Street, Jackson Heights, New York**  
 Date Start: **2/22/2019** Date Finish: **2/22/2019**

PROJECT NO.: **48122** BORING NO.: **VTX-S-2**  
 DRILLER: **ADT-Tony & Patrick** WELL:  
 INSPECTOR: **N. Carey**

SAMPLER		CASING		CORE		GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data	
TYPE	Geoprobe 6620DT					RISER ELEV.:		Datum:	
SIZE (ID)	2"					DATE:			
HAMMER (L.B.)	NA					TIME:		Elevation (ft):	
FALL (IN.)	NA					DEPTH (ft):			

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)			
21				0	20.0-22.0': Red-brown medium sand, damp		
22				0			
23	20'-25'	5/3.5'	NA	0	22.0-26.0': Red-brown medium sand with silt, damp		
24				0			
25				0			
26				0	26.0-28.0': Brown sandy silt, damp, some gravel		
27				0			
28	25'-30'	5/3.5'	NA	0			
29				0	28.0-29.0': Gravel, coarse		
30				0	29.0-32.5': Orange brown medium sand, damp		
31				0			
32				0			
33	30'-35'	5/5'	NA	0	32.5-33.0': Purple gravel and sand, wet		
34				0	33.0-34.0': Brown gravel and brown medium sand, wet		
35				0	34.0-35.0': Gray gravel, purple medium sand, wet		
36							
37							
38	35'-40'	NA	NA				
39							
40							
41							

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native
<b>Note(s):</b>				Hard	>30		Sand
							Grout

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	40.05'	SCREEN INTERVAL:	30.05'-40.05'	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	1"	LENGTH OF RISER:	30.05'	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	PVC	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	0.01"	DEPTH/TYPE SEAL:	NA						

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **82-11 37th Street Phase II**  
 LOCATION: **82-11 37th Street, Jackson Heights, New York**  
 Date Start: **2/22/2019** Date Finish: **2/22/2019**

PROJECT NO.: **48122** BORING NO.: **VTX-S-3**  
 DRILLER: **ADT-Tony & Patrick** WELL:  
 INSPECTOR: **N. Carey**

SAMPLER		CASING		CORE		GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data	
TYPE	Geoprobe 6620DT					RISER ELEV.:		Datum:	
SIZE (ID)	2"					DATE:			
HAMMER (L.B.)	NA					TIME:		Elevation (ft):	
FALL (IN.)	NA					DEPTH (ft):			

SAMPLE INFORMATION					SOIL DESCRIPTION		WELL CONST		WELL DETAILS	
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)						
1	0'-5'	5/2.5		0	0-0.5': Concrete, gravel					
2				0.5-1.0': Brown sand and gravel						
3				1.0-2.0': Ash and black sand						
4				2.0-5.0': Orange brown silty sand						
5										
6	5'-10'	5/3		0	5.0-5.5': Gray sand					
7				5.5-6.0': Brown silty sand						
8				6.0': Gravel						
9				6.0-9.0': Brown silty sand						
10				9.0-10.0': Brown medium sand, damp						
11	10'-15'	5/3.5		0	10.0-23.0': Red brown medium sand, trace fine gravel, damp					
12				0						
13				0						
14				0						
15				0						
16	15'-20'	5/4		0						
17				0						
18				0						
19				0						
20				0						

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native Sand
Note(s):				Hard	>30		Grout

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	40.05'	SCREEN INTERVAL:	30.05'-40.05'	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	1"	LENGTH OF RISER:	30.05'	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	PVC	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	0.01"	DEPTH/TYPE SEAL:	NA						

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **82-11 37th Street Phase II**  
 LOCATION: **82-11 37th Street, Jackson Heights, New York**  
 Date Start: **2/22/2019** Date Finish: **2/22/2019**

PROJECT NO.: **48122** BORING NO.: **VTX-S-3**  
 DRILLER: **ADT-Tony & Patrick** WELL:  
 INSPECTOR: **N. Carey**

SAMPLER		CASING	CORE	GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data
TYPE	Geoprobe 6620DT			RISER ELEV.:		Datum:
SIZE (ID)	2"			DATE:		
HAMMER (L.B.)	NA			TIME:		Elevation (ft):
FALL (IN.)	NA			DEPTH (ft):		

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)			
21				0	10.0-23.0': Red brown medium sand, trace fine gravel, damp		
22				0			
23	20'-25'	5/4	NA	0			
24				0			
25				0			
26				0	23.0-32.0': Red brown medium sand, trace fine gravel, some coarse gravel, damp		
27				0			
28	25'-30'	5/3.5'	NA	0			
29				0			
30				0			
31				0	32.0-32.5': Red brown medium sand, trace fine gravel, some coarse gravel, moist 32.5': Brown olive sand, wet		
32				0			
33	30'-35'	5/5	NA	0			
34				0			
35				0			
36					32.5-35.0': Brown silty sand, some gravel, some schist, wet		
37							
38	35'-40'	NA	NA				
39							
40							
41					Boring terminated at 35.0' bgs. No odors observed. Sample VTX-S-3(32.0-32.5) collected at 12:00 at above groundwater interface.		

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native
<b>Note(s):</b>							Sand
							Grout

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED		
DEPTH (FT.):	40.05'	SCREEN INTERVAL:	30.05'-40.05'	BACKFILL OVER SEAL:	NA	SAND: NA SAND SIZE: NA
DIA. (IN.):	1"	LENGTH OF RISER:	30.05'	SURFACE SEAL:	NA	BENTONITE: NA
MATERIAL:	PVC	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE: NA
SLOT SIZE:	0.01"	DEPTH/TYPE SEAL:	NA			

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **82-11 37th Street Phase II**  
 LOCATION: **82-11 37th Street, Jackson Heights, New York**  
 Date Start: **2/21/2019** Date Finish: **2/21/2019**

PROJECT NO.: **48122** BORING NO.: **VTX-S-4**  
 DRILLER: **ADT-Tony & Patrick** WELL:  
 INSPECTOR: **N. Carey**

SAMPLER		CASING	CORE	GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data
TYPE	Geoprobe 6620DT			RISER ELEV.:		Datum:
SIZE (ID)	2"			DATE:		
HAMMER (L.B.)	NA			TIME:		Elevation (ft):
FALL (IN.)	NA			DEPTH (ft):		

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)			
1	0'-5'	5/2.5		0	0-0.5': Concrete, gravel		
2				0	0.5-1.0': Ash, black sand, damp		
3				0	1.0-3.0': Brown silty sand		
4				0	3.0-5.0': Orange brown silty sand		
5				0			
6	0						
7	5'-10'	5/3		0	5.0-11.0': Brown red silty sand, trace gravel, damp		
8				0			
9				0			
10				0			
11	10'-15'	5/3		0	11.0-15.0': Brown medium sand, trace gravel, damp		
12				0			
13				0			
14				0			
15				0			
16	15'-20'	5/3.5		0	15.0-16.0': Orange brown fine sand, damp		
17				0	16.0-20.0': Brown medium sand, trace gravel, damp		
18				0			
19				0			
20				0			

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native Sand
Note(s):				Hard	>30		Grout

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	40.05'	SCREEN INTERVAL:	30.05'-40.05'	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	1"	LENGTH OF RISER:	30.05'	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	PVC	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	0.01"	DEPTH/TYPE SEAL:	NA						



**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **82-11 37th Street Phase II**  
 LOCATION: **82-11 37th Street, Jackson Heights, New York**  
 Date Start: **2/21/2019** Date Finish: **2/21/2019**

PROJECT NO.: **48122** BORING NO.: **VTX-S-4**  
 DRILLER: **ADT-Tony & Patrick** WELL:  
 INSPECTOR: **N. Carey**

SAMPLER		CASING		CORE		GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data	
TYPE	Geoprobe 6620DT					RISER ELEV.:		Datum:	
SIZE (ID)	2"					DATE:			
HAMMER (L.B.)	NA					TIME:		Elevation (ft):	
FALL (IN.)	NA					DEPTH (ft):			

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)			
21				0	20.0-22.0': Brown medium sand, trace gravel, dry		
22				0			
23	20'-25'	5/4	NA	0	22.0-25.0': Red-brown medium sand, dry		
24				0			
25				0			
26				0	25.0-30.0': Red-brown medium sand, dry/damp		
27				0			
28	25'-30'	5/4	NA	0			
29				0			
30				0			
31				0	30.0-35.0': Low recovery, red-brown medium sand, wet		
32				0			
33	30'-35'	5/1	NA	0			
34				0			
35				0			
36					Boring terminated at 35.0' bgs. No odors observed. Sample VTX-S-4 (29.5-30.0) collected at 15:40 at slightly above groundwater interface due to low recovery		
37							
38	35'-40'	NA	NA				
39							
40							
41							

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native
				Hard	>30		Sand
							Grout

Note(s):

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	40.05'	SCREEN INTERVAL:	30.05'-40.05'	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	1"	LENGTH OF RISER:	30.05'	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	PVC	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	0.01"	DEPTH/TYPE SEAL:	NA						

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **82-11 37th Street Phase II**  
 LOCATION: **82-11 37th Street, Jackson Heights, New York**  
 Date Start: **2/21/2019** Date Finish: **2/21/2019**

PROJECT NO.: **48122** BORING NO.: **VTX-S-5**  
 DRILLER: **ADT-Tony & Patrick** WELL:  
 INSPECTOR: **N. Carey**

SAMPLER		CASING		CORE		GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data	
TYPE	Geoprobe 6620DT					RISER ELEV.:		Datum:	
SIZE (ID)	2"					DATE:			
HAMMER (LB.)	NA					TIME:		Elevation (ft):	
FALL (IN.)	NA					DEPTH (ft):			

SAMPLE INFORMATION					SOIL DESCRIPTION		WELL CONST		WELL DETAILS			
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)								
1	0'-5'	5/4		0	0-0.5': Concrete, gravel							
2				0	0.5-2.5': Brown silty sand, damp							
3				0								
4				0	2.5-4.5': Orange brown silty sand							
5				0	4.5-5.0': Light brown medium sand, damp							
6	5'-10'	5/3.5		0	5.0-12.0': Medium brown medium sand, trace fines, trace gravel							
7				0								
8				0								
9				0								
10				0								
11	10'-15'	5/3.5		0	12.0-13.0': Quartz gravel							
12				0								
13				0							13.0-14.0': Brown sand	
14				0								
15				0								
16	15'-20'	5/3		15.1	15.0': Black gravel, black sand, no odor, dry							
17				10.4	15.0-16.0': Brown sand and gravel, dry							
18				0	16.0-20.0': Red brown silty sand, damp							
19				0								
20				0								

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		
Note(s):				Hard	>30		

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	40.05'	SCREEN INTERVAL:	30.05'-40.05'	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	1"	LENGTH OF RISER:	30.05'	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	PVC	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	0.01"	DEPTH/TYPE SEAL:	NA						

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **82-11 37th Street Phase II**  
 LOCATION: **82-11 37th Street, Jackson Heights, New York**  
 Date Start: **2/21/2019** Date Finish: **2/21/2019**

PROJECT NO.: **48122** BORING NO.: **VTX-S-5**  
 DRILLER: **ADT-Tony & Patrick** WELL:  
 INSPECTOR: **N. Carey**

SAMPLER		CASING	CORE	GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data
TYPE	Geoprobe 6620DT			RISER ELEV.:		Datum:
SIZE (ID)	2"			DATE:		
HAMMER (L.B.)	NA			TIME:		Elevation (ft):
FALL (IN.)	NA			DEPTH (ft):		

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)			
21	20'-25'	0./0.5	NA	0	20.0-20.5': Red brown silty sand, tight Refusal at 20.5'		
22				0			
23				0			
24				0			
25				0			
26	25'-30'	NA	NA	0	Boring terminated at 20.5' due to refusal. Attempted three locations, refusal encountered at 13', 20', 20.5'. No odors observed. Sample VTX-S-5 (15.0-15.5) collected at 12:30 from area of PID reading and dark coloring		
27				0			
28				0			
29				0			
30				0			
31	30'-35'	NA	NA	0			
32				0			
33				0			
34				0			
35				0			
36	35'-40'	NA	NA	0			
37				0			
38				0			
39				0			
40				0			
41				0			

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native
<b>Note(s):</b>							Sand
							Grout

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED		
DEPTH (FT.):	40.05'	SCREEN INTERVAL:	30.05'-40.05'	BACKFILL OVER SEAL:	NA	SAND: NA SAND SIZE: NA
DIA. (IN.):	1"	LENGTH OF RISER:	30.05'	SURFACE SEAL:	NA	BENTONITE: NA
MATERIAL:	PVC	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE: NA
SLOT SIZE:	0.01"	DEPTH/TYPE SEAL:	NA			

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **82-11 37th Street Phase II**  
 LOCATION: **82-11 37th Street, Jackson Heights, New York**  
 Date Start: **2/21/2019** Date Finish: **2/21/2019**

PROJECT NO.: **48122** BORING NO.: **VTX-S-6**  
 DRILLER: **ADT-Tony & Patrick** WELL:  
 INSPECTOR: **N. Carey**

SAMPLER		CASING		CORE		GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data	
TYPE	Geoprobe 6620DT					RISER ELEV.:		Datum:	
SIZE (ID)	2"					DATE:			
HAMMER (L.B.)	NA					TIME:		Elevation (ft):	
FALL (IN.)	NA					DEPTH (ft):			

SAMPLE INFORMATION					SOIL DESCRIPTION		WELL CONST		WELL DETAILS	
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)						
1	0'-5'	5/3.5		0	0-0.5': Concrete, gravel					
2				0	0.5-1.0': Tan fine sand, dry					
3				0	1.0-1.5': Ash, black sand					
4				0	1.5-3.5': Brown fine silty sand, damp					
5				0	3.5-4.5': Medium brown fine sandy silt, damp					
6	5'-10'	5/3.5		0	4.5-6.0': Medium brown fine sand, damp					
7				0						
8				0						
9				0						
10				0						
11	10'-15'	5/3		0	6.0-14.0': Brown medium sand, trace, gravel, damp					
12				0						
13				0						
14				0						
15				0	14.0-15.5': Red brown silty sand, trace gravel, wet					
16	15'-20'	5/4		0	15.5-16.0': Brown medium sand					
17				0						
18				0						
19				0	16.0-20.0': Medium brown silty sand, some gravel, damp					
20				0						

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native Sand
Note(s):				Hard	>30		Grout

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	40.05'	SCREEN INTERVAL:	30.05'-40.05'	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	1"	LENGTH OF RISER:	30.05'	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	PVC	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	0.01"	DEPTH/TYPE SEAL:	NA						

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **82-11 37th Street Phase II**  
 LOCATION: **82-11 37th Street, Jackson Heights, New York**  
 Date Start: **2/21/2019** Date Finish: **2/21/2019**

PROJECT NO.: **48122** BORING NO.: **VTX-S-6**  
 DRILLER: **ADT-Tony & Patrick** WELL:  
 INSPECTOR: **N. Carey**

SAMPLER		CASING		CORE		GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data	
TYPE	Geoprobe 6620DT					RISER ELEV.:		Datum:	
SIZE (ID)	2"					DATE:			
HAMMER (L.B.)	NA					TIME:		Elevation (ft):	
FALL (IN.)	NA					DEPTH (ft):			

SAMPLE INFORMATION					SOIL DESCRIPTION		WELL CONST		WELL DETAILS	
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)						
21	20'-25'	5/5	NA	0	20.0-22.0': Red brown silty sand, damp, tight					
22				0						
23				0						
24				0						
25				0						
26	25'-30'	5/3	NA	0	25.0-28.0': Medium red brown sand, trace gravel, damp					
27				0						
28				0						
29				0						
30				0						
31	30'-35'	5/3	NA	0	30.0-31.5': Red and brown medium sand, damp					
32				0						
33				0						
34				0						
35				0						
36	35'-40'	NA	NA		Boring terminated at 35.0' bgs. No odors observed. Sample VTX-S-6 (31.0-31.5) collected at 14:20 at above groundwater interface					
37										
38										
39										
40										
41										

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native
<b>Note(s):</b>							Sand
							Grout

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED		
DEPTH (FT.):	40.05'	SCREEN INTERVAL:	30.05'-40.05'	BACKFILL OVER SEAL:	NA	SAND: NA SAND SIZE: NA
DIA. (IN.):	1"	LENGTH OF RISER:	30.05'	SURFACE SEAL:	NA	BENTONITE: NA
MATERIAL:	PVC	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE: NA
SLOT SIZE:	0.01"	DEPTH/TYPE SEAL:	NA			

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **82-11 37th Street Phase II**  
 LOCATION: **82-11 37th Street, Jackson Heights, New York**  
 Date Start: **2/21/2019** Date Finish: **2/21/2019**

PROJECT NO.: **48122** BORING NO.: **VTX-S-7**  
 DRILLER: **ADT-Tony & Patrick** WELL:  
 INSPECTOR: **W. Swanson**

SAMPLER		CASING		CORE		GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data	
TYPE	Geoprobe 6620DT					RISER ELEV.:		Datum:	
SIZE (ID)	2"					DATE:			
HAMMER (L.B.)	NA					TIME:		Elevation (ft):	
FALL (IN.)	NA					DEPTH (ft):			

SAMPLE INFORMATION					SOIL DESCRIPTION		WELL CONST		WELL DETAILS	
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)						
1	0'-5'	5/3.5		3.3	0-0.5': Concrete and sub-base					
2				0	0.5-4.5': Soft-medium dense brown/light brown clay					
3				0						
4				0						
5				0						
6	5'-10'	5/3.5		0	4.5-8.5': Medium to fine yellow/brown sand					
7				0						
8				0						
9				0						
10				0						
11	10'-15'	5/3		0	8.5-9.0': Dense brown clay					
12				0						
13				0						
14				0						
15				0						
16	15'-20'	5/4		0	9.0-18.0': Brown silt, trace clay, trace pebbles					
17				0						
18				0						
19				0						
20				0						
				0	18.0-19.0': Brown silty clay					
				0	19.0-26.0': Brown coarse to fine sand with trace brown silty clay and pebbles					

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native Sand
Note(s):				Hard	>30		Grout

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	40.05'	SCREEN INTERVAL:	30.05'-40.05'	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	1"	LENGTH OF RISER:	30.05'	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	PVC	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	0.01"	DEPTH/TYPE SEAL:	NA						

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **82-11 37th Street Phase II**  
 LOCATION: **82-11 37th Street, Jackson Heights, New York**  
 Date Start: **2/21/2019** Date Finish: **2/21/2019**

PROJECT NO.: **48122** BORING NO.: **VTX-S-7**  
 DRILLER: **ADT-Tony & Patrick** WELL:  
 INSPECTOR: **W.Swanson**

SAMPLER		CASING		CORE		GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data	
TYPE	Geoprobe 6620DT					RISER ELEV.:		Datum:	
SIZE (ID)	2"					DATE:			
HAMMER (L.B.)	NA					TIME:		Elevation (ft):	
FALL (IN.)	NA					DEPTH (ft):			

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)			
21	20'-25'	5/5	NA	0	19.0-26.0': Brown coarse to fine sand with trace brown silty clay and pebbles		
22				0			
23				0			
24				0			
25				0			
26	25'-30'	5/3	NA	0	26.0-29.0': Light brown medium to fine sand with trace brown silt		
27				0			
28				0			
29				0			
30				0			
31	30'-35'	5/3	NA	0	30.0-33.0': Coarse brown sand with trace silt and pebbles		
32				0			
33				0			
34				0			
35				0			
36	35'-40'	NA	NA	0	Boring terminated at 35.0' bgs. No odors observed. Sample VTX-S-7 (33.5-34.0) collected above groundwater interface		
37				0			
38				0			
39				0			
40				0			
41							

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native
				Hard	>30		Sand
							Grout

Note(s):

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	40.05'	SCREEN INTERVAL:	30.05'-40.05'	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	1"	LENGTH OF RISER:	30.05'	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	PVC	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	0.01"	DEPTH/TYPE SEAL:	NA						

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: 82-11 37th Avenue Phase II  
LOCATION: 82-11 37th Avenue  
Jackson Heights, New York  
Date Start: 2/26/2019 Date Finish: 2/27/2019

PROJECT NO.: 48122 BORING NO.: MW-1  
DRILLER: ADT Drilling WELL: MW-1  
INSPECTOR: W. Swanson

SAMPLER		CASING	CORE	GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data	
TYPE	Macrocore	PVC	NA	RISER ELEV.:	NA	Datum:	
SIZE (ID)	2"	1"	NA	DATE:	2/27/2019	Elevation (ft):	
HAMMER (LB.)	NA	NA	NA	TIME:	NA		
FALL (IN.)	NA	NA	NA	DEPTH (ft):	30.20		

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST		WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)				
1				0.0	0 - 1': Concrete, sub-base			
2				0.0				
3	0-5	NA	NA	0.0	1 - 7': Brown to orange SANDY SILT with trace gravel and cobbles, dry			
4				0.0				
5				0.0				
6				0.0				
7				0.0				
8	5-10	NA	NA	0.0	7 - 10': Brown fine to medium SAND with trace SILT, trace cobbles, dry			
9				0.0				
10				0.7				
11				0.4				
12				0.7	10 - 19.5': Brown SANDY SILT, some cobbles and rock, dry to moist			
13	10-15	NA	NA	0.5				
14				0.1				
15				0.6				
16				0.1				
17				0.1				
18				0.1				
19	15-20	NA	NA	0.0	19.5 - 23': Light brown medium SAND, trace cobbles, moist			
20				0.4				
21				0.4				
22				0.4				
23	20-25	NA	NA	0.4				
24				0.7	23 - 40': Brown fine to medium SAND, with trace cobbles, wet			
25				0.7				
26				0.0				
27				0.0				
28	25-30	NA	NA	0.0				
29				0.0				
30				0.0				
31				0.1	Boring terminated at 34' bgs.			
32				0.1				
33	30-35	NA	NA	0.1				
34				0.0				
35				0.2				
36				0.2	35-40'			
37				0.5				
38	35-40	NA	NA					
39								
40								
41					40-45'			
42								
43	40-45	NA	NA					
44								
45								

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native
				Hard	>30		Sand
							Grout

**Note(s):**  
No odors or staining. No soil samples collected.

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	30.20	SCREEN INTERVAL:	10'	BACKFILL OVER SEAL:	NA	SAND:	X	SAND SIZE:	NA
DIA. (IN.):	1	LENGTH OF RISER:	24'	SURFACE SEAL:	NA	BENTONITE:	X		
MATERIAL:	PVC	DEPTH/TYPE PACK:	Sand	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	0.010	DEPTH/TYPE SEAL:	Grout						



**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: 82-11 37th Avenue Phase II  
 LOCATION: 82-11 37th Avenue  
 Jackson Heights, New York

PROJECT NO.: 48122 BORING NO.: MW-2  
 DRILLER: ADT Drilling WELL: MW-2  
 INSPECTOR: W. Swanson

Date Start: 2/27/2019 Date Finish: 2/27/2019

SAMPLER		CASING	CORE	GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data	
TYPE	Macrocore	PVC	NA	RISER ELEV.:	NA	Datum:	
SIZE (ID)	2"	1"	NA	DATE:	2/27/2019	Elevation (ft):	
HAMMER (LB.)	NA		NA	TIME:	NA		
FALL (IN.)	NA		NA	DEPTH (ft):	32.15		

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)			
1	0-5	NA	NA	0.0	0 - 1': Concrete, sub-base		
2				0.0			
3				0.0			
4				0.0			
5				0.0			
6	5-10	NA	NA	0.0	1.0 - 6.0': Light brown SILTY SAND, trace cobbles, dry		
7				0.0			
8				0.0			
9				0.0			
10				0.0			
11				0.0			
12				0.0			
13				0.0			
14				0.0			
15				0.0			
16	10-15	NA	NA	0.0	6.0 - 8.0': Brown and light brown coarse to fine SAND, dry		
17				0.0			
18				0.0			
19				0.0			
20				0.0			
21				0.0			
22				0.0			
23				0.0			
24				0.0			
25				0.0			
26	15-20	NA	NA	0.5	8.0 - 13.0': Light brown SILTY SAND, with trace medium to fine SAND, dry		
27				0.0			
28				0.0			
29				0.0			
30				0.0			
31				0.0			
32				0.0			
33				0.0			
34				0.0			
35				0.0			
36	20-25	NA	NA	0.6	13.0 - 17.5': Light brown to brown SANDY SILT, trace fine SAND, dry		
37				0.0			
38				0.0			
39				0.0			
40				0.0			
41				0.0			
42				0.0			
43				0.0			
44				0.0			
45				0.0			
46	25-30	NA	NA	0.4	17.5 - 24.5': Brown SANDY SILT, trace cobbles		
47				0.1			
48				0.0			
49				0.0			
50				0.0			
51				0.0			
52				0.0			
53				0.0			
54				0.0			
55				0.0			
56	30-35	NA	NA	0.1	24.5 - 30.5': Light brown to brown SILTY SAND, trace cobbles, dry to moist		
57				0.1			
58				0.1			
59				0.3			
60				0.3			
61				0.3			
62				0.3			
63				0.3			
64				0.3			
65				0.3			
66	35-40	NA	NA	0.3	30.5 - 38.0': Light brown medium to fine SAND, trace coarse SAND, wet		
67				0.2			
68				0.1			
69				0.1			
70				0.0			
71				0.0			
72				0.0			
73				0.0			
74				0.0			
75				0.0			
76	40-45	NA	NA	0.0	Boring terminated at 38' bgs.		
77				0.0			
78				0.0			
79				0.0			
80				0.0			
81				0.0			
82				0.0			
83				0.0			
84				0.0			
85				0.0			

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15 %	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30 %	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50 %	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50 %	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native
				Hard	>30		Sand
							Grout

Note(s):  
**No odors or staining. No soil samples collected.**

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	32.15	SCREEN INTERVAL:	10'	BACKFILL OVER SEAL:	NA	SAND:	X	SAND SIZE:	NA
DIA. (IN.):	1	LENGTH OF RISER:	28'	SURFACE SEAL:	NA	BENTONITE:	X		
MATERIAL:	PVC	DEPTH/TYPE PACK:	Sand	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	0.010	DEPTH/TYPE SEAL:	Grout						

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: **82-11 37th Avenue Phase II**  
 LOCATION: **82-11 37th Avenue  
Jackson Heights, New York**  
 Date Start: **2/26/2019** Date Finish: **2/26/2019**

PROJECT NO.: **48122** BORING NO.: **MW-3**  
 DRILLER: **ADT Drilling** WELL: **MW-3**  
 INSPECTOR: **W. Swanson**

SAMPLER	CASING	CORE	GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data
TYPE: Macrocore	PVC	NA	RISER ELEV.:	NA	Datum:
SIZE (ID): 2"	1"	NA	DATE:	2/26/2019	Elevation (ft):
HAMMER (LB.): NA		NA	TIME:	NA	
FALL (IN.): NA		NA	DEPTH (ft):	31.75	

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)			
1				0.0	0.0 - 1.0': Concrete, sub-base		
2				0.0	1.0 - 2.0': Brown SILTY SAND, with trace gravel, brick, and concrete, dry		
3	0-5	NA	NA	0.0			
4				0.0			
5				0.0	2.0 - 3.5': Dark brown SILTY CLAY, moist		
6				0.0	3.5 - 6.5': Light brown and grey SILTY CLAY, moist		
7				0.0			
8	5-10	NA	NA	0.0			
9				0.0			
10				0.0			
11				0.0	6.5 - 11.5': Light brown SILTY SAND, with trace medium to fine SAND, dry		
12				0.0			
13	10-15	NA	NA	0.0			
14				0.0			
15				0.0			
16				0.0	11.5 - 14.0': Light brown SILTY SAND with trace coarse to fine gravel, dry		
17				0.0			
18	15-20	NA	NA	0.0			
19				0.0			
20				0.0			
21				0.0	14.0 - 25.0': Brown and light brown SILTY SAND, trace CLAY, dry to moist		
22				0.0			
23	20-25	NA	NA	0.0			
24				0.0			
25				0.0			
26				0.0	25.0 - 30.0': Brown SANDY SILT, trace cobbles, dry to moist		
27				0.0			
28	25-30	NA	NA	0.0			
29				0.0			
30				0.0			
31				0.0	30.0 - 35.0': Brown medium to fine SAND, wet		
32				0.0			
33	30-35	NA	NA	0.0			
34				0.0			
35				0.0			
36				0.0	35.0 - 38.5': Light brown medium to fine SAND, trace coarse SAND, wet		
37				0.0			
38	35-40	NA	NA	0.0			
39				0.0			
40				0.0			
					Boring terminated at 38.5' bgs		

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5%	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native Sand
				Hard	>30		Grout

Note(s):  
**No staining or odors. No soil samples collected.**

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	31.75	SCREEN INTERVAL:	10'	BACKFILL OVER SEAL:	NA	SAND:	X	SAND SIZE:	NA
DIA. (IN.):	1	LENGTH OF RISER:	28.5'	SURFACE SEAL:	NA	BENTONITE:	X		
MATERIAL:	PVC	DEPTH/TYPE PACK:	Sand	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	0.010	DEPTH/TYPE SEAL:	Grout						

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: 82-11 37th Avenue Phase II  
 LOCATION: 82-11 37th Avenue  
 Jackson Heights, New York  
 Date Start: 2/27/2019 Date Finish: 2/27/2019

PROJECT NO.: 48122 BORING NO.: MW-4  
 DRILLER: ADT Drilling WELL: MW-4  
 INSPECTOR: W. Swanson

SAMPLER	CASING	CORE	GROUNDWATER DEPTH MEASUREMENTS	GS Elevation Data
TYPE: Macrocore	PVC	NA	RISER ELEV.: NA	Datum:
SIZE (ID): 2"	1"	NA	DATE: 2/27/2019	Elevation (ft):
HAMMER (LB.): NA		NA	TIME: NA	
FALL (IN.): NA		NA	DEPTH (ft): 31.25	

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST		WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)				
1	0-5	NA	NA	0.0	0 - 1': Concrete, sub-base			
2				0.0				
3				0.0				
4				0.0				
5				0.0				
6	5-10	NA	NA	0.0	1.0 - 6.0': Light brown SILTY SAND, trace cobbles, dry			
7				0.0				
8				0.3				
9				0.3				
10				0.3				
11				0.0				
12				0.4				
13				0.4				
14				0.0				
15				0.0				
16	10-15	NA	NA	0.0	6.0 - 8.0': Brown SILTY CLAY, moist			
17				0.4				
18				0.4				
19				0.0				
20				0.0				
21				0.6				
22				0.7				
23				0.8				
24				0.9				
25				1.2				
26	15-20	NA	NA	1.1	8.0 - 13.0': Light brown SILTY SAND, with trace medium to fine SAND, dry			
27				1.2				
28				1.2				
29				1.1				
30				0.5				
31				0.6				
32				0.5				
33				0.6				
34				0.4				
35				0.4				
36	20-25	NA	NA	0.4	13.0 - 17.5': Light brown to brown SANDY SILT, trace fine SAND, dry			
37				0.4				
38				0.1				
39				0.0				
40				0.0				
41				0.0				
42				0.0				
43				0.4				
44				0.2				
45				0.2				
46	25-30	NA	NA	0.2	17.5 - 24.5': Brown SANDY SILT, trace cobbles			
47				0.5				
48				0.8				
49				1.1				
50				1.2				
51				1.2				
52				1.3				
53				1.2				
54				0.8				
55				0.8				
56	30-35	NA	NA	0.4	24.5 - 30.5': Light brown to brown SILTY SAND, trace cobbles, dry to wet			
57				0.4				
58				0.0				
59				0.0				
60				0.0				
61				0.0				
62				0.0				
63				0.2				
64				0.3				
65				0.3				
66	35-40	NA	NA	0.2	30.5 - 38.0': Light brown medium to fine SAND, trace coarse SAND, wet			
67				0.2				
68				0.0				
69				0.0				
70				0.0				
71				0.0				
72				0.0				
73				0.0				
74				0.0				
75				0.0				
76	40-45	NA	NA	0.0	Boring terminated at 38' bgs.			
77				0.0				
78				0.0				
79				0.0				
80				0.0				
81				0.0				
82				0.0				
83				0.0				
84				0.0				
85				0.0				

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native
				Hard	>30		Sand
							Grout

Note(s): No odors or staining. No soil samples collected.

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED			
DEPTH (FT.): 31.25	SCREEN INTERVAL: 10'	BACKFILL OVER SEAL: NA	SAND: X	SAND SIZE: NA			
DIA. (IN.): 1	LENGTH OF RISER: 28'	SURFACE SEAL: NA	BENTONITE: X				
MATERIAL: PVC	DEPTH/TYPE PACK: Sand	ROADBOX DESC.: NA	CONCRETE: NA				
SLOT SIZE: 0.010	DEPTH/TYPE SEAL: Grout						

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: 82-11 37th Avenue Phase II  
LOCATION: 82-11 37th Avenue  
Jackson Heights, New York  
Date Start: 2/27/2019 Date Finish: 2/27/2019

PROJECT NO.: 48122 BORING NO.: MW-5  
DRILLER: ADT Drilling WELL: MW-5  
INSPECTOR: W. Swanson

SAMPLER		CASING	CORE	GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data	
TYPE	Macrocore	PVC	NA	RISER ELEV.:	NA	Datum:	
SIZE (ID)	2"	1"	NA	DATE:	2/27/2019	Elevation (ft):	
HAMMER (LB.)	NA	NA	NA	TIME:	NA		
FALL (IN.)	NA	NA	NA	DEPTH (ft):	29.70		

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST		WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)				
1	0-5	NA	NA	1.5	0 - 1': Concrete, sub-base			
2				1.5				
3	0-5	NA	NA	0.7	1.0 - 6.0': Light brown SILTY SAND, trace cobbles, dry			
4				0.7				
5				0.7				
6				0.7				
7	5-10	NA	NA	0.7	6.0 - 9.0': Brown SILT, with trace fine SAND, dry			
8				0.7				
9				0.7				
10				0.8				
11	10-15	NA	NA	0.9	9.0-10.5': Brown SILTY CLAY, moist			
12				1.1				
13				1.4				
14				1.5				
15				1.7				
16	10-15	NA	NA	0.5	10.5 - 17.0': Brown SILTY SAND, trace cobbles, dry			
17				0.5				
18				0.5				
19				0.7				
20				0.7				
21	15-20	NA	NA	0.4	17.0 - 27.0': Brown SANDY SILT with trace fine to medium SAND, dry			
22				0.4				
23				1.2				
24				1.3				
25				1.3				
26	20-25	NA	NA	1.4	17.0 - 27.0': Brown SANDY SILT with trace fine to medium SAND, dry			
27				1.4				
28				1.4				
29				0.8				
30				0.8				
31	25-30	NA	NA	0.4	27.0 - 39.0': Brown SANDY SILT, trace cobbles, moist to wet			
32				0.2				
33				0.2				
34				0.0				
35				0.0				
36	30-35	NA	NA	0.4	27.0 - 39.0': Brown SANDY SILT, trace cobbles, moist to wet			
37				1.2				
38				0.4				
39				0.4				
40				0.4				
41	35-40	NA	NA	0.8	27.0 - 39.0': Brown SANDY SILT, trace cobbles, moist to wet			
42				0.7				
43				0.6				
44				0.3				
45				0.3				
46	40-45	NA	NA	0.3	27.0 - 39.0': Brown SANDY SILT, trace cobbles, moist to wet			
47				0.3				
48				1.1				
49				1.4				
50				1.8				
51	40-45	NA	NA	1.8	27.0 - 39.0': Brown SANDY SILT, trace cobbles, moist to wet			
52				1.8				
53				1.7				
54				1.7				
55				0.9				
56	40-45	NA	NA	0.9	27.0 - 39.0': Brown SANDY SILT, trace cobbles, moist to wet			
57				0.9				
58				0.9				
59				0.4				
60				0.4				
61	40-45	NA	NA	0.2	27.0 - 39.0': Brown SANDY SILT, trace cobbles, moist to wet			
62				0.2				
63								
64								
65								
66	Boring terminated at 39.0' bgs							
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DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5%	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native
				Hard	>30		Sand
							Grout

Note(s): No odors or staining. No soil samples collected.

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED			
DEPTH (FT.):	29.7	SCREEN INTERVAL:	10'	BACKFILL OVER SEAL:	NA	SAND:	X
DIA. (IN.):	1	LENGTH OF RISER:	19	SURFACE SEAL:	NA	BENTONITE:	X
MATERIAL:	PVC	DEPTH/TYPE PACK:	Sand	ROADBOX DESC.:	NA	CONCRETE:	NA
SLOT SIZE:	0.010	DEPTH/TYPE SEAL:	Grout				

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: 82-11 37th Avenue Phase II  
 LOCATION: 82-11 37th Avenue  
 Jackson Heights, New York  
 Date Start: 3/20/2020 Date Finish: 3/20/2020

PROJECT NO.: 48122 BORING NO.: MW-6  
 DRILLER: ADT Drilling WELL: MW-6  
 INSPECTOR: W. Swanson

SAMPLER		CASING		CORE		GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data	
TYPE	NA			NA	NA	RISER ELEV.:	NA	Datum:	
SIZE (ID)	NA	2"		NA	NA	DATE:	3/20/2020		
HAMMER (LB.)	NA			NA	NA	TIME:	NA	Elevation (ft):	
FALL (IN.)	NA			NA	NA	DEPTH (ft):	32.50		

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST		WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)				
1	0-5	NA	NA	0.5	0 - 1': Concrete, sub-base			
2				0.7				
3				1.0				
4				1.0				
5				1.0				
6	5-10	NA	NA	1.5	1 - 7': Brown SILTY SAND with gravel and cobbles, trace fill material (brick fragments)			
7				1.5				
8				1.6				
9				1.6				
10				0.9				
11				0.9				
12				0.7				
13				0.7				
14				0.7				
15				0.7				
16	10-15	NA	NA	0.7	7 - 14': Brown SANDY SILT, trace cobbles			
17				0.7				
18				0.7				
19				0.7				
20				0.7				
21				0.7				
22				0.7				
23				0.7				
24				0.7				
25				0.0				
26	15-20	NA	NA	0.0	14 - 24': Brown fine SAND, trace SILT with some small cobbles			
27				0.0				
28				0.0				
29				0.0				
30				0.0				
31				0.0				
32				0.0				
33				0.0				
34				0.4				
35				0.4				
36	20-25	NA	NA	0.4	24 - 39.5': Brown fine SAND with small cobbles, petroleum odors noted on wet sand during the removal of the augers (PID on sands from the augers ranged from 23 to 43 ppm)			
37				0.4				
38				0.4				
39				0.4				
40				0.4				
41				0.4				
42				0.4				
43				0.6				
44				0.6				
45				0.6				
46	25-30	NA	NA	0.6	Boring terminated at 39.5' bgs.			
47				0.6				
48				0.6				
49				0.6				
50				0.6				
51				0.6				
52				0.6				
53				0.6				
54				0.6				
55				0.6				
56	30-35	NA	NA	0.7				
57				0.7				
58				0.8				
59				0.8				
60				0.9				
61				0.9				
62				0.9				
63				1.0				
64				1.0				
65				1.0				
66	35-40	NA	NA	1.0				
67				1.0				
68				1.1				
69				1.1				
70				1.1				
71				1.1				
72				1.1				
73				1.1				
74				1.1				
75				1.1				
76	40-45	NA	NA	1.1				
77				1.1				
78				1.1				
79				1.1				
80				1.1				
81				1.1				
82				1.1				
83				1.1				
84				1.1				
85				1.1				

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5%	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native
				Hard	>30		Sand
							Grout

Note(s): No soil samples collected. Petroleum odors noted on wet sands.

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED			
DEPTH (FT.):	32.50	SCREEN INTERVAL:	10'	BACKFILL OVER SEAL:	NA	SAND:	NA
DIA. (IN.):	2	LENGTH OF RISER:	29.5'	SURFACE SEAL:	NA	BENTONITE:	NA
MATERIAL:	PVC	DEPTH/TYPE PACK:	Sand	ROADBOX DESC.:	NA	CONCRETE:	NA
SLOT SIZE:	0.010	DEPTH/TYPE SEAL:	Grout				

SOIL BORING / MONITORING WELL CONSTRUCTION LOG										
PROJECT: 82-11 37th Avenue Phase II LOCATION: 82-11 37th Avenue Jackson Heights, New York			PROJECT NO.: 48122 DRILLER: ADT Drilling		BORING NO.: MW-7 WELL: MW-7					
Date Start: 3/16/2020			Date Finish: 3/16/2020		INSPECTOR: W. Swanson					
SAMPLER			CASING		CORE		GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data	
TYPE: NA			CASING: 2"		CORE: NA		RISER ELEV.: NA		Datum:	
SIZE (ID): NA			CASING: 2"		CORE: NA		DATE: 3/16/2020		Elevation (ft):	
HAMMER (L.B.): NA			CASING: 2"		CORE: NA		TIME: NA		Elevation (ft):	
FALL (IN.): NA			CASING: 2"		CORE: NA		DEPTH (ft): 29.20		Elevation (ft):	
SAMPLE INFORMATION			SOIL DESCRIPTION				WELL CONST		WELL DETAILS	
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)						
1				1.5	0 - 2': Concrete, brick and brown SILT, dry					
			1.5							
			1.5							
2				1.5	2 - 8': Light brown SILTY SAND, dry					
	0-5	NA	NA	0.7						
				0.7						
3				0.7	8 - 13': Reddish brown SILTY SAND with medium / large cobbles, dry					
				0.7						
				0.7						
4				0.7	13 - 25': Brown SILT, trace cobbles, dry					
				0.7						
				0.7						
5				0.7	25 - 40.5': Light brown fine SAND, trace SILT, medium / large cobbles, dry to wet				DTW = 29.20	
				0.7						
				0.7						
6				0.7	Boring terminated at 40.50' bgs.					
				0.7						
				0.7						
7				0.7						
	5-10	NA	NA	0.7						
				0.7						
8				0.7						
				0.7						
				0.7						
9				0.7						
				0.8						
				0.8						
10				0.9						
				0.9						
				1.1						
11				1.4						
				1.5						
				1.7						
12				1.7						
	10-15	NA	NA	0.5						
				0.5						
13				0.5						
				0.5						
				0.5						
14				0.5						
				0.5						
				0.5						
15				0.5						
				0.5						
				0.5						
16				0.7						
				0.7						
				0.7						
17				0.7						
	15-20	NA	NA	0.7						
				0.7						
18				0.7						
				0.7						
				0.7						
19				0.7						
				0.7						
				0.7						
20				0.7						
				0.7						
				0.7						
21				0.7						
				0.7						
				0.7						
22				0.7						
	20-25	NA	NA	0.7						
				0.7						
23				0.7						
				0.7						
				0.7						
24				0.7						
				0.7						
				0.7						
25				0.7						
				0.7						
				0.7						
26				0.7						
				0.7						
				0.7						
27				0.7						
	25-30	NA	NA	0.7						
				0.7						
28				0.7						
				0.7						
				0.7						
29				0.7						
				0.7						
				0.7						
30				0.7						
				0.7						
				0.7						
31				0.7						
				0.7						
				0.7						
32				0.7						
				0.7						
				0.7						
33				0.7						
	30-35	NA	NA	0.7						
				0.7						
34				0.7						
				0.7						
				0.7						
35				0.7						
				0.7						
				0.7						
36				0.7						
				0.7						
				0.7						
37				0.7						
				0.7						
				0.7						
38				0.7						
	35-40	NA	NA	0.7						
				0.7						
39				0.7						
				0.7						
				0.7						
40				0.7						
				0.7						
				0.7						
41				0.7						
				0.7						
				0.7						
42				0.7						
				0.7						
				0.7						
43				0.7						
	40-45	NA	NA	0.7						
				0.7						
44				0.7						
				0.7						
				0.7						
45				0.7						
				0.7						
				0.7						

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15 %	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30 %	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50 %	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50 %	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native Sand
				Hard	>30		Grout

Notes: No odors or staining. No soil samples collected.

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED			
DEPTH (FT.):	29.20	SCREEN INTERVAL:	30"	BACKFILL OVER SEAL:	NA	SAND:	NA
DIA. (IN.):	2	LENGTH OF RISER:	30"	SURFACE SEAL:	NA	BENTONITE:	NA
MATERIAL:	PVC	DEPTH/TYPE PACK:	Sand	ROADBOX DESC.:	NA	CONCRETE:	NA
SLOT SIZE:	0.010	DEPTH/TYPE SEAL:	Grout				

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**



PROJECT: 82-11 37th Avenue Phase II  
 LOCATION: 82-11 37th Avenue  
 Jackson Heights, New York  
 Date Start: 3/17/2020 Date Finish: 3/17/2020  
 PROJECT NO.: 48122 BORING NO.: MW-8  
 DRILLER: ADT Drilling WELL: MW-8  
 INSPECTOR: W. Swanson

SAMPLER		CASING		CORE		GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data	
TYPE	NA			NA		RISER ELEV.:	NA	Datum:	
SIZE (ID)	NA	2"		NA		DATE:	3/17/2020		
HAMMER (LB.)	NA			NA		TIME:	NA	Elevation (ft):	
FALL (IN.)	NA			NA		DEPTH (ft):	29.20		

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)			
1				0.0	0 - 1': Concrete, sub-base		
2				0.0			
3	0-5	NA	NA	0.0	1 - 8': Fill Material: Brick fragments, asphalt, coal ash, concrete, brown SILT and gravel, dry		
4				0.0			
5				0.0			
6				0.0			
7				0.0	8 - 14': Brown SANDY SILT with small / medium cobbles, dry		
8	5-10	NA	NA	0.0			
9				0.0			
10				0.0			
11				0.0	14 - 25': Brown SILT, with trace CLAYEY SILT, dry to moist		
12				0.0			
13	10-15	NA	NA	0.0			
14				0.0			
15				0.0	25 - 38': Brown SANDY SILT, trace small cobbles, wet		DTW = 29.20
16				0.0			
17				0.0			
18	15-20	NA	NA	0.0			
19				0.0	Boring terminated at 38' bgs		
20				0.0			
21				0.0			
22				0.0			
23	20-25	NA	NA	0.0			
24				0.0			
25				0.0			
26				0.0			
27				0.0			
28	25-30	NA	NA	0.0			
29				0.0			
30				0.0			
31				0.0			
32				0.0			
33	30-35	NA	NA	0.0			
34				0.0			
35				0.0			
36				0.0			
37				0.0			
38	35-40	NA	NA	0.0			
39				0.0			
40				0.0			

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPS	Very Dense	>50	Very Stiff	15 - 30		Native Sand
				Hard	>30		Grout

Note(s):  
 No staining or odors. No soil samples collected.

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED			
DEPTH (FT.):	29.20	SCREEN INTERVAL:	10'	BACKFILL OVER SEAL:	NA	SAND:	X
DIA. (IN.):	2	LENGTH OF RISER:	28'	SURFACE SEAL:	NA	BENTONITE:	X
MATERIAL:	PVC	DEPTH/TYPE PACK:	Sand	ROADBOX DESC.:	NA	CONCRETE:	NA
SLOT SIZE:	0.010	DEPTH/TYPE SEAL:	Grout				

SOIL BORING / MONITORING WELL										
CONSTRUCTION LOG										
<b>VERTEX</b>	PROJECT:	82-11 37th Avenue Phase II			PROJECT NO.:	48122		BORING NO.:	MW-9	
	LOCATION:	82-11 37th Avenue Jackson Heights, New York			DRILLER:	ADT Drilling		WELL:	MW-9	
	Date Start:	3/18/2020		Date Finish:	3/18/2020		INSPECTOR:	W. Swanson		
SAMPLER		CASING		CORE		GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data		
TYPE	NA	2"		NA	RISER ELEV.:	NA		Datum:		
SIZE (ID)	NA			NA	DATE:	3/18/2020		Elevation (ft):		
HAMMER (L.B.)	NA			NA	TIME:	NA				
FALL (IN.)	NA			NA	DEPTH (ft):	31.50				
SAMPLE INFORMATION				SOIL DESCRIPTION				WELL CONST		WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)						
1				0.0	0 - 1': Concrete, sub-base					
2				0.0						
3	0-5	NA	NA	0.5						
4				0.5						
5				0.5	1 - 7': Fill Material: Brown SILT, concrete, gravel, and cobbles, dry					
6				0.5						
7				0.5						
8	5-10	NA	NA	0.3						
9				0.3						
10				0.3						
11				0.3	7 - 13': Brown SANDY SILT, dry					
12				0.4						
13	10-15	NA	NA	0.4						
14				0.4						
15				0.4						
16				0.4						
17				0.4						
18	15-20	NA	NA	0.4						
19				0.4						
20				0.4	13 - 25': Brown SANDY SILT, some fine SAND, trace cobbles, dry					
21				0.4						
22				0.4						
23	20-25	NA	NA	0.4						
24				0.4						
25				0.4						
26				0.4						
27				0.4						
28	25-30	NA	NA	0.4						
29				0.4						
30				2.2						
31				0.0						
32				0.0						
33	30-35	NA	NA	0.0	25 - 38.8': Brown fine SAND, small cobbles, moist to wet, petroleum odors noted on wet sand during the removal of the augers (PID on sands from the augers ranged from 15 to 85 ppm)				DTW = 31.5	
34				0.0						
35				0.0						
36				0.0						
37				0.0						
38	35-40	NA	NA	0.0						
39				0.0						
40				0.0						
41				0.0	Boring terminated at 40' bgs					
42										
43	40-45	NA	NA							
44										
45										
DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS				
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)					
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2					
5 - 15 %	Little	Loose	4 - 10	Soft	2 - 4					
15 - 30 %	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8					
30 - 50 %	Modifier	Dense	30 - 50	Stiff	8 - 15					
>50 %	In CAPs	Very Dense	>50	Very Stiff	15 - 30					
Notes:				Hard		15 - 30				
				>30				Screen Riser Concrete Bentonite Native Sand Grout		
No soil samples collected. Petroleum odors noted on wet sands.										
GROUNDWATER MONITORING WELL DATA					WELL MATERIALS USED					
DEPTH (FT.):	31.50	SCREEN INTERVAL:	20"	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA	
DIA. (IN.):	2	LENGTH OF RISER:	29"	SURFACE SEAL:	NA	BENTONITE:	NA			
MATERIAL:	PVC	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA			
SLOT SIZE:	0.010	DEPTH/TYPE SEAL:	NA							



SOIL BORING / MONITORING WELL										
CONSTRUCTION LOG										
<b>VERTEX</b>	PROJECT:	82-11 37th Avenue Phase II			PROJECT NO.:	48122	BORING NO.:	MW-10		
	LOCATION:	82-11 37th Avenue Jackson Heights, New York			DRILLER:	ADT Drilling	WELL:	MW-10		
Date Start:		3/19/2020		Date Finish:	3/19/2020		INSPECTOR:	W. Swanson		
SAMPLER		CASING		CORE		GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data		
TYPE	NA	2"		NA	RISER ELEV.:	NA		Datum:		
SIZE (ID)	NA			NA	DATE:	3/19/2020		Elevation (ft):		
HAMMER (L.B.)	NA			NA	TIME:	NA				
FALL (IN.)	NA			NA	DEPTH (ft):	21.00				
SAMPLE INFORMATION				SOIL DESCRIPTION				WELL CONST		WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)						
1				0.0	0 - 1': Concrete and sub-base					
				0.0						
				0.1						
2				0.2						
				0.2						
3	0-5	NA	NA	0.3	1 - 13': Brown SANDY SILT with medium / large cobbles and rock fragments, dry					
				0.4						
4				1.5						
				1.6						
5				4.6						
				6.5						
6				6.9						
				10.2						
7				10.5						
				11.2						
8	5-10	NA	NA	13.5						
				13.4						
9				15.4						
				15.0						
10				15.0						
				16.2						
11				16.4						
				16.5						
12				14.7						
				14.7						
13	10-15	NA	NA	14.7						
				16.2						
14				16.0						
				17.2						
15				17.2						
				22.1						
16				22.8						
				23.1						
17				23.6						
				23.5						
18	15-20	NA	NA	24.4	13-29.5': Brown fine SAND, trace cobbles, dry to wet					
				18.6						
19				15.5						
				20.0						
20				20.9						
				23.8						
21				23.8						
				23.8						
22				19.8						
				19.4						
23	20-25	NA	NA	19.5						
				19.6						
24				20.5						
				25.2						
25				26.2						
				26.2						
26				26.3						
				24.4						
27				24.4						
				20.5						
28	25-30	NA	NA	20.8						
				24.4						
29				25.0						
				25.0						
30										
Boring terminated at 29.5' bgs										
31					Boring terminated at 29.5' bgs					
32										
33	30-35	NA	NA							
34										
35										
36										
37										
38	35-40	NA	NA							
39										
40										
41										
42										
43	40-45	NA	NA							
44										
45										
DESCRIPTION OF SOIL CONSTITUENTS				SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS		
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)					
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2					
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4					
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8					
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15					
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30					
Notes:				Hard	>30					
No odors or staining. No soil samples collected.										
GROUNDWATER MONITORING WELL DATA					WELL MATERIALS USED					
DEPTH (FT.):	21.00	SCREEN INTERVAL:	10'	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA	
DIA. (IN.):	2	LENGTH OF RISER:	19.5	SURFACE SEAL:	NA	BENTONITE:	NA			
MATERIAL:	PVC	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA			
SLOT SIZE:	0.010	DEPTH/TYPE SEAL:	NA							

SOIL BORING / MONITORING WELL CONSTRUCTION LOG											
<b>VERTEX</b>		PROJECT: <b>RockFarmer</b>				PROJECT NO.: <b>48122</b>		BORING NO.: <b>B1</b>			
		LOCATION: <b>82-13 37th Ave, Jackson Heights, Queens, NY</b>				DRILLER: <b>PAL</b>		WELL: <b>NA</b>			
		Date Start: <b>10/29/2021</b>		Date Finish: <b>10/29/2021</b>		INSPECTOR: <b>T. Barros</b>					
		SAMPLER		CASING		CORE		GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data	
TYPE		MICROCORE		3 foot sleeves		RISER ELEV.: <b>NA</b>		Datum:			
SIZE (ID)		2-inch				DATE: <b>NA</b>					
HAMMER (LB.)		NA				TIME: <b>NA</b>		Elevation (ft):			
FALL (IN.)		NA				DEPTH (ft): <b>NA</b>					
SAMPLE INFORMATION				SOIL DESCRIPTION				WELL CONST		WELL DETAILS	
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)							
1	0-3	1.5	0.9	0.9	0-0.5: Concrete slab & subbase						
2			0.0	0.0	0.5-3.0: Brown silt with many stones, dry						
3			0.0	0.0							
4	3-6	2.5	2.5	2.5	3.0-6.0: Brown silty sand, large pieces of stone, moist at 5.0-6.0'						
5			1.1	1.1							
6			1.0	1.0							
7	6-9	2.5	2.5	2.5	6.0-7.0: Light brown sandy silt, not packed, little stone, dry						
8			1.0	1.0							
9			0.3	0.3	7.0-10.0: Medium brown silt, packed, dry						
10	9-12	3	2.5	2.5							
11			0.7	0.7	11.0-12.0: Light brown sandy silt, not packed, some stone, dry						
12			0.1	0.1							
13	12-15	2	1.1	1.1	12.0-13.0: Medium brown silt, dry						
14			0.0	0.0	13.0-14.0: Light brown sandy silt, not packed, dry, refusal @ 14.0'						
15											
DESCRIPTION OF SOIL CONSTITUENTS				SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS			
%		Descriptor		Density	Blows (N)	Consistency	Blows (N)			Screen	
0 - 5 %		Trace		Very Loose	0 - 4	Very Soft	<2			Riser	
5 - 15%		Little		Loose	4 - 10	Soft	2 - 4			Concrete	
15 - 30%		Some		Medium Dense	10 - 30	Medium Stiff	4 - 8			Bentonite	
30 - 50%		Modifier		Dense	30 - 50	Stiff	8 - 15			Native	
>50%		In CAPs		Very Dense	>50	Very Stiff	15 - 30			Sand	
Note(s):						Hard		>30		Grout	
GROUNDWATER MONITORING WELL DATA						WELL MATERIALS USED					
DEPTH (FT.):		NA		SCREEN INTERVAL:		NA		BACKFILL OVER SEAL:		NA	
DIA. (IN.):		NA		LENGTH OF RISER:		NA		SURFACE SEAL:		NA	
MATERIAL:		NA		DEPTH/TYPE PACK:		NA		ROADBOX DESC.:		NA	
SLOT SIZE:		NA		DEPTH/TYPE SEAL:		NA		SAND:		NA	
								BENTONITE:		NA	
								CONCRETE:		NA	
								SAND SIZE:		NA	

SOIL BORING / MONITORING WELL CONSTRUCTION LOG											
<b>VERTEX</b>		PROJECT: <b>RockFarmer</b>				PROJECT NO.: <b>48122</b>		BORING NO.: <b>B2</b>			
		LOCATION: <b>82-13 37th Ave, Jackson Heights, Queens, NY</b>				DRILLER: <b>PAL</b>		WELL: <b>NA</b>			
		Date Start: <b>10/29/2021</b>		Date Finish: <b>10/29/2021</b>		INSPECTOR: <b>T. Barros</b>					
		SAMPLER		CASING		CORE		GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data	
TYPE		MICROCORE		3 foot sleeves		RISER ELEV.: <b>NA</b>		Datum:			
SIZE (ID)		2-inch				DATE: <b>NA</b>					
HAMMER (LB.)		NA				TIME: <b>NA</b>		Elevation (ft):			
FALL (IN.)		NA				DEPTH (ft): <b>NA</b>					
SAMPLE INFORMATION				SOIL DESCRIPTION				WELL CONST		WELL DETAILS	
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)							
1	0-3	1	NA	2.7	0-0.5: Concrete slab & subbase						
2				2.3	0.5-3: Medium brown silt, trace large pieces of stone, dry						
3				2.1							
4	3-6	1	NA	3.7	3.0-4.0: Dark brown silt, dry						
5				2.3	4.0-6.0: Medium brown silt, little stone, dry						
6				1.5							
7	6-9	3	NA	2	6.0-9.0: Medium brown silt, slight clay; some moisture @ 8.0-9.0ft						
8				1.4							
9				1.3							
10	9-12	3	NA	1.7	9.0-13.0: Light brown sandy silt, not packed, some stone, dry						
11				1.1							
12				1							
13	12-15	2	NA	1.4	13.0-15.0: Light brown silty sand, packed, trace rock, dry						
14				1.8							
15				2.5							
DESCRIPTION OF SOIL CONSTITUENTS				SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS			
%		Descriptor		Density	Blows (N)	Consistency	Blows (N)				
0 - 5 %		Trace		Very Loose	0 - 4	Very Soft	<2	Screen			
5 - 15%		Little		Loose	4 - 10	Soft	2 - 4	Riser			
15 - 30%		Some		Medium Dense	10 - 30	Medium Stiff	4 - 8	Concrete			
30 - 50%		Modifier		Dense	30 - 50	Stiff	8 - 15	Bentonite			
>50%		In CAPs		Very Dense	>50	Very Stiff	15 - 30	Native			
Note(s):						Hard		>30		Sand	
										Grout	
GROUNDWATER MONITORING WELL DATA						WELL MATERIALS USED					
DEPTH (FT.):	NA	SCREEN INTERVAL:	NA	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA		
DIA. (IN.):	NA	LENGTH OF RISER:	NA	SURFACE SEAL:	NA	BENTONITE:	NA				
MATERIAL:	NA	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA				
SLOT SIZE:	NA	DEPTH/TYPE SEAL:	NA								

SOIL BORING / MONITORING WELL CONSTRUCTION LOG										
<b>VERTEX</b>		PROJECT: <b>Rockfarmer</b>				PROJECT NO.: <b>48122</b>		BORING NO.: <b>B3</b>		
		LOCATION: <b>82-13 37th Ave, Jackson Heights, Queens, NY</b>				DRILLER: <b>PAL</b>		WELL: <b>NA</b>		
		Date Start: <b>10/28/2021</b>		Date Finish: <b>10/28/2021</b>		INSPECTOR: <b>T. Barros</b>				
SAMPLER		CASING			CORE		GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data	
TYPE	MICROCORE						RISER ELEV.:	NA	Datum:	
SIZE (ID)	2-inch	3 foot sleeves					DATE:	NA		
HAMMER (LB.)	NA						TIME:	NA	Elevation (ft):	
FALL (IN.)	NA						DEPTH (ft):	NA		
SAMPLE INFORMATION					SOIL DESCRIPTION				WELL CONST	WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)						
1	0-3	2	NA	0.0	0.0- 0.5: Concrete and sub-base					
2				0.0	0.5-1.5: Black/dark brown fine to coarse sand with gravel, dry					
3				0.0	1.5-3.0: Medium brown silty sand, trace coble, little angular gravel, dry					
4	3-6	2	NA	0.0	3.0-7.5: Medium brown silty sand, trace clay and gravel, dry					
5				0.0						
6				0.0						
7	6-9	2.5	NA	0.0	7.5-9.0: Medium brown silt, trace clay, damp					
8				0.0						
9				0.0						
10	9-12	2.5	NA	0.0	9.0-21.0: Light brown silt and fine sand, little gravel, dry, moist at bottom boring, refusal at 21.0'					
11				0.0						
12				0.0						
13	12-15	2	NA	0.0						
14				0.0						
15				0.0						
DESCRIPTION OF SOIL CONSTITUENTS			SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS			
%	Descriptor		Density	Blows (N)	Consistency	Blows (N)	Screen	Riser		
0 - 5 %	Trace		Very Loose	0 - 4	Very Soft	<2	Concrete	Concrete		
5 - 15%	Little		Loose	4 - 10	Soft	2 - 4	Bentonite	Bentonite		
15 - 30%	Some		Medium Dense	10 - 30	Medium Stiff	4 - 8	Native	Native		
30 - 50%	Modifier		Dense	30 - 50	Stiff	8 - 15	Sand	Sand		
>50%	In CAPs		Very Dense	>50	Very Stiff	15 - 30	Grout	Grout		
Hard					Hard	>30				
<b>Note(s):</b> PID was malfunctioning the first day, a new one was ordered for second day of sampling.										
GROUNDWATER MONITORING WELL DATA						WELL MATERIALS USED				
DEPTH (FT.):	NA	SCREEN INTERVAL:	NA	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE: NA		
DIA. (IN.):	NA	LENGTH OF RISER:	NA	SURFACE SEAL:	NA	BENTONITE:	NA			
MATERIAL:	NA	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA			
SLOT SIZE:	NA	DEPTH/TYPE SEAL:	NA							

SOIL BORING / MONITORING WELL CONSTRUCTION LOG																
VERTEX		PROJECT: <b>Rockfarmer</b>				PROJECT NO.: <b>48122</b>		BORING NO.: <b>B3</b>								
		LOCATION: <b>82-13 37th Ave, Jackson Heights, Queens, NY</b>				DRILLER: <b>PAL</b>		WELL: <b>NA</b>								
		Date Start: <b>10/28/2021</b>		Date Finish: <b>10/28/2021</b>		INSPECTOR: <b>T. Barros</b>										
SAMPLER		CASING		CORE		GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data								
TYPE: MICROCORE		3 foot sleeves				RISER ELEV.: NA		Datum:								
SIZE (ID): 2-inch						DATE: NA										
HAMMER (LB.): NA						TIME: NA		Elevation (ft):								
FALL (IN.): NA						DEPTH (ft): NA										
SAMPLE INFORMATION				SOIL DESCRIPTION				WELL CONST		WELL DETAILS						
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)												
16	15-18	2	NA	0.0	9.0-21.0: Light brown silt and fine sand, little gravel, dry, moist at bottom boring, refusal at 21.0'											
17				0.0												
18				0.0												
19	18-21	2	NA	0.0												
20				0.0												
21				0.0												
DESCRIPTION OF SOIL CONSTITUENTS			SAND AND GRAVEL (GRANULAR SOILS)			CLAY (COHESIVE SOILS)			WELL CONSTRUCTION DETAILS							
%	Descriptor		Density	Blows (N)		Consistency	Blows (N)									
0 - 5 %	Trace		Very Loose	0 - 4		Very Soft	<2									
5 - 15%	Little		Loose	4 - 10		Soft	2 - 4									
15 - 30%	Some		Medium Dense	10 - 30		Medium Stiff	4 - 8									
30 - 50%	Modifier		Dense	30 - 50		Stiff	8 - 15									
>50%	In CAPs		Very Dense	>50		Very Stiff	15 - 30									
						Hard	>30									
<b>Note(s):</b> PID was malfunctioning the first day, a new one was ordered for second day of sampling.																
GROUNDWATER MONITORING WELL DATA						WELL MATERIALS USED										
DEPTH (FT.): NA		SCREEN INTERVAL: NA		BACKFILL OVER SEAL: NA		SAND: NA		SAND SIZE: NA								
DIA. (IN.): NA		LENGTH OF RISER: NA		SURFACE SEAL: NA		BENTONITE: NA										
MATERIAL: NA		DEPTH/TYPE PACK: NA		ROADBOX DESC.: NA		CONCRETE: NA										
SLOT SIZE: NA		DEPTH/TYPE SEAL: NA														

SOIL BORING / MONITORING WELL CONSTRUCTION LOG												
<b>VERTEX</b>		PROJECT: <b>RockFarmer</b>				PROJECT NO.: <b>48122</b>		BORING NO.: <b>B4</b>				
		LOCATION: <b>82-13 37th Ave, Jackson Heights, Queens, NY</b>				DRILLER: <b>PAL</b>		WELL: <b>NA</b>				
		Date Start: <b>10/29/2021</b>		Date Finish: <b>10/29/2021</b>		INSPECTOR: <b>T. Barros</b>						
		SAMPLER		CASING		CORE		GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data		
TYPE		MICROCORE				RISER ELEV.: <b>NA</b>		Datum:				
SIZE (ID)		2-inch		3 ft sleeves		DATE: <b>NA</b>						
HAMMER (LB.)		NA				TIME: <b>NA</b>		Elevation (ft):				
FALL (IN.)		NA				DEPTH (ft): <b>NA</b>						
SAMPLE INFORMATION				SOIL DESCRIPTION				WELL CONST		WELL DETAILS		
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)								
1	0-3	2	NA	0.0	0.0- 0.5: Concrete and sub-base							
2				3.5	0.5-1.0: Black sandy silt with gravel, dry							
3				3.2	1.0-3.0: Medium brown silt, some gravel, dry							
4	3-6	2	NA	1.6	3.0-12.0: Medium brown silty sand, trace large rock pieces, dry to moist							
5				1.4								
6				1.4								
7	6-9	2	NA	2.3								
8				2.0								
9				1.7								
10	9-12	2	NA	2.6	12.0-13.0: Weathered rock, refusal @ 13ft							
11				1.9								
12				2.3								
13	12-15	1	NA	1.6								
14												
15												
DESCRIPTION OF SOIL CONSTITUENTS				SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS				
%		Descriptor		Density	Blows (N)	Consistency	Blows (N)			Screen		
0 - 5 %		Trace		Very Loose	0 - 4	Very Soft	<2			Riser		
5 - 15%		Little		Loose	4 - 10	Soft	2 - 4			Concrete		
15 - 30%		Some		Medium Dense	10 - 30	Medium Stiff	4 - 8			Bentonite		
30 - 50%		Modifier		Dense	30 - 50	Stiff	8 - 15			Native		
>50%		In CAPs		Very Dense	>50	Very Stiff	15 - 30			Sand		
Note(s):						Hard				Grout		
A duplicate sample was taken at 1.5-2ft.												
GROUNDWATER MONITORING WELL DATA						WELL MATERIALS USED						
DEPTH (FT.): <b>NA</b>		SCREEN INTERVAL: <b>NA</b>		BACKFILL OVER SEAL: <b>NA</b>		SAND: <b>NA</b>		SAND SIZE: <b>NA</b>				
DIA. (IN.): <b>NA</b>		LENGTH OF RISER: <b>NA</b>		SURFACE SEAL: <b>NA</b>		BENTONITE: <b>NA</b>						
MATERIAL: <b>NA</b>		DEPTH/TYPE PACK: <b>NA</b>		ROADBOX DESC.: <b>NA</b>		CONCRETE: <b>NA</b>						
SLOT SIZE: <b>NA</b>		DEPTH/TYPE SEAL: <b>NA</b>										

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**

**VERTEX**

PROJECT: **Rockfarmer**  
 LOCATION: **82-13 37th Avenue, Jackson Heights, Queens, NY**  
 Date Start: **10/29/2021** Date Finish: **10/29/2021**

PROJECT NO.: **48122** BORING NO.: **B5**  
 DRILLER: **PAL** WELL: **NA**  
 INSPECTOR: **T. Barros**

SAMPLER		CASING	CORE	GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data
TYPE	MICROCORE			RISER ELEV.:	NA	Datum:
SIZE (ID)	2-inch	3 ft sleeves		DATE:	NA	
HAMMER (LB.)	NA			TIME:	NA	Elevation (ft):
FALL (IN.)	NA			DEPTH (ft):	NA	

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)			
1	0-3	1.5	NA		0-0.5: Concrete slab & subbase		
				5.6	0.5-1.0: Medium brown silt with large gravel		
2					1.0-1.5: Concrete refusal		
3							

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS														
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)															
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2	<table border="1"> <tr><td></td><td>Screen</td></tr> <tr><td></td><td>Riser</td></tr> <tr><td></td><td>Concrete</td></tr> <tr><td></td><td>Bentonite</td></tr> <tr><td></td><td>Native</td></tr> <tr><td></td><td>Sand</td></tr> <tr><td></td><td>Grout</td></tr> </table>		Screen		Riser		Concrete		Bentonite		Native		Sand		Grout
	Screen																			
	Riser																			
	Concrete																			
	Bentonite																			
	Native																			
	Sand																			
	Grout																			
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4															
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8															
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15															
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30															
<b>Note(s):</b>				Hard	>30															

**Note(s):** There was a second layer of concrete after breaking through the floor, it didn't allow the drill to go deeper. Multiple attempts encountered shallow refusal.

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	NA	SCREEN INTERVAL:	NA	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	NA	LENGTH OF RISER:	NA	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	NA	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	NA	DEPTH/TYPE SEAL:	NA						

**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**

**VERTEX**

PROJECT: **Rockfarmer**  
 LOCATION: **82-13 37th Ave, Jackson Heights, Queens, NY**  
 Date Start: **10/28/2021** Date Finish: **10/28/2021**

PROJECT NO.: **48122** BORING NO.: **B6**  
 DRILLER: **PAL** WELL: **NA**  
 INSPECTOR: **T. Barros**

SAMPLER		CASING	CORE	GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data
TYPE	MICROCORE			RISER ELEV.:	NA	Datum:
SIZE (ID)	2-inch	3 ft sleeves		DATE:	NA	
HAMMER (LB.)	NA			TIME:	NA	Elevation (ft):
FALL (IN.)	NA			DEPTH (ft):	NA	

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)			
1	0-3	2	NA	0.0	0-0.5: Concrete & subbase		
2				0.0	0.5-2.0: Black sandy silt with gravel, dry		
3				0.0	2.0-3.0: Medium brown silty sand, dry		
4	3-6	2	NA	0.0	3.0-12.0: Medium brown silt/sand, some cobble, dry, refusal at 12.0'		
5				0.0			
6				0.0			
7	6-9	2	NA	0.0			
8				0.0			
9				0.0			
10	9-12	2	NA	0.0			
11				0.0			
12				0.0			

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native Sand
				Hard	>30		Grout

**Note(s):**  
 PID was malfunctioning the first day, a new one was ordered for second day of sampling.

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED					
DEPTH (FT.):	NA	SCREEN INTERVAL:	NA	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:	NA
DIA. (IN.):	NA	LENGTH OF RISER:	NA	SURFACE SEAL:	NA	BENTONITE:	NA		
MATERIAL:	NA	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA		
SLOT SIZE:	NA	DEPTH/TYPE SEAL:	NA						





**SOIL BORING / MONITORING WELL  
CONSTRUCTION LOG**

**VERTEX**

PROJECT: **Rockfarmer**  
 LOCATION: **82-13 37th Ave, Jackson Heights, Queens, NY**  
 Date Start: **10/28/2021** Date Finish: **10/28/2021**

PROJECT NO.: **48122** BORING NO.: **B8**  
 DRILLER: **PAL** WELL: **NA**  
 INSPECTOR: **T. Barros**

SAMPLER		CASING	CORE	GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data
TYPE	MICROCORE			RISER ELEV.:	NA	Datum:
SIZE (ID)	2-inch	3 ft sleeves		DATE:	NA	
HAMMER (LB.)	NA			TIME:	NA	Elevation (ft):
FALL (IN.)	NA			DEPTH (ft):	NA	

SAMPLE INFORMATION					SOIL DESCRIPTION	WELL CONST	WELL DETAILS
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)			
1	0-3	2	NA	0.0	0.0'- 0.5': Concrete and sub-base		
2				0.0	0.5-1.5: Black sandy silt with gravel, dry		
3				0.0	1.5-3: Medium brown silt, dry		
4	3-6	2	NA	0.0	3.0-9.0: medium brown sand, little silt and clay, damp, trace large gravel, dry		
5				0.0			
6				0.0			
7	6-9	2	NA	0.0			
8				0.0			
9				0.0			
10	9-12	2	NA	0.0	9.0-12.0: Medium brown silt, dry to moist		
11				0.0			
12				0.0			

DESCRIPTION OF SOIL CONSTITUENTS		SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS	
%	Descriptor	Density	Blows (N)	Consistency	Blows (N)		
0 - 5 %	Trace	Very Loose	0 - 4	Very Soft	<2		Screen
5 - 15%	Little	Loose	4 - 10	Soft	2 - 4		Riser
15 - 30%	Some	Medium Dense	10 - 30	Medium Stiff	4 - 8		Concrete
30 - 50%	Modifier	Dense	30 - 50	Stiff	8 - 15		Bentonite
>50%	In CAPs	Very Dense	>50	Very Stiff	15 - 30		Native
				Hard	>30		Sand
							Grout

Note(s):  
 PID was malfunctioning the first day, a new one was ordered for second day of sampling.

GROUNDWATER MONITORING WELL DATA				WELL MATERIALS USED			
DEPTH (FT.):	NA	SCREEN INTERVAL:	NA	BACKFILL OVER SEAL:	NA	SAND:	NA
DIA. (IN.):	NA	LENGTH OF RISER:	NA	SURFACE SEAL:	NA	BENTONITE:	NA
MATERIAL:	NA	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA
SLOT SIZE:	NA	DEPTH/TYPE SEAL:	NA				

SOIL BORING / MONITORING WELL CONSTRUCTION LOG													
<b>VERTEX</b>		PROJECT: <b>Rockfarmer</b>				PROJECT NO.: <b>48122</b>		BORING NO.: <b>B9</b>					
		LOCATION: <b>82-13 37th Ave, Jackson Heights, Queens, NY</b>				DRILLER: <b>PAL</b>		WELL: <b>NA</b>					
		Date Start: <b>10/29/2021</b>		Date Finish: <b>10/29/2021</b>		INSPECTOR: <b>T. Barros</b>							
SAMPLER		CASING			CORE		GROUNDWATER DEPTH MEASUREMENTS		GS Elevation Data				
TYPE	MICROCORE						RISER ELEV.:	NA	Datum:				
SIZE (ID)	2-inch	3 ft sleeves					DATE:	NA					
HAMMER (LB.)	NA						TIME:	NA	Elevation (ft):				
FALL (IN.)	NA						DEPTH (ft):	NA					
SAMPLE INFORMATION					SOIL DESCRIPTION			WELL CONST		WELL DETAILS			
DEPTH / ELEV (ft)	Interval (ft)	PEN / REC (ft)	BLOWS/6"	PID (ppm)									
1	0-3	1.5	NA	0.0	0.0- 0.5: Concrete and sub-base								
2				7.1	0.5-1.5: Black sandy silt with gravel, dry								
3				5.1	1.5-3: Medium brown silty sand with trace cobble, dry								
4	3-6	1.5	NA	4.4	3.0-12.0: Medium brown silt, dry to slight moisture, trace gravel								
5				4.1									
6				3									
7	6-9	1	NA	4.1									
8				3.8									
9				3.4									
10	9-12	1	NA	4									
11				3.6									
12				4									
13	12-15	1	NA	4.1	12.0-15.0: Light brown silty sand, dry to moist								
14				3.2									
15				3									
DESCRIPTION OF SOIL CONSTITUENTS				SAND AND GRAVEL (GRANULAR SOILS)		CLAY (COHESIVE SOILS)		WELL CONSTRUCTION DETAILS					
%	Descriptor			Density	Blows (N)	Consistency	Blows (N)						
0 - 5 %	Trace			Very Loose	0 - 4	Very Soft	<2						
5 - 15%	Little			Loose	4 - 10	Soft	2 - 4						
15 - 30%	Some			Medium Dense	10 - 30	Medium Stiff	4 - 8						
30 - 50%	Modifier			Dense	30 - 50	Stiff	8 - 15						
>50%	In CAPs			Very Dense	>50	Very Stiff	15 - 30						
Note(s):						Hard	>30						
GROUNDWATER MONITORING WELL DATA						WELL MATERIALS USED							
DEPTH (FT.):	NA	SCREEN INTERVAL:	NA	BACKFILL OVER SEAL:	NA	SAND:	NA	SAND SIZE:		NA			
DIA. (IN.):	NA	LENGTH OF RISER:	NA	SURFACE SEAL:	NA	BENTONITE:	NA						
MATERIAL:	NA	DEPTH/TYPE PACK:	NA	ROADBOX DESC.:	NA	CONCRETE:	NA						
SLOT SIZE:	NA	DEPTH/TYPE SEAL:	NA										

# **APPENDIX D: EXCAVATION WORK PLAN**

# EXCAVATION WORK PLAN

**Rockfarmer 37<sup>th</sup> Avenue**  
82-13 37<sup>th</sup> Avenue  
Jackson Heights, Queens County, New York 11372  
Block 1456, Lots 35 & 41  
NYSDEC Site No. C241212

**AUGUST 2022**

**PREPARED FOR:**

37<sup>th</sup> Avenue Owner LLC; Horizon 37<sup>th</sup> Ave, LLC; and RFC Ketcham 37<sup>th</sup> Ave, LLC  
42-01 235<sup>th</sup> Street  
Douglaston, New York 11363

**PREPARED BY:**

Vertex Engineering, PC  
147 West 35<sup>th</sup> Street, 19<sup>th</sup> Floor  
New York, New York 10001  
**PHONE** 646.553.3500

**VERTEX PROJECT NO:** 48122

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## EXCAVATION WORK PLAN (EWP)

### 1.0 NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination or breach or alter the Site’s cover system, the Site owner or their representative will notify the NYSDEC contact listed in the table below. **Table 1** includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information. A full listing of Site-related contact information is provided in **Appendix A**.

**Table 1 – Notifications <sup>(1)</sup>**

NAME	CONTACT
NYSDEC Project Manager: Sadique Ahmed, P.E.	(518) 402-9656 / sadique.ahmed@dec.ny.gov
NYSDEC Section Chief: William Bennett	(518) 402-9659 / william.bennett@dec.ny.gov

(1) Note: Notifications are subject to change and will be updated as necessary.

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent of excavation, plans/drawings for Site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated, any modifications of truck routes, and any work that may impact an engineering control.
- A summary of environmental conditions anticipated to be encountered in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling.
- A schedule for the work, detailing the start and completion of all intrusive work.

- A summary of the applicable components of this Excavation Work Plan (EWP).
- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120.
- A copy of the contractor's health and safety plan (HASP), in electronic format, if it differs from the HASP provided in **Appendix E** of the Site Management Plan (SMP).
- Identification of disposal facilities for potential waste streams; and
- Identification of sources of any anticipated backfill, along with the required request to import form and all supporting documentation including, but not limited to, chemical testing results.

The NYSDEC project manager will review the notification and may impose additional requirements for the excavation that are not listed in this EWP.

## **2.0 SOIL SCREENING METHODS**

Visual, olfactory, and instrument-based (e.g., photoionization detector (PID)) soil screening will be performed during all excavations into known or potentially contaminated material (remaining contamination) or a breach of the cover system. A qualified environmental professional as defined in 6 NYCRR Part 375, a PE who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State will perform the screening. Soil screening will be performed when invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the Certificate of Completion (COC).

Visual Inspection – Soils will be visually inspected for evidence of potential impacts, including staining and/or discoloration.



Instrument Screening – Soils will be screened in the field for the presence of total organic vapors using a photoionization detector (PID) calibrated to 100 parts per million (ppm) by volume isobutylene.

Olfactory Evaluation – Soils will be evaluated for unusual odors.

Soils will be segregated based on previous environmental data and screening results into material that requires off-site disposal and material that requires testing to determine if the material can be reused on-Site as soil beneath a cover or if the material can be used as cover soil. Further discussion of off-site disposal of materials and on-Site reuse is provided in Section D5 of this Appendix.

### **3.0 SOIL STAGING METHODS**

If soil stockpiles are created during Site construction activities, they will be managed in accordance with appropriate erosion and sediment control measures and located within the boundaries of the Site. Erosion control measures may include:

- Cover stockpiles with polyethylene sheeting.
- Install hay bales or silt fencing to prevent runoff.
- Maintain stockpiles away from storm drains and surface water drainage courses; and
- Maintain stockpiles of manageable size.

Contaminated stockpiles that will be sent off-Site as waste will be placed on a 6-mil (minimum) polyethylene substrate and covered with polyethylene and shall be surrounded by silt fences with booms and/or hay bales where necessary to prevent erosion or run-off migration during precipitation events.

Soil stockpiles will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters, and other discharge points.

Stockpiles will be kept covered at all times with appropriate anchored tarps. Stockpiles will be routinely inspected, and damaged tarp covers will be promptly replaced.

Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by the NYSDEC.

#### **4.0 MATERIALS EXCAVATION AND LOAD-OUT**

A qualified environmental professional as defined in 6 NYCRR Part 375, a PE who is licensed and registered in New York State, or a qualified person who directly reported to a PE who is licensed and registered in New York State will oversee all invasive work and the excavation and load-out of all excavated material.

The owner of the property and remedial party (if applicable) and its contractors are responsible for safe execution of all invasive and other work performed under this Plan.

The presence of utilities and easements on the Site will be investigated by the qualified environmental professional. It will be determined whether a risk of impediment to the planned work under this SMP is posed by utilities or easements at the Site. A Site utility stakeout will be completed for all utilities prior to any ground intrusive activities at the Site.

Loaded vehicles leaving the Site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and New York State Department of Transportation (NYSDOT) requirements (and all other applicable transportation requirements).

A truck wash will be operated on-Site, as appropriate. The qualified environmental professional will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the Site until the activities performed under this section are complete. Truck wash waters will be collected and disposed of off-Site in an appropriate manner.

Locations where vehicles enter or exit the Site shall be inspected daily for evidence of off-Site soil tracking.

The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the Site are clean of direct and other materials derived from the Site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials. Material accumulated from the street cleaning and egress cleaning activities will be disposed off-Site at a permitted landfill facility in accordance with all applicable local, State, and Federal regulations.

## **5.0 MATERIALS TRANSPORT OFF-SITE**

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Materials transported by trucks exiting the Site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

Truck transport routes are as follows: From 37<sup>th</sup> Avenue, trucks will make a left onto 82<sup>nd</sup> Street and travel one block to Roosevelt Avenue. Trucks will then make a left onto Roosevelt Avenue and travel west to the Brooklyn-Queens Expressway. The truck route is depicted on **Figure 1**.

All trucks loaded with Site materials will exit the vicinity of the Site using only these approved truck routes. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off-Site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport.

Trucks will be prohibited from stopping and idling in the neighborhood outside the project Site.

Egress points for truck and equipment transport from the Site will be kept clean of dirt and other materials during site remediation and development.

Queuing of trucks will be performed on-Site in order to minimize off-Site disturbance. Off-Site queuing will be prohibited.

## **6.0 MATERIALS DISPOSAL OFF-SITE**

All material excavated and removed from the Site will be treated as contaminated and regulated material and will be transported and disposed off-Site in a permitted facility in accordance with all local, State, and Federal regulations. If disposal of material from this Site is proposed for unregulated off-Site disposal (i.e., clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC project manager. Unregulated off-Site management of materials from the Site will not occur without formal NYSDEC project manager approval.

Off-Site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, (e.g., hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C&D debris recovery facility). Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report (PRR). This documentation will include, but is not limited to, waste profiles, test results, facility acceptance letters, manifests, bills of lading, and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-Site will be handled consistent with 6 NYCRR Parts 360, 361, 362, 363, 364, and 365. Material that does not meet Unrestricted Soil Cleanup Objectives (SCOs) is prohibited from being taken to a New York State C&D debris recovery facility (6 NYCRR Subpart 360-15 registered or permitted facility).

## **7.0 MATERIALS REUSE ON-SITE**

The qualified environmental professional as defined in 6 NYCRR Part 375 will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material (i.e., contaminated) does not remain on-Site. Contaminated on-Site material, including historic fill and contaminated soil, that is acceptable for reuse on-Site will be placed below the demarcation layer of impervious surface, and will not be reused within a cover soil payer, within landscaped berms, or as backfill for subsurface utility lines.

Proposed materials for reuse on-Site must be sampled for full suite analytical parameters included per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane. The sampling frequency will be in accordance with DER-10 Table 5.4(e)10 unless prior approved is obtained from the NYSDEC project manager for modification of the sampling frequency.

Soil Quantity (cubic yards)	Contaminant and Sample Type		
	VOCs	SVOCs, Inorganics, PCB/Pesticides	
	Discrete Samples	Composite	Discrete Samples/Composite
0 - 50	1	1	3 – 5 discrete samples from different locations will comprise a composite sample for analysis
50 - 100	2	1	
100 – 200	3	1	
200 – 300	4	1	
300 – 400	4	2	
400 – 500	5	2	
500 - 800	6	2	
800 – 1,000	7	2	
> 1,000	Add an additional 2 VOC and 1 composite sample for each additional 1,000 cubic yards		

The analytical results of soil/fill material testing must meet the Site use criteria presented in NYSDEC DER-10 Appendix 5 – Allowable Constituent Levels for Imported Fill or Soil for all constituents listed, and the NYSDEC Sampling, Analysis, and Assessment for Per- and Polyfluoroalkyl Substances (June 2021) guidance values. Approvals for modifications to the analytical parameters must be obtained from the NYSDEC project manager prior to the sampling event.

Soil/fill material for reuse on-Site will be segregated and stated as described in Sections D-2 and D-3 of this EWP. The anticipated size and location of stockpiles will be provided in the 15-day notification to the NYSDEC project manager. Stockpile locations will be based on the location of Site excavation activities and proximity to nearby Site features. Material reuse on-Site will comply with requirements of NYSDEC DER-10 Section 5.4(e)4. Any modifications to the requirements of DER-10 Section 5.4(e)4 must be approved by the NYSDEC project manager.

Any demolition material proposed for reuse on-Site will be sampled for asbestos and the results will be reported to the NSYDEC for acceptance. Concrete crushing or processing on-Site will not

be performed without prior NYSDEC approval. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the Site will not be reused on-Site.

## **8.0 FLUIDS MANAGEMENT**

All liquids to be removed from the Site, including but not limited to, excavation dewatering, decontamination water, and groundwater monitoring well purge and development waters, will be handled, transported, and disposed off-Site at a permitted facility in accordance with applicable local, State, and Federal regulations. Dewatering, purge, and development fluids will not be recharged back to the land surface or subsurface of the Site, and will be managed off-Site, unless prior approval is obtained from NYSDEC.

Discharge of water generated during large-scale construction activities to surface waters (i.e., a local pond, stream, or river) will be performed under a State Pollutant Discharge Elimination System (SPDES) permit.

## **9.0 COVER SYSTEM RESTORATION**

After the completion of soil removal and any other invasive activities, the cover system will be restored. The existing cover system is comprised of concrete and brick-covered sidewalks and concrete building slab. If the type of cover system changes from that which exists prior to the excavation (i.e., soil cover is replaced by asphalt), this will constitute a modification of the cover element of the remedy and the upper surface of the remaining contamination. A figure showing the modified surface will be included in the subsequent PRR and in an updated SMP.

## **10.0 BACKFILL FROM OFF-SITE SOURCES**

All materials proposed for import onto the Site will be approved by the qualified environmental professional as defined in 6 NYCRR Part 375 and will be in compliance with provisions in this SMP

prior to receipt at the Site. A Request to Import/Reuse Fill or Soil form, which can be found at <http://www.dec.ny.gov/regulations/67386.html> will be prepared and submitted to the NYSDEC project manager allowing a minimum of 5 business days for review. A copy of the form is presented in **Appendix B**.

Materials from industrial sites, spill sites, or other environment remediation sites, or potentially contaminated sites will not be imported to the Site.

All imported soils will meet the backfill and cover soil quality standards established in 6 NYCRR 375-6.7(d) and DER-10 Appendix 5 for commercial use.

Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards the lower of the Part 375 Protection of Groundwater and Restricted-Residential Use soil cleanup objectives (SCOs). Soils that meet “general” fill requirements under 6 NYCRR Part 360.13, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by NYSDEC project manager. Soil material will be sampled for the full suite of analytical parameters, including PFAS and 1,4-dioxane. Solid waste will not be imported onto the Site.

Trucks entering the Site with imported soils will be securely covered with tight fitting covers. Imported soil will be stockpiled separately from excavated materials and covered to prevent dust releases.

## **11.0 STORMWATER POLLUTION PREVENTION**

The total area of the Site is 0.46 acres; therefore, no excavation at the Site will exceed one acre. Therefore, a stormwater pollution prevent plan will not be required. However, soil erosion and sediment control measures will be implemented in accordance with the New York Standards and



Specifications for Erosion and Sediment Control (November 2016), including, but not limited to the following:

Barriers and hay bales will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by the NYSDEC.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.

All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.

Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.

Silt fencing or hay bales will be installed around the entire perimeter of the construction area.

## **12.0 EXCAVATION CONTINGENCY PLAN**

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition. The NYSDEC project manager will be promptly notified of the discovery.

Sampling will be performed on product, sediment, and surrounding soils, etc. as necessary to determine the nature of the material and property disposal method. Chemical analysis will be performed for a full list of analytes (target analyte list (TAL) metals, target compound list (TCL) volatile and semi-volatiles (including 1,4-dioxane), TCL pesticides and polychlorinated biphenyls (PCBS) and PFAS), unless the Site history and previous sampling results provide sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be property to the NYSDEC project manager for approval prior to sampling. Any tanks will be closed as per NYSDEC regulations and guidance.

Identification of unknown or unexpected contaminated media identified by screening during invasive Site work will be promptly communicated by phone within two hours to NYSDEC's project manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the PRR.

### **13.0 COMMUNITY AIR MONITORING PLAN**

The Community Air Monitoring Plan (CAMP) has been developed to provide specific procedures for monitoring, documenting, and responding to potential airborne contaminants at the Site. The CAMP was prepared in accordance with Appendix 1A – New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan and Appendix 1B – Fugitive Dust and Particulate Monitoring in the New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation (DER)-10 Technical Guidance for Site Investigation and Remediation, May 3, 2010.

### **13.1 Monitoring Requirements**

The air monitoring program will be implemented during all ground intrusive activities to mitigate exposure of field staff and the public. The air monitoring findings will be used to determine appropriate response actions.

Real-time air monitoring for VOCs and particulate levels at the perimeter of the work area would be performed. Continuous monitoring would be performed for all ground intrusive activities and during the handling of contaminated or potentially contaminated media.

### **13.2 Meteorological Data**

Meteorological data will be measured at the start of each workday and periodically thereafter to establish background conditions. The meteorological data to be recorded includes wind speed, wind direction, temperature, barometric pressure, and relative humidity. The wind direction data will be used to determine the position of the air monitoring equipment in appropriate upwind and downwind locations. A wireless instrument station or equivalent will be used to measure and record the meteorological data.

### **13.3 VOC Monitoring, Response Levels, and Actions**

VOCs will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis during invasive work. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work will be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment will be calibrated at least weekly for the contaminant(s) of concern or for an appropriate surrogate. The equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown.

All readings will be recorded and made available for NYSDEC and NYSDOH project managers. Exceedances of action levels will be reported to NYSDEC and NYSDOH project managers.

#### **13.4 Particulate Monitoring, Response Levels, and Actions**

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the fence line at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter ( $\text{mcg}/\text{m}^3$ ) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed  $150 \text{ mcg}/\text{m}^3$  above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than  $150 \text{ mcg}/\text{m}^3$  above the upwind level, work will be stopped, and a re-evaluation of activities initiated. Work will resume if dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within  $150 \text{ mcg}/\text{m}^3$  of the upwind level and in preventing visible dust migration.

All readings will be recorded and made available for NYSDEC and NYSDOH project managers. Exceedances of action levels will be reported to NYSDEC and NYSDOH project managers.

The monitoring locations will be adjusted on a daily or more frequency basis based on actual wind directions to provide an upwind and at least two downwind monitoring stations.

Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH project managers.

#### **14.0 ODOR CONTROL PLAN**

This odor control plan is capable of controlling emissions of nuisance odors off-Site and on-Site. Use of specific odor control methods on a routine basis is not anticipated to be necessary. If nuisance odors are identified at the Site boundary, or if odor complaints are received, work will be halted, and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the

halt of work, is the responsibility of the remedial party's Remediation Engineer, and any measures that are implemented will be discussed in the PRR.

All necessary means will be employed to prevent on- and off-Site nuisances. At a minimum, these measures will include: (a) limiting the area of open excavations and size of soil stockpiles; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-Site disposal; (e) use of chemical odorants in spray or misting systems; and (f) use of staff to monitor odors in surrounding neighborhoods.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-Site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

## **15.0 DUST CONTROL PLAN**

Particulate monitoring must be conducted according to the CAMP provided in Section D-13. If particulate levels at the Site exceed the thresholds listed in the CAMP or if airborne dust is observed on the Site or leaving the Site, the dust suppression techniques listed below will be employed. The remedial party will also take measures listed below to prevent dust production in the Site.




A dust suppression plan that addresses dust management during invasive on-Site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved using a dedicated on-Site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface; and
- On-Site roads will be limited in total area to minimize the area required for water truck sprinkling.

## **16.0 OTHER NUISANCES**

A plan for rodent control will be developed and utilized by the contractor prior to and during site clearing and site grubbing, and during all remedial work.

A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.

-  LOCAL TRUCK ROUTE
-  THROUGH TRUCK ROUTE
-  TRUCK ROUTE TO/FROM SITE

Source: SPEED Mapping Program



VERTEX ENGINEERING, PC  
147 West 35th Street, 19th Floor  
New York, New York

## TRUCK ROUTES MAP

82-13 37th Avenue  
Jackson Heights, New York

FIGURE NO. 1

VERTEX Project Number  
48122



**APPENDIX A  
LIST OF SITE CONTACTS**

<b>TITLE</b>	<b>NAME</b>	<b>CONTACT</b>
Site Owner and Remedial Party	John Petras 37th Owner LLC; Horizon 37th Ave, LLC; and RFC Ketcham 37th Ave, LLC	(718) 229-4488 <a href="mailto:jpetras@rockfarmerproperties.com">jpetras@rockfarmerproperties.com</a>
Qualified Environmental Professional	Timothy Biercz The Vertex Companies, Inc.	(908) 333-4317 <a href="mailto:tbiercz@vertexeng.com">tbiercz@vertexeng.com</a>
Remedial Engineer	Richard Tobia, P.E. Vertex Engineering, PC	(908) 458-9604 <a href="mailto:rtobia@vertexeng.com">rtobia@vertexeng.com</a>
NYSDEC Project Manager	Sadique Ahmed, P.E.	(518) 402-9656 <a href="mailto:sadique.ahmed@dec.ny.gov">sadique.ahmed@dec.ny.gov</a>
NYSDEC Project Manager Supervisor	William Bennett	(518) 402-9659 <a href="mailto:william.bennett@dec.ny.gov">william.bennett@dec.ny.gov</a>
NYSDEC Site Control Section Chief	Kelly Lewandowski	(518) 402-9569 <a href="mailto:kelly.lewandowski@dec.ny.gov">kelly.lewandowski@dec.ny.gov</a>
NYSDOH Project Manager	Kristen Kulow	(607) 353-4335 <a href="mailto:kristin.kulow@health.ny.gov">kristin.kulow@health.ny.gov</a>
Remedial Party Attorney	Scott Furman Sive, Paget & Riesel P.C.	(212) 421-2150 <a href="mailto:sfurman@sprlaw.com">sfurman@sprlaw.com</a>



**NEW YORK STATE  
DEPARTMENT OF ENVIRONMENTAL CONSERVATION**



**Request to Import/Reuse Fill or Soil**

\*This form is based on the information required by DER-10, Section 5.4(e). Use of this form is not a substitute for reading the applicable Technical Guidance document.\*

**SECTION 1 – SITE BACKGROUND**

The allowable site use is:

Have Ecological Resources been identified?

Is this soil originating from the site?

How many cubic yards of soil will be imported/reused?

If greater than 1000 cubic yards will be imported, enter volume to be imported:

**SECTION 2 – MATERIAL OTHER THAN SOIL**

Is the material to be imported gravel, rock or stone?

Does it contain less than 10%, by weight, material that would pass a size 80 sieve?

Is this virgin material from a permitted mine or quarry?

Is this material recycled concrete or brick from a DEC registered processing facility?

**SECTION 3 - SAMPLING**

Provide a brief description of the number and type of samples collected in the space below:

-----  
*Example Text: 5 discrete samples were collected and analyzed for VOCs. 2 composite samples were collected and analyzed for SVOCs, Inorganics & PCBs/Pesticides.*

*If the material meets requirements of DER-10 section 5.4(e)5 (other material), no chemical testing needed.*

### SECTION 3 CONT'D - SAMPLING

Provide a brief written summary of the sampling results or attach evaluation tables (compare to DER-10, Appendix 5):

---

*Example Text: Arsenic was detected up to 17 ppm in 1 (of 5) samples; the allowable level is 16 ppm.*

*If Ecological Resources have been identified use the "If Ecological Resources are Present" column in Appendix 5.*

### SECTION 4 – SOURCE OF FILL

Name of person providing fill and relationship to the source:

Location where fill was obtained:

Identification of any state or local approvals as a fill source:

If no approvals are available, provide a brief history of the use of the property that is the fill source:

Provide a list of supporting documentation included with this request:

The information provided on this form is accurate and complete.

---

Signature

---

Date

---

Print Name

---

Firm

# **APPENDIX E: CONSTRUCTION HEALTH & SAFETY PLAN**

**Rockfarmer 37<sup>th</sup> Avenue**

82-13 37<sup>th</sup> Avenue  
Jackson Heights, Queens County, New York 11372  
Block 1456, Lots 35 & 41  
NYSDEC Site No. C241212

---

## HEALTH AND SAFETY PLAN (HASP)

**PREPARED FOR:**

37<sup>th</sup> Avenue Owner LLC; Horizon 37<sup>th</sup> Ave, LLC; and RFC  
Ketcham 37<sup>th</sup> Ave, LLC  
42-01 235<sup>th</sup> Street  
Douglaston, New York 11363

**PREPARED BY:**

Vertex Engineering, PC  
147 West 35<sup>th</sup> Street, 19<sup>th</sup> Floor  
New York, New York 10001  
**PHONE 646.553.3500**

**VERTEX PROJECT NO: 48122**



Prepared by: Blair Gomes      Signature: *Blair Gomes*      Date: 2/1/2022

Project  
Manager: Timothy Biercz      Signature: *T.Biercz*      Date: 2/1/2022

HandS Team  
Member: Richard J. Tobia      Signature: *R. Tobia*      Date: 2/1/2022

### CHASP Limitations and Acknowledgement

This Health and Safety Plan (HASP) addresses those activities and site procedures to be followed by VERTEX personnel during work performed at this site(s). *This CHASP is designed to comply with OSHA standards, such as HAZWOPER, 29 CFR 1910.120, and VERTEX Companies Safety Policies, so compliance with this CHASP is required by VERTEX personnel.* The content of this HASP may change or undergo revision based upon additional information made available to VERTEX. Changes proposed must be approved by VERTEX’s Hands Team and the Project Manager.

The information in this HASP supplements the health and safety training that each VERTEX employee receives. It is not possible to discover, evaluate, and provide protection for all possible hazards, which may be encountered. This plan is written for the specific-site conditions, purposes, dates, and personnel specified, and must be amended if these conditions change.

Compliance with this HASP is required by persons who enter the site.

#### VERTEX Colleagues

Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_



**Contractors, Owner, and Others**

Contractors must review this HASP but must prepare their own site-specific HASP based upon their company health and safety program, and the risks and precautions of their work on the site. The contractor HASP will be at a minimum consistent with the provisions of this HASP.

This HASP is not intended to satisfy the requirement for the owner or designated contractor to prepare their own site-specific HASPs. This HASP does not relieve the owner, contractor, or their designated representatives of their responsibility to comply with all federal, state and local laws, regulations and ordinances governing worker health and safety.

VERTEX expressly disclaims any and all guarantees or warranties, expressed or implied that this plan will meet the specific needs or requirements of any contractor or its employees. VERTEX, therefore, cannot and does not assume any liability by the use or reuse of this plan by any client, contractor or their employees or agents. Any reliance on this plan or the information herein will be at the sole risk and liability of such party.

Name: \_\_\_\_\_ Employer: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name: \_\_\_\_\_ Employer: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name: \_\_\_\_\_ Employer: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name: \_\_\_\_\_ Employer: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name: \_\_\_\_\_ Employer: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name: \_\_\_\_\_ Employer: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name: \_\_\_\_\_ Employer: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

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Daily Safety Log Forms

Near Miss Form

Incident Investigation Form

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Hospital Map and Directions

## HEALTH AND SAFETY PLAN (HASP)

Rockfarmer 37<sup>th</sup> Avenue  
82-13 37<sup>th</sup> Avenue  
Jackson Heights, Queens County, New York  
VERTEX Project No. 48122

### 1.0 CONTACT INFORMATION

EMERGENCY PHONE NUMBERS	
Ambulance, Police, and Fire	911, in case of emergency.
Poison Control Center	1-800-222-1222
Chemtrec	1-800-424-9300
National Response Center	1-800-424-8802
Utility Clearance (National)/Local Phone #	811
Local Fire Department	718-999-2000
Local Police Department	718-794-2300
Water/Sewer Department	718-643-3063
Electrical Company	1-800-752-6633
Gas Company	1-800-752-6633
WorkCare Injury Intervention	1-888-449-7787

HOSPITAL INFORMATION	
Elmhurst Hospital	718-334-4000 79-01 Broadway Queens, New York 11373

\*\*\*A HOSPITAL MAP AND DIRECTIONS ARE ATTACHED\*\*\*

PERTINENT SITE CONTACT INFORMATION	
SITE CONTACT	Mr. Steve Boudourakis RockFarmer Properties 718-229-4488 x2000 sboudourakis@rockfarmerproperties.com
Site Health & Safety Officer (Primary)	Timothy Biercz VERTEX Branchburg, NJ Office 3322 Route 22W., STE. 907 Branchburg, NJ 08876 908-448-2627



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PERTINENT SITE CONTACT INFORMATION	
Site Health & Safety Officer (Alternate)	Richard Tobia VERTEX Branchburg, NJ Office 3322 Route 22W., STE. 907 Branchburg, NJ 08876 908-458-9604
Health and Safety (HANDS) Phone Number	339-499-4995
HandS Team Member working on this HASP:	Richard Tobia 908-458-9604

### 1.1 Project Communication Hierarchy

Timothy Biercz  
Regional Service Area Lead, VERTEX  
Office: 908-333-4317  
Cell: 732-690-3083

Richard J. Tobia, P.E.  
Technical Director, VERTEX  
Office: 908-458-9604  
Cell: 908-500-2369

Steve Boudourakis  
Rockfarmer Properties  
Office: 718-229-4488 x 2000  
Cell: 646-236-1000

Nick Sellas  
Rockfarmer Properties  
Cell: 347-204-1241



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## 2.0 SITE DESCRIPTION AND RELEVANT INFORMATION

The Site is located at 82-13 37<sup>th</sup> Avenue in the Jackson Heights section of Queens, New York, and is identified as Block 1456, Lots 35 and 41 on the New York City Tax Map. According to the New York City Department of buildings (NYCDOB), the Site is identified with the following addresses: 82-01 to 82-09 37<sup>th</sup> Avenue, 82-11 to 82-21 37<sup>th</sup> Avenue, 35-57 to 35-65 82<sup>nd</sup> Street, and 35-64 83<sup>rd</sup> Street. The Site is 20,000-square feet (0.46 acres) and is bounded to the north by residential buildings, to the south by 37<sup>th</sup> Avenue followed by commercial and retail buildings, to the east by 83<sup>rd</sup> Street followed by ground-floor commercial/residential and residential building, and to the west by 82<sup>nd</sup> Street followed by commercial and residential buildings. Currently, the Site is improved with an approximately 108,000-square foot (above-grade), nine-story commercial office building, with ground-floor retail (Rite Aid, nail salon, and vacant space) and a two-level parking garage. The Site building is improved with a basement, which is occupied by office space, utilities, and storage space.

### 2.1 Relevant Information

Based on a review of city directories identified Star Cleaning & Dyeing Co. at 82-05 37<sup>th</sup> Avenue in 1939 and Columbia Cleaners at 82-13 37<sup>th</sup> Avenue for the years 1939 to 1970. In addition, Cecil Cleaners was identified at 35-62 83<sup>rd</sup> Street from 1986 to 1994. A 1,500-gallon heating oil underground storage tank (UST) was registered for the site address of 82-11 37<sup>th</sup> Avenue. The UST (Tank No. 001) is identified as “closed-removed” under Permit No. 2-207845.

## 2.2 Scope of Work

Activity that is anticipated to encounter remaining contamination or breach or alter the Site's cover system (covered under the Excavation Work Plan) could include the following tasks:

By Others:

- Demolition of existing structures and paved surfaces.
- Grading, excavation, and disposal of soil off-site.
- Installation or repair of subsurface utilities.
- Dewatering excavations.

By VERTEX:

- Soil management oversight (visual, olfactory, and instrument-based field screening)
- Soil sampling.
- Soil vapor sampling.
- Air monitoring.
- Groundwater sampling.
- Monitoring well installation.
- Drilling.

### **3.0 HAZARD ANALYSIS**

This section presents an assessment of the hazards that may be encountered during the tasks specified under this HASP (Section 2.2).

#### **3.1 Chemical Hazards Previously Identified**

The primary contaminants of concern (COCs) at the Site are chlorinated volatile organic compounds (CVOCs) that were identified in the groundwater and sub-slab soil vapor.

No significant CVOC soil source was detected on-site or within the immediate area of the Site building footprint and no known CVOC soil source remains. No evidence of a chlorinated solvent release to soil (elevated PID readings, odors, or staining) was identified in any of the soil borings installed below the footprint of the Site building or along the adjoining sidewalks.

Groundwater flow direction was documented at the Site to be northwest (March and June 2019) and southwest (April 2020), and groundwater is encountered at approximately 29.5 to 32.8 feet bgs on the exterior of the Site building and approximately 21 feet below the basement slab of the Site building. CVOC impacts in groundwater were identified in the up-gradient monitoring wells on the Site and up-gradient off-site wells. Review of the groundwater data for the down-gradient monitoring wells identified no CVOC concentrations exceeding the AWQS or Class GA standard. The groundwater impacts are delineated in the down-gradient direction and extend from up-gradient of the Site building to beneath the footprint of the Site building.

The highest sub-slab soil vapor detections were identified in the southern and eastern portions of the Site, and there is a potential for off-site soil vapor intrusion impacts.



Likely routes of exposure during intrusive activities include inhalation of volatile or semi-volatile compounds, inhalation of particulate-laden air, dermal and eye contact with contaminants, and accidental ingestion of contaminants.

### **3.2 Physical & Biological Hazards**

The following physical and biological job site hazards were identified:

- Heat Stress
- Cold Stress
- COVID-19
- Slips, Trips, and Falls
- Vehicles
- Construction Ladders
- Demolition/Excavation Hazards

### **3.3 Ladders**

We can minimize risk when using a ladder by:

- Using a VERTEX-owned ladder.
- Thoroughly inspecting the ladder before each use.
- Ascending and descending the ladder with three contact points
- Using ladders of the appropriate height, materials, and construction for the work being performed
- Securing the ladder, and where applicable maintaining appropriate ladder angle prior to ascension
- Never move a ladder while occupied
- Using a hoist to bring tools and materials to the work area

#### 4.0 WORK ZONES

Work zones in an environmental remediation project typically include three specific areas:

1. The Support Zone
2. The Decontamination Zone
3. The Exclusion Zone

Specific decontamination zones are not required based on previous sampling and are not included in this HASP. General decontamination practices are detailed in a following section.

The following tables provide general guidelines for the establishment of work zones. The work area will be cordoned off with caution tape or using other similar measures. The information provided should be adjusted if warranted by field observations, such as traffic, and measurements, laboratory analytical results, or at the request of the HandS Team.

ACTIVITY	GENERAL WORK ZONE RADIUS (FEET)	WORK ZONE EVALUATION
Soil/Sediment Sampling	5	The site supervisor may modify the work zone radius based upon field conditions (examples below): Physical barriers or walls that may reduce the work zone to the barrier or wall.  High traffic area may increase the work zone to allow for worker safety.
Direct Push (Drilling)	15	The site supervisor may modify this radius based upon the specific equipment being use. Generally, height of equipment plus 5 feet.
Overhead Power Lines	10	Assumes < 50 kV. Additional 4-inches per 50 kV.
Working around Heavy Equipment	20	The turn radius may necessitate more space. Speak with the operator of the equipment to obtain the safe distance. Cones and danger tape may be needed.

## **5.0 CLEANLINESS AND HYGIENE**

### **5.1 Housekeeping**

Proper housekeeping is the foundation for a safe work environment. It prevents incidents and fires, as well as creating a businesslike work area. Materials will be stored in a stable manner so that it will not be subject to falling. Rubbish, scraps, and debris will be removed from the work area on a daily basis to job-site dumpster or truck as required. Materials and supplies will not be left in stairways, walkways, near floor openings or at the edge of the building when exterior walls are not built.

### **5.2 Hygiene Facilities**

Hygiene facilities include washing and toilet facilities. The hygiene facilities for this project will be located within the on-site building, in the central portion of the site, and will consist of a permanent restroom.

## 6.0 AIR MONITORING AND ACTION LEVELS

Air monitoring is required whenever we anticipate exposure to airborne chemicals or dust. The purpose of air monitoring is to keep track of the concentration of the contaminants of concern (COC) and minimize the exposure to VERTEX colleagues, workers, and the general public. The following table presents the air monitoring methods, exposure guidelines and action levels.

Contact the HandS Team to establish the values that are appropriate for the purpose and for the COCs. If you have questions or surpass an action level in the field, contact the HandS Team for guidance.

MONITORING PROTOCOLS AND ACTION LIMITS FOR PETROLEUM VOCs		
RANGE	PPE	ACTION
Background to 5 ppmv	LEVEL D	Continue air monitoring
Above 5 ppmv	LEVEL D	Pause work and contact the Project Manager and the HandS Team for guidance.

## 6.1 Exposure Guidelines

AIRBORNE CONTAMINANT MONITORING VERTEX Responses Based on Level D PPE				
Parameter	Contaminant Measurements	VERTEX Response	Comments	Frequency of Measurement
VOCs – normal concentration: 0 - 5 ppm Depending on the concentration you may sense an oily odor	< 5 ppm	Continue working	VOCs are group of compounds with various PELs. Benzene and vinyl chloride have low PEL, each is 1 ppm. A PID is usually used to measure VOCs. The lamp selected, usually either 10.6 or 11.7eV must be appropriate for the contaminants of concern. If the work is intended to be completed only in Level D PPE, then work should stop at 5 ppm. A decision would be made at that point about whether to use a Draeger Tube to test for benzene, or to wear a respirator.	VOCs will be continuously logged in the datalogger.
	5 – 10 ppm	<b>Temporarily stop work and contact the CIH</b>		
	1-5 mg/m <sup>3</sup>	<b>Temporarily stop work and contact the CIH</b>		
	> 5 mg/m <sup>3</sup>	<b>Stop work, respiratory protection will be required</b>		
Dust – nuisance dust, not otherwise specified. Normal value is < 1mg/m <sup>3</sup> No odor.	< 1 mg/m <sup>3</sup>	Continue working	This dust is considered simple nuisance dust, not flammable or otherwise contaminated by any compound that might cling to the dust particles.	Dust concentrations will be continuously logged in the datalogger.
	1-5 mg/m <sup>3</sup>	<b>Temporarily stop work and contact the CIH</b>		
	> 5 mg/m <sup>3</sup>	<b>Stop work, respiratory protection will be required</b>		

## 7.0 DECONTAMINATION

Our goal is always to keep contaminated material where it belongs, either on a project site or in an appropriate waste disposal process. We should avoid taking contaminated materials with us on our clothes or the bottoms of our work boots, into our vehicles or to our homes. This practice applies to staff who may encounter hazardous materials/waste or other materials such as oil and gasoline contaminated soils that may not be called hazardous waste, and it is also reasonable to manage nuisance dirt from sites in a responsible manner.

VERTEX supports proper project planning and execution to minimize risks. This requires:

- Planning before going to the site:
- Responsible actions at the site:
- After you leave the site:

It is critical that decontamination takes place prior to break periods and at the end of the day to reduce the chances of ingesting contaminants or carrying them off the site. The following procedures will be followed on the site:

- Proper disposal of all single use PPE and material.
- Washing of hands and face as soon as possible before leaving the site and before eating.
- Decontamination of boots, hardhats, and other durable/reusable field equipment.
- Decontamination of heavy equipment prior to being relocated to a clean area or leaving the site.
- At the end of each field workday, field equipment such as notebooks, pens, PPE, phones etc. should be sanitized (e.g., Lysol wipes) to prevent contamination into the vehicle, including potential contamination from COVID-19.

## **8.0 TRAINING AND MEDICAL SURVEILLANCE**

### **8.1 Training**

Colleagues and workers assigned to a VERTEX project must have proper training and experience to enable our project to be performed successfully. At a minimum, completion of the OSHA 10-Hour Construction Safety training session and 40-Hour HAZWOPER in accordance with OSHA standard, 29 CFR 1910.120 required for all VERTEX colleagues. In addition, all field personnel assigned to the project will have completed training that will specifically address the activities, monitoring, and equipment used in the site operations.

### **8.2 Medical Surveillance**

VERTEX field staff who are exposed to chemicals will participate in VERTEX's Medical Surveillance Program. Our program is administered by our Human Resources Department. The examination is responsive to many chemicals, but not all chemicals, so prior to a project, the Project Manager should check with Human Resources or the HandS Team, especially if unusual chemicals or elements are involved in the scope of work. VERTEX colleagues can verify the content of their exams by contacting Human Resources. The colleague must successfully pass the physical examination prior to field work on the project.

## 9.0 SAFETY MEETINGS

Safety meetings are vital to set the tone for safe work performance at the beginning of a project and each day. These meetings should be attended by all project participants, that is, VERTEX colleagues, contractors, and client staff if they are on-site. Several types of meetings may take place during a project:

- Kick-off meeting. This meeting begins a project and may take place at the field site or in an office or trailer. The scope of work should be reiterated, along with the hazards and precautions. This meeting is important to setting the tone and expectations for performance.
- Daily tailgate safety meeting. Held at the beginning of each shift, this meeting reiterates the scope of work planned during the shift, the hazards, and precautions. Ideally, a different person, including contractor workers, would lead the meeting each day of a project to engage everyone and make each meeting fresh.
- Post project meeting. Although this meeting does not always take place, it is a good idea to wrap up a project and share what went well and what should be improved the next time the project team is together or share lessons to take to the next project regardless of the team.
- Root cause analysis meeting is held following an incident or near miss to understand the root cause of what went wrong or almost went wrong (near miss) to reduce the chance of recurrence and to share lessons learned. These discussions are an essential part of any people-based safety program.



## 10.0 EMERGENCY RESPONSE PLAN

Incidents and near misses, no matter how minor, must be reported immediately to the Project Safety Supervisor or VERTEX HandS Team! The VERTEX Safety Hotline is 339.499.4995. Other information is included in the Contact Information chart at the beginning of this HASP. Directions to the nearest hospital are attached at the end of the HASP so that they can be posted in an accessible location.

### 10.1 Emergency Incident

The nature of our work makes emergencies on site a continual possibility. Although emergencies are unlikely and occur infrequently, a contingency plan is required to assure timely and appropriate response actions. The contingency plan is reviewed at the tailgate safety meetings. Discuss client Emergency Response Plans with all project participants so that everyone knows their part and expectations.

**Upon Incident, Near Miss, Physical Reaction or Excessive Exposure:** Leave area immediately and seek appropriate medical assistance. This may include, but not be limited to, any of the following physiological reactions:

- Dizziness
- Nausea
- Rash
- Asthmatic Reaction
- Abdominal Pain
- Distorted Vision of Hearing
- Excessive Coughing
- Edema or Localized Swelling
- Headaches

- Exposure to High/Cold Temperatures

## **10.2 Upon Emergency Incident, Take the Following Actions:**

1. Size-up the situation based on the available information.
2. Only respond to an emergency if personnel are sufficiently trained and properly equipped.
3. As appropriate, evacuate site personnel and notify emergency response agencies, e.g., fire, police, etc.
4. As necessary, request assistance from outside sources and/or allocate personnel and equipment.
5. Consult the posted emergency phone list and contact key personnel.
6. If necessary, report any spills to the NYSDEC Hotline (718-337-4357).
7. Prepare an incident/near miss report. Forward incident report to Project Manager/VERTEX HandS Team within 24 hours via the [HandS@vertexeng.com](mailto:HandS@vertexeng.com) email.
8. For VERTEX personnel, follow the VERTEX Wallet Card calling directions. You must speak directly to a person: Notify:
  - a. Your Supervisor/Site Supervisor (follow any client required procedures).
  - b. Call the VERTEX HandS Team at 339-499-4995.
  - c. Call Human Resources.
  - d. Call your Project Manager/Client.
  - e. Call Account Manager.

## **10.3 Upon Medical Emergency, Take the Following Actions:**

1. Assess the severity of the injury and perform first aid/CPR as necessary to stabilize the injured person. Follow universal precautions to protect against exposure to bloodborne pathogens.

2. Get medical attention for the injured person immediately. Call 911 or consult the Emergency Contacts list which must be posted at the site.
  
3. For VERTEX personnel, follow the VERTEX Wallet Card calling directions. You must speak directly to a person: Notify:
  - a. Your Supervisor/Site Supervisor (follow any client required procedures);
  - b. For any injuries, call **WorkCare** at **888-449-7787**. For international calls, use 714-456-2107. WorkCare has qualified medical practitioners tending the phone to offer a telephone triage of the situation. WorkCare will provide guidance on how to transport the injured individual.
  - c. Call the **VERTEX HandS Team** at **339-499-4995**.
  - d. Call Human Resources.
  - e. Call your Project Manager/Client.
  - f. Call Account Manager.
  
4. Prepare an incident report. The Site Safety officer is responsible for its preparation and submittal to the Health and Safety Manager within 24 hours by email at [HandS@vertexeng.com](mailto:HandS@vertexeng.com).
  
5. You can reach Human Resources at [HR@vertexeng.com](mailto:HR@vertexeng.com).

## 11.0 NEAR MISS/UNSAFE CONDITION REPORTING

Reporting of near misses and unsafe conditions is a critical piece of our health & safety learning, and it comes with “no cost,” because nothing was damaged, and no one was hurt. A near miss is defined as an event that “almost happened but did not.” An unsafe condition is simply a potentially unsafe condition that is recognized before it even becomes a near miss. A good litmus test for reporting is, “Do you think someone who has less experience would benefit from learning about your event or unsafe condition?” If so, please go ahead and report it. The Near Miss Incident Report can be used for this purpose. The HandS Team also accepts emails or even a phone call to report to make sharing of information as easy as possible. Call the HandS Team number that is found in the Contacts information, or email at [HandS@vertexeng.com](mailto:HandS@vertexeng.com).

# **JOB SAFETY ANALYSES**

# VERTEX The VERTEX Companies Health & Safety - A HANDS on Approach to Safety

<b>Task to Be Performed:</b>	<b>Cold Weather</b>	<b>Analyzed By:</b>	T. Bierz
		<b>Date</b>	30-Mar-22
<b>Project Name &amp; Location:</b>	82-13 37th Avenue, Jackson Heights, New York		
<b>Possible Risks at a Glance</b>		<b>Engineering Controls at a Glance</b>	
<p><b>Possible risks include associated with drilling oversight in cold weather include:</b></p> <ol style="list-style-type: none"> <li>1. Frostbite;</li> <li>2. Hypothermia;</li> <li>3. Dehydration;</li> <li>4. Trench Foot;</li> <li>5. Chilblains.</li> </ol>		<ul style="list-style-type: none"> <li>* Sit in a warm location periodically to minimize cold stress.</li> <li>* Use handwarmers/footwarmers as needed.</li> </ul>	
		<b>Work Practice Controls at a Glance</b>	
		<ul style="list-style-type: none"> <li>* Wear appropriate PPE, practice safe drilling and oversight techniques.</li> <li>* Discuss a communications plan each day in the tailgate meeting to include at least hourly check-ins to be sure that colleagues are not suffering from cold stress.</li> <li>* Be familiar with the emergency response plan for the project.</li> </ul>	
		<b>Personal Protective Equipment at a Glance</b>	
		<ul style="list-style-type: none"> <li>* Level D PPE with cold weather attire. Dress in layers and use hardhat winter liners, gloves, wool socks, lined clothing.</li> </ul>	

## VERTEX The VERTEX Companies Health & Safety - A HANDS on Approach to Safety

Step #	Specific Steps in the Task	Cold-Related Hazards and Risks That Must Be Controlled (Apply to All Steps)	Precautions Actions to Avoid the Risks	Responsible Person
		<i>Please note that each of the syndromes noted below can occur in each of the steps of this task.</i>		
1	Set up necessary traffic and public access controls	1. Frostbite = an injury to the body that is caused by freezing. Frostbite causes a loss of feeling and color in the affected areas. It most often affects the nose, ears, cheeks, chin, fingers, or toes.	Know the symptoms of frostbite. Prevent frostbite by limiting skin exposure to cold air. Wear gloves and a hardhat liner, cover neck and face, and dress in layers. Take frequent breaks in a warm sheltered area such as inside a building or heated vehicle to avoid exposure.	
2	Utility Clearance	2. Hypothermia = abnormally low body temperature caused by prolonged exposure to cold. A body temperature that is too low affects the brain, making the victim unable to think clearly or move well.	Know the symptoms of hypothermia. Prevent hypothermia by limiting skin exposure to cold air. Make sure to eat enough food throughout the day. Wear gloves and a hardhat liner, cover neck and face, and dress in layers. Take frequent breaks in a warm sheltered area such as inside a building or heated vehicle to avoid exposure.	

## VERTEX The VERTEX Companies Health & Safety - A HANDS on Approach to Safety

Step #	Specific Steps in the Task	Cold-Related Hazards and Risks That Must Be Controlled (Apply to All Steps)	Precautions Actions to Avoid the Risks	Responsible Person
3	Oversight of drilling operations	3. Trench Foot, also known as immersion foot = an injury of the feet resulting from prolonged exposure to wet and cold conditions. Trench foot can occur at temperatures as high as 60 degrees F if the feet are constantly wet. Injury occurs because wet feet lose heat 25-times faster than dry feet. Therefore, to prevent heat loss, the body constricts blood vessels to shut down circulation in the feet. Skin tissue begins to die because of lack of oxygen and nutrients and due to the buildup of toxic products.	Know the symptoms of trench foot. Prevent trenchfoot by wearing appropriate socks and boots. Take frequent breaks in a warm sheltered area such as inside a building or heated vehicle to avoid exposure. Do not allow feet to get wet. Carry an extra pair of socks in your equipment bag.	



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Step #	Specific Steps in the Task	Hazards and Risks by Step That Must Be Controlled	Precautions Actions to Avoid the Risks	Responsible Person
		<p>4. Chilblains = caused by the repeated exposure of skin to temperatures just above freezing to as high as 60 degrees F. The cold exposure causes damage to the capillary beds (groups of small blood vessels) in the skin. This damage is permanent and the redness and itching will return with additional exposure. The redness and itching typically occurs on cheeks, ears, fingers, and toes.</p>	<p>Know the symptoms of chilblains. Prevent chilblains by limiting skin exposure to cold air. Wear gloves and a hat, cover neck and face, and dress in layers. Take frequent breaks in a warm sheltered area such as inside a building or heated vehicle to avoid exposure. Do not allow feet to get wet.</p>	<p>Field Staff</p>
		<p>5. Dehydration = occurs when your body does not have the water it needs. Can be a bigger risk in cold weather, when you may not feel as much of an urge to drink water.</p>	<p>Drink plenty of water before, during, and after work. Avoid a high protein diet, caffeine, and alcohol. Periodically switch from drinking straight water to an electrolyte-rich beverage, such as gatorade. Eating soup in the support zone is also encouraged.</p>	

# VERTEX The VERTEX Companies Health & Safety - A HANDS on Approach to Safety

<b>Task to Be Performed:</b>	<b>Groundwater Sampling</b>	<b>Analyzed By:</b>	A. Turner	
		<b>Date</b>	7-Sep-21	
<b>Project Name &amp; Location:</b>	82-13 37th Avenue, Jackson Heights, New York			
<b>Possible Risks at a Glance</b>		<b>Engineering Controls at a Glance</b>		
<b>Possible risks include associated with groundwater sampling include:</b>  <b>1. Vehicular traffic;</b> <b>2. Tripping/slipping hazards;</b> <b>3. Pinch points;</b> <b>4. Lacerations;</b> <b>5. Muscle strains from lifting;</b> <b>6. Electrical shock; and</b> <b>7. Exposure to contaminated vapors and/or water.</b>		None		
		<b>Work Practice Controls at a Glance</b>		
		Wear appropriate PPE, practice safe sampling techniques.		
		<b>Personal Protective Equipment at a Glance</b>		
Level D PPE including safety glasses, steel-toe boots, chemical resistant gloves, work gloves, hard hat, and reflective safety vest.				
Step #	Specific Steps in the Task	Hazards and Risks by Step That Must Be Controlled	Precautions Actions to Avoid the Risks	Responsible Person
1	Stage at pre-determined sampling location and set up work zone and sampling equipment	1. Personnel could be hit by vehicular traffic.	Set up cones and establish work area. Position vehicle so that field crew is protected from site traffic. Unload as close to work area as safely as possible.	
		2. Sampling equipment, tools, and monitoring well covers can cause tripping hazard.	Keep equipment picked up and monitor any changes to site condition.	
2	Open wells to equilibrate and gauge wells	1. When squatting down, personnel can be difficult to see by vehicular traffic.	Wear Class II traffic vest if wells are located in/near vehicular traffic. Use tall cones and the buddy system if practicable.	

# VERTEX The VERTEX Companies Health & Safety - A HANDS on Approach to Safety

Step #	Specific Steps in the Task	Hazards and Risks by Step That Must Be Controlled	Precautions Actions to Avoid the Risks	Responsible Person
2	Open wells to equilibrate and gauge wells	2. Pinch points on well vaults can pinch or lacerate fingers.	Use correct tools to open well vault/cap. Wear leather gloves when removing well vault lids, and chemical protective gloves when gauging. Wear proper PPE including safety boots, knee pads, and safety glasses.	
		3. Lifting sampling equipment can cause muscle strain.	Unload as close to work area as safely possible; use proper lifting and reaching techniques and body positioning; don't carry more than you can handle and get help moving heavy or awkward objects.	
		4. Pressure can build up inside well causing cap to release under pressure.	Keep head away from well cap when removing. If pressure relief valves are on well, use prior to opening.	
		5. Vapors from open wells.	Conduct air monitoring as wells are opened. When opening wells, be positioned downwind when possible.	
3	Begin purging well and collecting parameter measurements	1. Electrical shock can occur when connecting/disconnecting pump from battery.	Make sure equipment is turned off when connecting/disconnecting. Wear leather gloves. Use GFCIs when using power tools and pumps. Do not use in the rain or run electrical cords through wet areas.	
		2. Purge water can spill or leak from equipment.	Stop purging activities immediately, stop leakage and block any drainage grate with absorbent pads. Call PM to notify them of any reportable spill.	
		3. Water spilling on the ground can cause muddy/slippery conditions.	Be careful when walking around work area and wear proper safety boots.	
		4. Lacerations can occur when cutting materials such as plastic tubing.	When cutting tubing, use tubing cutter. No open fixed blades should ever be used. When possible, wear leather safety gloves.	

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Step #	Specific Steps in the Task	Hazards and Risks by Step That Must Be Controlled	Precautions Actions to Avoid the Risks	Responsible Person
3	Begin purging well and collecting parameter measurements	5. Purge water can splash into eyes.	Pour water slowly into buckets/drums to minimize splashing. Wear safety glasses and recommended PPE.	
4	Collect groundwater sample	1. Sample water can splash into eyes.  2. Sample containers could break/leak preservative.	Minimize splashing potential by wearing safety glasses and appropriate gloves.  Discard any broken sample containers properly. Wear appropriate eye and hand protection.	
5	Staging of purged well water	1. Muscle strains can occur when moving purge water or drums.	If using buckets, do not fill buckets up to the top. Always keep lid on buckets when travelling or moving them to another location. Only half fill buckets so bucket weight is manageable.	
		2. Spilling or splashing of purge water.	Make sure that purge water is properly contained with a lid to avoid spilling/splashing the purge water. Wear long sleeve shirts while sampling.	

# VERTEX The VERTEX Companies Health & Safety - A HANDS on Approach to Safety

<b>Task to Be Performed:</b>		<b>Analyzed By:</b>	A. Turner
		<b>Date</b>	07-09-21

<b>Project Name &amp; Location:</b>	82-13 37th Avenue, Jackson Heights, New York
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Possible Risks at a Glance	Engineering Controls at a Glance
<p>Possible risks include associated with field work in hot weather include:</p> <ol style="list-style-type: none"> <li>1. Heat Stroke;</li> <li>2. Heat Exhaustion;</li> <li>3. Rhabdomyolysis;</li> <li>4. Heat syncope;</li> <li>5. Heat Cramps;</li> <li>6. Heat Rash;</li> <li>7. Dehydration;</li> <li>8. Sun Burn.</li> </ol>	<p>* Sit in a cool, shaded, or air conditioned location periodically to minimize heat stress.</p> <p>* Use wet towels and ice to stay cool.</p>
	Work Practice Controls at a Glance
	<p>* Wear appropriate PPE, practice safe field work and oversight techniques.</p> <p>* Discuss a communications plan each day in the tailgate meeting to include at least hourly check-ins to be sure that colleagues are not suffering from heat stress.</p> <p>* Be familiar with the emergency response plan for the project.</p>
	Personal Protective Equipment at a Glance
	<p>* Level D PPE with hot weather attire. Dress breathable clothes that cover the arms and legs and use a hardhat and sunglasses. Use sunscreen.</p>

Step #	Specific Steps in the Task	Cold-Related Hazards and Risks That Must Be Controlled (Apply to All Steps)	Precautions Actions to Avoid the Risks	Responsible Person
		<i>Please note that each of the syndromes noted below can occur in each of the steps of this task.</i>		
	Refer to task-specific JSAs.	1. Heat Stroke = the most serious heat-related illness. It occurs when the body becomes unable to control its temperature: the body's temperature rises rapidly, the sweating mechanism fails, and the body is unable to cool down. When heat stroke occurs, the body temperature can rise to 106°F or higher within 10 to 15 minutes. Heat stroke can cause death or permanent disability if emergency treatment is not given.	Know the symptoms of heat stroke. Prevent heat stroke by limiting exposure to excessively hot temperatures. Wear breathable, light weight clothes that cover the arms and legs and a hat. Stay out of the sun as much as possible. Take frequent breaks in a cool shaded area such as inside a building or air conditioned vehicle to avoid exposure. Drink plenty of cold water.	

Step #	Specific Steps in the Task	Cold-Related Hazards and Risks That Must Be Controlled (Apply to All Steps)	Precautions Actions to Avoid the Risks	Responsible Person
	Refer to task-specific JSAs.	2. Heat Exhaustion = the body's response to an excessive loss of water and salt, usually through excessive sweating. Workers most prone to heat exhaustion are those that are elderly, have high blood pressure, and those working in a hot environment.	Know the symptoms of heat exhaustion. Prevent heat exhaustion by limiting exposure to excessively hot temperatures. Wear breathable, light weight clothes that cover the arms and legs and a hat. Stay out of the sun as much as possible. Take frequent breaks in a cool shaded area such as inside a building or air conditioned vehicle to avoid exposure. Drink plenty of fluids, alternating between water and electrolyte-rich beverages. Eat plenty of food throughout the day.	
		3. Rhabdomyolysis = a medical condition associated with heat stress and prolonged physical exertion, resulting in the rapid breakdown, rupture, and death of muscle. When muscle tissue dies, electrolytes and large proteins are released into the bloodstream that can cause irregular heart rhythms and seizures, and damage the kidneys.	Know the symptoms of rhabdomyolysis. Prevent rhabdomyolysis by limiting exposure to excessively hot temperatures. Wear breathable, light wait clothes that cover the arms and legs and a hat. Stay out of the sun as much as possible. Take frequent breaks in a cool shaded area such as inside a building or air conditioned vehicle to avoid exposure. Drink plenty of fluids, alternating between water and electrolyte-rich beverages. If physical exertion is required for the work task, take frequent breaks and employ the buddy system when possible. Maintain an exercise regime so that your body is tolerant to physical exertion.	
		4. Heat syncope = a fainting (syncope) episode or dizziness that usually occurs with prolonged standing or sudden rising from a sitting or lying position. Factors that may contribute to heat syncope include dehydration and lack of acclimatization.	Drink plenty of water before, during, and after work. Avoid a high protein diet, caffiene, and alcohol. Periodically switch from drinking straight water to an electrolyte-rich beverage, such as gatorade. Allow your body to acclimate to the heat for at least a few minutes prior to physically exerting yourself. If field work requires prolonged sitting or standing, periodically get up and stretch and walk around.	

Step #	Specific Steps in the Task	Hazards and Risks by Step That Must Be Controlled	Precautions Actions to Avoid the Risks	Responsible Person
		5. Heat cramps = usually affect workers who sweat a lot during strenuous activity. This sweating depletes the body's salt and moisture levels. Low salt levels in muscles causes painful cramps. Heat cramps may also be a symptom of heat exhaustion.	Drink plenty of water before, during, and after work. Avoid a high protein diet, caffiene, and alcohol. Periodically switch from drinking straight water to an electrolyte-rich beverage, such as gatorade. Take frequent breaks from physical activity, and when possible use the buddy system to perform physical tasks.	
	Refer to task-specific JSAs.	6. Heat rash = a skin irritation caused by excessive sweating during hot, humid weather.	Prevent heat rash by limiting exposure to excessively hot temperatures. Wear breathable, light weight clothes that cover the arms and legs and a hat. Stay out of the sun as much as possible. Take frequent breaks in a cool shaded area such as inside a building or air conditioned vehicle to avoid exposure. Drink plenty of fluids, alternating between water and electrolyte-rich beverages. If physical exertion is required for the work task, take frequent breaks and employ the buddy system when possible. Wipe sweat from skin during breaks.	
		7. Dehydration = occurs when your body does not have the water it needs.	Drink plenty of water before, during, and after work. Avoid a high protein diet, caffiene, and alcohol. Periodically switch from drinking straight water to an electrolyte-rich beverage, such as gatorade. Drink even when you do not feel thirsty.	
		8. Sun Burn = a form of radiation burn that affects living tissue, such as skin, that results from an overexposure to ultraviolet (UV) radiation, commonly from the sun.	Wear breathable, light wait clothes that cover the arms and legs and a hat. Wear sunglasses or shaded safety glasses. Be sure to cover all exposed skin with sunscreen, and re-apply throughout the day.	

# VERTEX The VERTEX Companies Health & Safety - A HANDS on Approach to Safety

<b>Task to Be Performed:</b>	<b>Site Reconnaissance</b>	<b>Analyzed By:</b>	E.Giaradino	
		<b>Date</b>	20-Aug-20	
<b>Project Name &amp; Location:</b>	82-13 37th Avenue, Jackson Heights, New York			
<b>Possible Risks at a Glance</b>		<b>Engineering Controls at a Glance</b>		
<b>Possible risks include associated with groundwater sampling include:</b>  <b>1. Vehicular accident/damage;</b> <b>2. Slip, trip, and fall hazards;</b> <b>3. Heavy equipment operations;</b> <b>4. Scratch, scrape, and impalement hazards;</b> <b>5. Muscle strains;</b> <b>6. On site traffic;</b> <b>7. Lack of communications;</b> <b>8. Changing site conditions; and</b> <b>9. Personal injury from energized equipment.</b>		None		
		<b>Work Practice Controls at a Glance</b>		
		Wear appropriate PPE, practice safe site reconnaissance techniques.		
		<b>Personal Protective Equipment at a Glance</b>		
		Limited Level D PPE including steel-toe boots and reflective safety vest. Additional Level D PPE including, chemical resistant gloves, work gloves, hard hat, and safety glasses when applicable.		
<b>Step #</b>	<b>Specific Steps in the Task</b>	<b>Hazards and Risks by Step That Must Be Controlled</b>	<b>Precautions Actions to Avoid the Risks</b>	<b>Responsible Person</b>
1	Commuting to and from the work site	1. Vehicular accident/damage.	Wear seatbelts. Drive defensively by: (a) looking down road to determine limiting factors, (b) Minimizing/eliminating distractions, and (c) managing speed and distance. Check vehicle for proper operating systems, such as lights, tires, and mirrors.	VERTEX
2	Site walkovers and inspections	1. Slips/trips/falls.	Wear footwear with proper ankle support and be	VERTEX
		2. Heavy equipment operations.	Use hearing protection and maintain 15-foot minimum clearance of heavy equipment. Maintain eye contact with equipment operators when possible.	VERTEX



# VERTEX The VERTEX Companies Health & Safety - A HANDS on Approach to Safety

Step #	Specific Steps in the Task	Hazards and Risks by Step That Must Be Controlled	Precautions Actions to Avoid the Risks	Responsible Person
2	Site walkovers and inspections	3. Scratches/scrapes/impalement from sharp edges/protruding objects.	Be vigilant for hazards and avoid climbing in tight spaces and on equipment.	VERTEX
		4. On-site traffic.	Watch for vehicular traffic on site and maintain eye contact with operator when possible.	VERTEX/Drillers
		5. Lack of site communications.	Carry cell phone or walkie talkie (if necessary). Abandon site activity when conditions are unsafe.	VERTEX/Drillers
		6. Changing site conditions.	The work area should be consistently assessed for changing conditions (animals, pedestrians, etc.) to avoid potential safety-related issues.	VERTEX
3	Equipment assessments	1. Personal injury from energized equipment.	Use LO/TO procedures.	VERTEX/Drillers
		2. Back/hand injuries.	Keep back straight when moving equipment and performing inspection. Maintain vigilance for potential hazards.	Drillers

# VERTEX

The VERTEX Companies Health & Safety - A HANDS on Approach to Safety

<b>Task to Be Performed:</b>		<b>Soil Sampling via Excavator</b>		<b>Analyzed By:</b>	E.Giardino
				<b>Date</b>	20-Aug-20
<b>Project Name &amp; Location:</b>			82-13 37th Avenue, Jackson Heights, New York		
<b>Possible Risks at a Glance</b>			<b>Engineering Controls at a Glance</b>		
<b>Possible risks include associated with groundwater sampling include:</b>  1. Vehicular traffic; 2. Tripping/slipping hazards; 3. Pinch points; 4. Lacerations; 5. Muscle strains from lifting; 6. Electrical shock; and 7. Exposure to contaminated soils and/or water.			1. Stay in sight lines of excavator operator 2. Remain outside excavator swing radius and stand-off zone		
			<b>Work Practice Controls at a Glance</b>		
			Wear appropriate PPE, practice safe sampling techniques.		
			<b>Personal Protective Equipment at a Glance</b>		
			Level D PPE including safety glasses, steel-toe boots, chemical resistant gloves, work gloves, hard hat, and reflective safety vest.		
Step #	Specific Steps in the Task	Hazards and Risks by Step That Must Be Controlled	Precautions Actions to Avoid the Risks	Responsible Person	
1	Stage at pre-determined sampling location and set up work zone and sampling equipment	1. Personnel could be hit by vehicular traffic.	Set up cones and establish work area. Position vehicle so that field crew is protected from site traffic. Unload as close to work area as safely as possible.	Field Personnel	
		2. Sampling equipment, tools, and monitoring well covers can cause tripping hazard.	Practice good housekeeping techniques and monitor any changes to site condition.	Field Personnel	
2	Excavation of sampling locations	1. Potential to be struck by swinging excavator body or bucket	Keep correct stand-off. Wear appropriate hi-vis vest/apparel. Ensure operator sees and acknowledges any movement across their	Field Personnel	

# VERTEX

## The VERTEX Companies Health & Safety - A HANDS on Approach to Safety

Step #	Specific Steps in the Task	Hazards and Risks by Step That Must Be Controlled	Precautions Actions to Avoid the Risks	Responsible Person
			workzone prior to entering.	
3	Working with and near an excavator	1. Approaching excavator/bucket	Wear appropriate hi-vis vest/apparel. Ensure operator sees and acknowledges any movement across their workzone prior to entering. Ensure the machine is not in motion and the bucket is resting on the ground.	Field Personnel
		2. Pinch points/lacerations from machinery	Avoid touching or brushing against any part of an excavator during operation.	Field Personnel
		3. Moving around open excavations	Have the excavator operator swing the bucket at least 3 ft. from the edge of any open excavations. Do not approach within 3 ft. of open excavations.	Field Personnel
4	Collect soil sample from	1. Exposure to contaminants	Minimize potential by wearing safety glasses and appropriate gloves.	Field Personnel
		2. Pinch points/lacerations from machinery	Avoid touching or brushing against any part of an excavator bucket during sampling. Use disposable sampling scoops or trowel to collect	Field Personnel
		3. Exiting the excavators workzone.	Maintain communication (visual or auditory) with the excavator operator. Ensure the machine remains motionless until you exit the workzone.	Field Personnel

# VERTEX The VERTEX Companies Health & Safety - A HANDS on Approach to Safety

<b>Task to Be Performed:</b>	<b>Soil Sampling</b>	<b>Analyzed By:</b>	A. Turner	
		<b>Date</b>	7-Sep-21	
<b>Project Name &amp; Location:</b>	82-13 37th Avenue, Jackson Heights, New York			
<b>Possible Risks at a Glance</b>		<b>Engineering Controls at a Glance</b>		
<b>Possible risks include associated with soil sampling include:</b>  <b>1. Vehicular traffic;</b> <b>2. Potential to encounter utilities;</b> <b>3. Excessive noise;</b> <b>4. Drill rig moving and heated mechanisms;</b> <b>5. Muscle strains from lifting;</b> <b>6. Eye injury from dust and debris;</b> <b>7. Lacerations;</b> <b>8. Hand strains and blisters; and</b> <b>9. Slip/Trip/Fall hazards due to equipment, debris, and/or slippery surfaces.</b>		<b>None</b>		
		<b>Work Practice Controls at a Glance</b>		
		<b>Wear appropriate PPE, practice safe boring and sampling techniques.</b>		
		<b>Personal Protective Equipment at a Glance</b>		
		<b>Level D PPE including safety glasses, steel-toe boots, chemical resistant gloves, hearing protection, work gloves, hard hat, and reflective safety vest.</b>		
<b>Step #</b>	<b>Specific Steps in the Task</b>	<b>Hazards and Risks by Step That Must Be Controlled</b>	<b>Precautions Actions to Avoid the Risks</b>	<b>Responsible Person</b>
1	Set up necessary traffic and public access controls	1. Personnel could be hit by vehicular traffic	Set up cones and establish work area. Position vehicle so that field crew is protected from site traffic.	
2	Utility Clearance	1. Potential to encounter underground or aboveground utilities while drilling.	Complete utility clearance using State One Call, GPR services, and/or hand augur to 5 feet bgs.	
3	Installation of boring using drill rig.	1. Excessive noise is generated by rig operations.	When the engine is used at high RPMs or soil samples are being collected, use hearing protection.	

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Step #	Specific Steps in the Task	Hazards and Risks by Step That Must Be Controlled	Precautions Actions to Avoid the Risks	Responsible Person
3	Installation of boring using drill rig.	2. During drill rig operation, surfaces will become hot and cause burns if touched, and COCs in the soil will more readily vaporize generating airborne contaminants.	Use caution handling equipment and wear proper work gloves. Air monitoring should be performed in accordance with the HASP to monitor the potential volatilization of COCs.	
		3. Moving parts of the drilling rig can pull you in, causing injury. Pinch points on the rig and auger connections can cause pinching or crushing of body parts.	Stay at least 5 feet away from moving parts of the drill rig. Know where the kill switch is, and have the drillers test it to verify that it is working. Do not wear loose clothing and tie back long hair. Avoid wearing jewelry when drilling. Cone off work area to keep general public away from the drill rig.	
		4. Dust and debris can cause eye injury and soil cuttings and/or water could contain COCs.	Wear safety glasses and stay as far away from actual drilling operation as practicable. Wear appropriate gloves to protect from COCs.	
		5. Drilling equipment laying on the ground (i.e. augers, split spoons, decon equipment, coolers, etc.) create a tripping hazard. Water	Keep equipment and trash picked up and store away from the primary work area. Wear footwear with ankle support.	
		6. The raised derrick can strike overhead utilities, tree limbs, or other elevated items.	Never move the rig with the derrick up. Ensure there is proper clearance to raise the derrick. Ensure that you are far enough away from overhead power lines.	
4	Installation of boring using hand auger, sample probe, and/or trowel	1. Muscle strains from pulling/pushing could occur when installing the boring and when removing the auger from the hole.	Stretch out back/arms/shoulders prior to beginning activities. Using a firm grip on the handle, slowly turn the auger and progress downward in 6" increments. Slowly pull the auger from the hole using legs and proper lifting techniques. Ask for assistance if necessary.	

## VERTEX The VERTEX Companies Health & Safety - A HANDS on Approach to Safety

Step #	Specific Steps in the Task	Hazards and Risks by Step That Must Be Controlled	Precautions Actions to Avoid the Risks	Responsible Person
4	Installation of boring using hand auger, sample probe, and/or trowel	2. Hand strain and blisters could develop from prolonged hand augering.	Select proper gloves for the task (wear padded mechanics glove when turning auger). If hot spots develop on hands, re-adjust gloves or change to better padded gloves.	
		3. Over-exertion could occur when trying to force an auger forward if there is refusal.	If refusal occurs, stop work. Remove auger from the hole and check hole with flashlight. Do not over-exert by using excessive force.	
		4. Fatigue can occur due to strenuous nature of hand augering activities.	Take rest breaks as needed or switch out task with another employee.	
5	Collection of soil sample	1. Contact with impacted soils	Wear chemical protective gloves as outlined in the HASP and wear safety glasses.	
		2. Sharp edges and broken glassware can cause lacerations.	Discard any broken sample containers or glass properly. Do not overtighten containers. Wear cut-resistant gloves when handling sample containers.	
		3. Containerizing and moving soil cuttings can cause muscle strains.	Dispose of leftover soil cuttings in a drum or bucket and dispose properly. Only fill buckets half full due to weight and strength of bucket. Wear leather work gloves and use good lifting techniques when handling buckets.	
6	Decontamination of hand auger, sample probe, and/or trowel	1. Exposure to COCs during equipment decontamination.	Wear chemical protective gloves as outlined in the HASP and wear safety glasses.	
		2. The end of the auger/probe has sharp/pointed edges; lacerations can occur.	Use a brush to scrub off soils. Wear cut-resistant gloves when handling auger. Do not reach into	

# VERTEX The VERTEX Companies Health & Safety - A HANDS on Approach to Safety

Step #	Specific Steps in the Task	Hazards and Risks by Step That Must Be Controlled	Precautions Actions to Avoid the Risks	Responsible Person
7	Fill in sample location	1. Open boreholes are a trip hazard.	Fill in holes with sand or bentonite. Pack down chips as best as possible, adding water as necessary.	
		2. Muscle strain can occur from lifting bags of sand and/or bentonite.	Use proper lifting techniques and body positioning.	

# VERTEX The VERTEX Companies Health & Safety - A HANDS on Approach to Safety

<b>Task to Be Performed:</b>	<b>Indoor Soil Vapor and Indoor Air Sampling</b>	<b>Analyzed By:</b>	D. Cron	
		<b>Date</b>	24-Oct-17	
<b>Project Name &amp; Location:</b>	82-13 37th Avenue, Jackson Heights, New York			
<b>Possible Risks at a Glance</b>		<b>Engineering Controls at a Glance</b>		
<b>Possible risks include associated with indoor soil vapor and indoor air sampling include:</b>  1. Vehicular traffic; 2. Potential to encounter utilities; 3. Excessive noise; 4. Moving/vibrating and hot parts of the hammer drill and drill bit; 5. Eye injury from dust and debris; 6. Electrical hazards; 7. Hand strain and blisters; 8. Over-exertion and fatigue; and 9. Slip/Trip/Fall hazards due to equipment, debris, and/or slippery surfaces.		None		
		<b>Work Practice Controls at a Glance</b>		
		Wear appropriate PPE, practice safe drilling and sampling techniques.		
		<b>Personal Protective Equipment at a Glance</b>		
		Level D PPE including safety glasses, steel-toe work boots, chemical resistant and cut-resistant work gloves, hearing protection, hard hat, and reflective safety vest.		
<b>Step #</b>	<b>Specific Steps in the Task</b>	<b>Hazards and Risks by Step That Must Be Controlled</b>	<b>Precautions Actions to Avoid the Risks</b>	<b>Responsible Person</b>
1	Set up necessary traffic and public access controls.	1. Personnel could be hit by vehicular traffic	Set up cones and establish work area. Position vehicle so that field crew is protected from site traffic.	Field Staff
2	Utility Clearance.	1. Potential to encounter underground utilities while drilling.	Complete utility clearance using Dig Safe notification.	Field Staff
3	Installation of soil vapor point using hammer drill with 5/8" (or appropriate drill bit) as well as hammer and mallet.	1. Excessive noise is generated by hammer drill.	When hammer drill is being utilized, use hearing protection.	Field Staff



## VERTEX The VERTEX Companies Health & Safety - A HANDS on Approach to Safety

Step #	Specific Steps in the Task	Hazards and Risks by Step That Must Be Controlled	Precautions Actions to Avoid the Risks	Responsible Person
3	Installation of soil vapor point using hammer drill with 5/8" (or appropriate drill bit) as well as hammer and mallet.	2. Immediately after drilling, the drill bit or blade/cutter may be very hot and could burn you.	Do not touch drill bit or blade/cutter immediately after the drilling. Wear cut-resistant work gloves at all times.	Field Staff
		3. Moving and vibrating parts of the hammer drill can cause you to lose control and cause injury. Pinch points on the hammer drill equipment can cause pinching of body parts.	Always keep a firm footing when using power tools, making sure you have balance and control before you start the job. Firmly grasp the tool handle and auxiliary handle (if provided) to maintain control. Always hold or brace the tool securely. Brace against stationary objects for maximum control. Do not wear loose clothing and tie back long hair. Avoid wearing jewelry when drilling. Wear steel-toe work boots when drilling. Cone off work area to keep general public away from the drilling operation.	Field Staff
		4. Dust and debris from drilling can cause eye injury and sub-slab soil could contain COCs.	Wear safety glasses at all times. Wear appropriate chemical resistant gloves to protect from COCs.	Field Staff
		5. Drilling and sampling equipment laying on the ground (i.e., Summa canisters, electrical cords, extension cords) create a tripping hazard.	Keep equipment and trash picked up and store away from the primary work area. Wear footwear with ankle support.	Field Staff

## VERTEX The VERTEX Companies Health & Safety - A HANDS on Approach to Safety

Step #	Specific Steps in the Task	Hazards and Risks by Step That Must Be Controlled	Precautions Actions to Avoid the Risks	Responsible Person
		6. Hammer drill power cord and any extension cords used could pose an electrical hazard.	Grounded tools (3-pronged cords) must be plugged into a properly grounded installed outlet. Extension cords with 3-prong grounding plugs must be plugged into 3-prong outlets when using grounded tools. Do not use power tools in wet conditions. Do not abuse the power cord, do not carry the tool by its cord, or pull the cord to unplug it. Replace damaged cords immediately.	Field Staff
		7. Hand strain and blisters could develop from prolonged use of hand drill.	Select proper cut-resistant work gloves for the task. If hot spots develop on hands, re-adjust gloves or change to better padded gloves. Take rest breaks as needed.	Field Staff
		8. Fatigue can occur due to strenuous nature of hammer drill & vapor point installation activities.	Take rest breaks as needed.	Field Staff
4	Collection of soil vapor samples and indoor air samples using Summa canisters.	1. Sample containers could be damaged during the job.	Discard any damaged sample containers properly. Wear appropriate eye and hand protection.	Field Staff

<p><b>Task to Be Performed:</b></p>	<p><b>Virus Avoidance JSA</b></p> <p><i><b>NOTE:</b> This JSA is meant to cover VERTEX work with an on-site component and be used in conjunction with existing VERTEX's task-specific procedures. This JSA must be modified as needed for the scope of work.</i></p> <p><i>* Guidance is appropriate for our construction sites, Phase I ESAs, Cause &amp; Origin (C&amp;O) investigations, insurance assessments, asbestos surveys, IAQ assessments, radon sampling, PCAs, and other site visit scopes that require being physically present on-site.</i></p> <p><i>* Special guidance is provided for multi-tenant facilities and facilities with large numbers of occupants, including apartment complexes, hospitals, schools/higher education, nursing homes, assisted living, office buildings, and hotels; airport; cruise ships.</i></p>	<p><b>Analyzed By:</b></p>	<p>and Genevieve Reynolds</p>
<p><b>Project Name &amp; Location:</b></p>	<p>VERTEX field-activities requiring in-person presence of VERTEX team members at field sites</p>		
<p><b>Possible Risks at a Glance</b></p>		<p><b>Engineering Controls at a Glance</b></p>	
<p>* Possible exposure to the virus that causes COVID-19</p> <p>Note: This guidance must be combined with JSAs for site-work tasks have their own risks and precautions that must be addressed, such as electrical risks, falling, tripping, chemicals, etc.</p>	<ul style="list-style-type: none"> <li>* Do not go to the site if you can achieve your objectives remotely.</li> <li>* Good preparation before you go to a project site can avoid incidents of all types.</li> <li>* For construction sites, order construction trailers that are large enough to allow at least a separation between employees of 6 feet/2m.</li> <li>* Determine if any restrictions in the location to which you are going might limit the effectiveness of the visit and impact achieving all the goals of the visit.</li> </ul>		
<p><b>Possible Risks at a Glance</b></p>		<p><b>Work Practice Controls at a Glance</b></p>	
		<ul style="list-style-type: none"> <li>* Establishing a distance of 6 feet/2m between people, when possible.</li> <li>* Conducting work off-hours, when fewer people are around, when possible.</li> <li>* Avoid any contact with confirmed positive COVID-19 or presumptive positive cases.</li> <li>* Obey any restrictions imposed by the various states of emergency or other community restrictions.</li> <li>* Implement cleaning/disinfection procedures in job trailers.</li> <li>* Discuss wellness <i>daily</i> to ensure that all project participants are feeling well at the beginning of every shift.</li> </ul>	

Personal Protective Equipment at a Glance				
<p>* Bring gloves, hand sanitizer, to the visit to use. If hand sanitizer is in short supply, use cleaning/disinfectant wipes, or simply identify places where you can wash your hands with soap and water.</p> <p>* Depending on the VERTEX task(s), some level of respiratory protection may be needed. Please contact Philip Platcow to discuss the task, airborne hazards and the need for protection.</p> <p>* You should wear paper or cloth masks when more substantial respiratory protection is <u>not</u> required. When you are walking around a site or traveling to and from, you should wear a mask (surgical or cloth).</p> <p>* Utilize other PPE as required for the specific task, such as steel-toed work boots, safety glasses, hardhats, etc.</p>				
Step #	Specific Steps in the Task	Hazards and Risks by Step That Must Be Controlled	Precautions Actions to Avoid the Risks	Responsible Person
1	Preparing for a site visit or other work task requiring that the VERTEX team member be physically present at a site.		<p>Determine if going to the location is absolutely necessary to achieve the project goal.</p> <ul style="list-style-type: none"> <li>* Can we use a technology tool to avoid the need to be on a site?</li> <li>* Can we attend a meeting by remote video?</li> </ul>	Project managers/field colleagues
			<p>When setting up a site visit:</p> <ul style="list-style-type: none"> <li>* Ask if the facility is open and operating, and which hours may have fewer people present at the site.</li> <li>* Ask your site contact if any cases or voluntary isolations/quarantines have been reported among employees/tenants/etc. at the location.</li> <li>* Tactfully ask if there is anyone else who might be aware of cases.</li> </ul>	Project managers/field colleagues
			For sites between 3 and 6 hours from your office, consider driving rather than taking a train or plane to your destination.	Field colleagues
			<p>If you must take a plane:</p> <ul style="list-style-type: none"> <li>* Wear a surgical or cloth mask while traveling these areas.</li> <li>* Make an effort to avoid crowds, create a 6 feet/2m distance between you and others while in the waiting areas and in lines to the extent possible.</li> <li>* Although you may feel uncomfortable, it is fine to wear nitrile gloves.</li> <li>* Bring disinfectant wipes for seats, arm rests, tray tables, etc.</li> <li>* Wash hands frequently and carry a small container of hand sanitizer.</li> </ul>	Field colleagues

			<ul style="list-style-type: none"> <li>* Select a good level hotel, such as, Courtyard and above, where you can count on it being clean under normal circumstances.</li> <li>* Call the hotel and ask if they have had any COVID-19 cases.</li> <li>* When checking in/out, keep a 6 foot/2m distance from the hotel employees and any other guests.</li> <li>* Bring your own pen to sign documents. Many people may have used those hotel pens.</li> <li>* Bring disinfectant wipes to go back over surfaces and high touch areas like knobs, lights, thermostat, and stay away from people as possible.</li> <li>* Use a wipe to disinfect the room key and the TV remote control. If you use any glasses, wash them again prior to use.</li> <li>* Wear a surgical or cloth mask and gloves as you go through the hotel.</li> <li>* Do not use the fitness center during this time at all; go for a run or walk outdoors if it's in a good area.</li> <li>* Select a hotel with a refrigerator so that you do a bit of shopping (breakfast and lunch anyway) and minimize the meals you take in the presence of others. Indeed, these common areas may be closed anyway.</li> <li>* Follow other, now typical COVID avoidance procedures, such as parking under lights, choose a hotel that requires you to enter through the lobby, etc.</li> <li>* During this time, it is even more important to consider wellness: eat properly, get some exercise, get a good amount of sleep.</li> </ul>	
			<p>Make sure you have nitrile gloves and hand sanitizer, or other available and appropriate sanitization supplies and PPE, in your field kit before you set out for the project location.</p>	Field colleagues
			<p>For scopes that require a municipal research component, consider calling or submitting a FOIA to local offices to confirm records are available before visiting in person. Give yourself enough time for the office visit so that you can wait, if needed, to get in a cabinet/folder that someone else may be standing near. Then approach when they move. Wear a surgical or cloth mask in these offices.</p>	Project managers/field colleagues

			Obey all local/State/Federal restrictions in place on work in the site area, such as stop-work orders for construction sites, shelter-in-place orders, etc.	Project managers/field colleagues
			For multi-tenant residential visits: Ask the site management to notify more units than you need, to complete the scope. For example, if your scope requires access to 20% of the units, request that the property notify 25% or even 30%. This will allow you to skip units during the visit if it becomes necessary. This is always a good approach because all sorts of scenarios may come up that prohibit you from getting into one unit or space or another.	Project managers/field colleagues
			For multi-tenant residential visits: request access to vacant units when the scope can be completed by visiting vacant units. Note that this may not be appropriate for all scopes.	Project managers/field colleagues
2	During your task		At the start of the on-site portion of the assessment, ask the site contacts again if any cases (confirmed or presumptive positive) or voluntary isolations have been reported at the property. This is an evolving situation, and cases may have been reported since you set up the visit.	Field colleagues
			Please bring a surgical or cloth mask, gloves, hand sanitizer, etc. to the visit to use.	Field colleagues
			As much as possible, avoid touching high-contact surfaces (railings, knobs, switches, etc.), particularly in high-occupancy areas like clubhouses. We want to avoid touching railings, but we also need to be careful walking up/down stairs as well. Use your surgical or cloth mask, and nitrile gloves for protection.	Field colleagues
<b>Step #</b>	<b>Specific Steps in the Task</b>	<b>Hazards and Risks by Step That Must Be Controlled</b>	<b>Precautions Actions to Avoid the Risks</b>	<b>Responsible Person</b>
			As always, wash hands frequently (esp. before eating) for about 20 second, up to the elbow, and avoid touching your face. This actually takes some practice to get used to.	Field colleagues
			* While at the property, maintain a distance of 6 feet/2m between people, when possible. Remember that people who are not showing visible symptoms or even exhibiting an elevated temperature may still be capable of spreading COVID-19. * Wear your surgical or cloth mask, unless the scope of work requires a higher level of respiratory protection.	Field colleagues

			<p>For Construction Sites:</p> <ul style="list-style-type: none"> <li>* Discuss measuring temperatures of individuals coming on to the site.</li> <li>* Signage about proper hygiene practices should be installed on the outside of job trailers or at the gate wherever possible.</li> <li>* Ensure an adequate number of hand-washing stations on job sites to facilitate better hygiene.</li> <li>* Minimize sharing of tools and wipe down tools with disinfectant prior to another worker using a tool.</li> <li>* Have daily discussions about wellness with colleagues and workers at the beginning of each shift to ensure that all are feeling well. Anyone who is sick should be sent home.</li> </ul>	Project Managers and Field colleagues
			<ul style="list-style-type: none"> <li>* Site meetings should be done at a distance and outdoors whenever possible. Meetings in trailers should be avoided. If possible, people who do not need to attend a meeting in person, should attend remotely.</li> <li>* Wear your surgical or cloth mask.</li> <li>* No hand-shaking.</li> </ul>	Field colleagues
			<p>At the end of your visit, wash your hands and clean your camera/phone, pen, clipboard, etc. before getting back in your car.</p>	Field colleagues
			<ul style="list-style-type: none"> <li>* For multi-tenant residential visits: When knocking on unit doors, stand back and to the side when a tenant answers, to increase distance between you and the tenant. With respiratory syndromes such as COVID-19, when possible, you want to maintain a 6 feet distance from people.</li> <li>* Wear your surgical or cloth mask.</li> </ul>	Field colleagues
			<ul style="list-style-type: none"> <li>* For multi-tenant residential visits: If a tenant/occupant appears visibly ill (coughing, sneezing, obvious sweating, etc.), tactfully apologize for the interruption, and skip the unit and move on. This is an example of why it is a good idea to request access to more units than the scope requires. Requesting additional units may also be important if tenants deny access to site inspectors due to COVID-19-related concerns.</li> <li>* Wear your surgical or cloth mask.</li> </ul>	Field colleagues
			<p><i>Remember, you do not have to enter work areas, spaces or units if you do not feel comfortable. If you have questions, please feel free to reach out to your manager or the Hands Team.</i></p>	Field colleagues

# **DAILY SAFETY LOG FORMS**



**DAILY SAFETY LOG**

DATE: \_\_\_\_\_

SITE LOCATION: \_\_\_\_\_

WEATHER: \_\_\_\_\_

PROJECT NUMBER: \_\_\_\_\_

**TOPICS DISCUSSED**

- |  |  |
|--|--|
| <input type="checkbox"/> Expected Activities                 | <input type="checkbox"/> Chemical Hazards      |
| <input type="checkbox"/> Health and Safety Emergency Numbers | <input type="checkbox"/> Bonding and Grounding |
| <input type="checkbox"/> Hospital Location                   | <input type="checkbox"/> Heavy Equipment       |
| <input type="checkbox"/> Work Areas (Posted)                 | <input type="checkbox"/> Traffic hazards       |
| <input type="checkbox"/> Standing Orders                     | <input type="checkbox"/> Heat/Cold Stress      |
| <input type="checkbox"/> Confined Space Entry                | <input type="checkbox"/> Noise Hazards         |
| <input type="checkbox"/> Slip, Trip, Fall                    | <input type="checkbox"/> Lock-out/Tag-out      |
| <input type="checkbox"/> Manual Lifting                      | <input type="checkbox"/> Excavation Hazards    |
| <input type="checkbox"/> Utility Locations                   | <input type="checkbox"/> Venting/Inerting      |
| <input type="checkbox"/> Mechanical Hazards                  | <input type="checkbox"/> Biological Hazards    |
| <input type="checkbox"/> Emergency Communications            | <input type="checkbox"/> Meeting Place         |
| <input type="checkbox"/> Electrical Hazards                  | <input type="checkbox"/> Other _____           |
| <input type="checkbox"/> Other _____                         |  |

**PERSONAL PROTECTIVE EQUIPMENT**

- |  |  |
|--|--|
| <input type="checkbox"/> Energized Systems                     | <input type="checkbox"/> Hard Hat            |
| <input type="checkbox"/> Eye Protection                        | <input type="checkbox"/> Protective Clothing |
| <input type="checkbox"/> Hearing Protection                    | <input type="checkbox"/> Retrieval System    |
| <input type="checkbox"/> Gloves (Specify Type)                 | <input type="checkbox"/> Backup system       |
| <input type="checkbox"/> Respiratory Protection (Specify Type) | <input type="checkbox"/> Lighting            |
| <input type="checkbox"/> Engineering Controls (Specify Type)   | <input type="checkbox"/> Other _____         |
| <input type="checkbox"/> Other _____                           |  |

Additional Comments Observations, Deficiencies / Corrective Actions Taken:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

MEETING CONDUCTED BY: \_\_\_\_\_

Meeting Attended By:

_____	_____
_____	_____
_____	_____
_____	_____

# **NEAR MISS FORM**

THE **VERTEX**<sup>®</sup> COMPANIES, INC.

NEAR MISS FORM

This is an official document to be initiated by a VERTEX employee, please answer correctly and with much detail as possible. This report should be forwarded to the OHSM within 24 hours of the near miss.

EMPLOYEE(S) INVOLVED: \_\_\_\_\_

DATE & TIME OF INCIDENT:

PERSON COMPLETING FORM: \_\_\_\_\_

DATE: \_\_\_\_\_

PROJECT NAME / NUMBER: \_\_\_\_\_

TIME: \_\_\_\_\_ AM/PM

NEAR MISS LOCATION (ADDRESS): \_\_\_\_\_

DESCRIBE NEAR MISS: (Defined as an event or situation that could have resulted in an accident, injury, or illness but DID NOT, either by chance of time/distance or through timely intervention). Describe fully, the protocol / procedures being followed including all substances, machinery, equipment (including personnel protective equipment) being used as related to the near miss.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

SUBCONTRACTORS OR OTHER COMPANY INVOLVED? NO  IF YES, DESCRIBE

\_\_\_\_\_

ON A SCALE OF 1 TO 10 HOW SEVERE COULD THE EVENT HAVE BEEN?

Least Severe 1 2 3 4 5 6 7 8 9 10 Most Severe

WHAT IS THE PROBABILITY OF AN INCIDENT IF THIS WERE TO OCCUR AGAIN (HIGH, MEDIUM, LOW)?

(Example: HIGH = task occurs frequently and by numerous individuals; MEDIUM = task occurs on a regular basis by certain individuals; LOW = minor or no injury, no lost dollar)

LOW

MEDIUM

High

WHAT ARE THE SUGGESTED CORRECTIVE ACTIONS? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

EMPLOYEE \_\_\_\_\_  
Printed Name Signature Date

CHSM \_\_\_\_\_  
Printed Name Signature Date

ATTACHMENTS  YES  NO

# **INCIDENT INVESTIGATION FORM**



## INCIDENT INVESTIGATION REPORT

To: _____	Prepared by: _____
cc: _____ Workers Compensation Administrator (if employee injured)	Position: _____
Project name: _____	Office: _____
_____	Telephone number: _____
Project number: _____	Fax number: _____
Date of the incident: _____	Time of the incident: _____ a.m. <input type="checkbox"/> p.m. <input type="checkbox"/>
	<input type="checkbox"/> Check if time cannot be determined

### LOCATION OF THE INCIDENT

Street address: \_\_\_\_\_

City, State, Zip Code: \_\_\_\_\_ County: \_\_\_\_\_

Did the incident occur on VERTEX premises? Yes  No

### EMPLOYEES INVOLVED

VERTEX employees involved: \_\_\_\_\_

\_\_\_\_\_

Subcontractors involved: \_\_\_\_\_

\_\_\_\_\_

Other parties involved: \_\_\_\_\_

\_\_\_\_\_

### INFORMATION ABOUT THE INCIDENT

What was the employee(s) doing just before the incident occurred? *Describe the activity as well as the tools, equipment, or material the employee was using. Be specific. Examples: "Climbing a ladder while carrying roofing material"; "Daily computer key-entry"; "Verifying masonry installation from scaffolding"; "Operating an aerial lift"*

This form contains information relating to employee health and must be used in a manner that protects the confidentiality of the employee to the extent possible while the information is being used for occupational safety and health purposes.

Revision Date: 1/10/2017



## INCIDENT INVESTIGATION REPORT (Continued)

### INFORMATION ABOUT THE INCIDENT (continued)

What happened? *Clearly describe how the incident occurred. Examples: "When ladder slipped on wet floor, worker fell 20 feet"; "Worker developed soreness in wrist over time"; "Worker displaced loose brick which fell 25 feet and landed on a parked vehicle;" "Worker raised work platform while railing was beneath exterior light fixture, contacting the fixture and knocking it off the wall."*

Was the employee performing regular job duties? Yes  No

Was safety equipment provided? Yes  No  Was safety equipment used? Yes  No

### REPORT OF INJURY

Did an injury or illness occur? Yes  No  (*skip to next section if "No"*)

#### Injured Employee Information

Name: \_\_\_\_\_ Office: \_\_\_\_\_

Home address: \_\_\_\_\_ Gender: M  F  No. of dependents: \_\_\_\_\_

\_\_\_\_\_ Marital status: \_\_\_\_\_

Home telephone number: \_\_\_\_\_ Date of birth: \_\_\_\_\_

Occupation (regular job title): \_\_\_\_\_

Department: \_\_\_\_\_

What was the injury or illness? *Describe the part(s) of the body affected and how it was affected. Be more specific than "hurt," "pain," or "sore." Examples: "Strained back"; "Carpal tunnel syndrome, left wrist"*

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## INCIDENT INVESTIGATION REPORT (Continued)

### REPORT OF INJURY (continued)

Describe the object or substance that directly harmed the employee. *Examples: "Concrete floor"; "Chlorine."*

Did the employee die? Yes  No  Date of death: \_\_\_\_\_

**NOTE: Attach any police reports or related diagrams to this report.**

Medical treatment required? Yes  No  First Aid Only

Name of physician of health care professional: \_\_\_\_\_

If treatment was provided away from the work site, provide the information below:

Facility name: \_\_\_\_\_

Street address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip code: \_\_\_\_\_

Telephone number: \_\_\_\_\_

Was the employee treated in an emergency room? Yes  No

Was the employee hospitalized overnight as an in-patient? Yes  No

### PROPERTY DAMAGE

Did property damage occur? Yes  No  (*skip to next section if "No"*)

VERTEX property damaged: \_\_\_\_\_

\_\_\_\_\_

VERTEX client property damaged: \_\_\_\_\_

\_\_\_\_\_

Other property damaged: \_\_\_\_\_

\_\_\_\_\_

Trespassers, vandalism or illegal activity: \_\_\_\_\_

\_\_\_\_\_

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## INCIDENT INVESTIGATION REPORT (Continued)

### PROPERTY DAMAGE (continued)

Wildlife or environmental damage: \_\_\_\_\_  
\_\_\_\_\_

Motor vehicle involved? Yes  No  - If "Yes", **attach police report** and insurance information.

### WITNESS INFORMATION (attach additional sheets for other witnesses)

Were there witnesses to the incident? Yes  No

Name: \_\_\_\_\_ Company: \_\_\_\_\_

Street Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip code: \_\_\_\_\_

Telephone number: \_\_\_\_\_

### CORRECTIVE ACTION(S)

Corrective action(s) taken by unit reporting the incident:

Corrective action still to be taken (by whom and when) with suggestions to prevent a similar incident:

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## INCIDENT INVESTIGATION REPORT (Continued)

### REPORTING AND ACKNOWLEDGEMENT

Name of employee the incident was first reported to: \_\_\_\_\_

Date of Report: \_\_\_\_\_ Time of Report: \_\_\_\_\_

I have reviewed this investigation report and agree, to the best of my recollection, with its contents.

Name of reporting employee (print): \_\_\_\_\_ Telephone Number: \_\_\_\_\_

Signature of reporting employee: \_\_\_\_\_ Date: \_\_\_\_\_

Name of injured employee (print): \_\_\_\_\_ Telephone Number: \_\_\_\_\_

Signature of injured employee: \_\_\_\_\_ Date: \_\_\_\_\_

The signatures below indicate that appropriate personnel have been notified of the incident.

<u>Title</u>	<u>Printed Name</u>	<u>Signature</u>	<u>Telephone Number</u>	<u>Date</u>
Corporate Health & Safety Manager				
Supervisor				
Site Safety Coordinator (if applicable)				

*Subsequent pages to be completed by the Health and Safety Representative, Human Resources, and Workers Compensation Carrier, respectively.*

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Revision Date: 1/10/2017



## INCIDENT INVESTIGATION REPORT (Continued)

### To Be Completed by the Health and Safety Representative

#### Classification of Incident:

Injury     Illness     Property damage with no injury or illness

#### Result of Incident:

- Property damage  
 First aid only  
 Days away from work  
 Remained at work but incident resulted in job transfer or work restriction  
 Incident involved days away and job transfer or work restriction  
 Medical treatment only  
 Was incident investigated?

No. of days away from work \_\_\_\_\_

Date employee left work \_\_\_\_\_

Date employee returned to work \_\_\_\_\_

No. of days placed on restriction or job transfer: \_\_\_\_\_

OSHA Recordable Case Number \_\_\_\_\_

Reason for Incident:  Lack of Knowledge/Experience     Improper Attitude  
 Human Limitation     Condition

Corrective Action:  Instruction/Training  
 Motivation/Discipline  
 Proper Placement  
 Repair/Eliminate  
 Recommended Management

Suggestions for Changes to Avoid a Similar Incident? \_\_\_\_\_

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

Printed Name: \_\_\_\_\_

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Revision Date: 1/10/2017



## INCIDENT INVESTIGATION REPORT (Continued)

### To Be Completed by Human Resources

Date of hire: \_\_\_\_\_ Hire date for current job: \_\_\_\_\_

Wage information: \$ \_\_\_\_\_ per  Hour  Day  Week  Month  Year

Position at time of hire: \_\_\_\_\_

Current position: \_\_\_\_\_ Shift hours: \_\_\_\_\_

State in which employee was hired: \_\_\_\_\_

Status:  Full-time  Part-time Hours per week: \_\_\_\_\_ Days per week: \_\_\_\_\_

Temporary job end date: \_\_\_\_\_

### To Be Completed during Report to Workers Compensation Carrier

Date reported: \_\_\_\_\_ Reported by: \_\_\_\_\_

Confirmation number: \_\_\_\_\_

Name of contact: \_\_\_\_\_

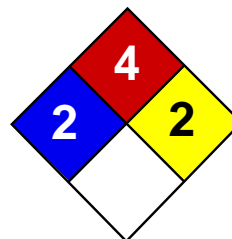
Field office of claims adjuster: \_\_\_\_\_

For claims:

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Revision Date: 1/10/2017

# **SAFETY DATA SHEETS (SDS)**



Health	2
Fire	4
Reactivity	0
Personal Protection	G

## Material Safety Data Sheet

### Vinylidene Chloride MSDS

#### Section 1: Chemical Product and Company Identification

**Product Name:** Vinylidene Chloride

**Catalog Codes:** SLV1063

**CAS#:** 75-35-4

**RTECS:** KV9275000

**TSCA:** TSCA 8(b) inventory: Vinylidene Chloride

**CI#:** Not available.

**Synonym:** 1,1-Dichloroethylene

**Chemical Name:** Vinylidene Chloride

**Chemical Formula:** C<sub>2</sub>H<sub>2</sub>Cl<sub>2</sub>

**Contact Information:**

**Sciencelab.com, Inc.**

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: [ScienceLab.com](http://ScienceLab.com)

**CHEMTREC (24HR Emergency Telephone), call:**

1-800-424-9300

**International CHEMTREC, call:** 1-703-527-3887

**For non-emergency assistance, call:** 1-281-441-4400

#### Section 2: Composition and Information on Ingredients

**Composition:**

Name	CAS #	% by Weight
Vinylidene Chloride	75-35-4	100

**Toxicological Data on Ingredients:** Vinylidene Chloride: ORAL (LD50): Acute: 194 mg/kg [Mouse]. 200 mg/kg [Rat].

#### Section 3: Hazards Identification

**Potential Acute Health Effects:**

Hazardous in case of skin contact (irritant). Slightly hazardous in case of eye contact (irritant), of inhalation (lung irritant). Severe over-exposure can result in death.

**Potential Chronic Health Effects:**

**CARCINOGENIC EFFECTS:** Classified 4 (No evidence.) by NTP. A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC. **MUTAGENIC EFFECTS:** Not available. **TERATOGENIC EFFECTS:** Not available. **DEVELOPMENTAL TOXICITY:** Classified Reproductive system/toxin/female [POSSIBLE]. The substance may be toxic to kidneys, liver, bladder, gastrointestinal tract, skin, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

#### Section 4: First Aid Measures

**Eye Contact:**

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. WARM water MUST be used. Get medical attention if irritation occurs.

**Skin Contact:**

In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

**Serious Skin Contact:**

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

**Inhalation:**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Serious Inhalation:**

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek medical attention.

**Ingestion:**

If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

**Serious Ingestion:** Not available.

## Section 5: Fire and Explosion Data

**Flammability of the Product:** Flammable.

**Auto-Ignition Temperature:** 520°C (968°F)

**Flash Points:** CLOSED CUP: -28°C (-18.4°F).

**Flammable Limits:** LOWER: 8.4% UPPER: 16.5%

**Products of Combustion:** These products are carbon oxides (CO, CO<sub>2</sub>), halogenated compounds.

**Fire Hazards in Presence of Various Substances:** Not available.

**Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

**Fire Fighting Media and Instructions:**

Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

**Special Remarks on Fire Hazards:** Not available.

**Special Remarks on Explosion Hazards:** Not available.

## Section 6: Accidental Release Measures

**Small Spill:** Absorb with an inert material and put the spilled material in an appropriate waste disposal.

**Large Spill:**

Flammable liquid. Poisonous liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call

for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

## Section 7: Handling and Storage

### Precautions:

Keep locked up.. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Avoid contact with skin. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, moisture.

### Storage:

Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame). Do not store above 25°C (77°F).

## Section 8: Exposure Controls/Personal Protection

### Engineering Controls:

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

### Personal Protection:

Safety glasses. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

### Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

### Exposure Limits:

STEL: 20 (ppm) from ACGIH (TLV) [United States] TWA: 1 from OSHA (PEL) [United States] TWA: 2 (ppm) [Austria] TWA: 5 (ppm) [Belgium] TWA: 5 (ppm) [Denmark] TWA: 2 (ppm) [Germany] Consult local authorities for acceptable exposure limits.

## Section 9: Physical and Chemical Properties

**Physical state and appearance:** Liquid.

**Odor:** Chloroform-like (Slight.)

**Taste:** Not available.

**Molecular Weight:** 96.94 g/mole

**Color:** Colorless.

**pH (1% soln/water):** Not available.

**Boiling Point:** 31°C (87.8°F)

**Melting Point:** -122.5°C (-188.5°F)

**Critical Temperature:** Not available.

**Specific Gravity:** 1.213 (Water = 1)

**Vapor Pressure:** 78.8 kPa (@ 20°C)

**Vapor Density:** 3.25 (Air = 1)

**Volatility:** Not available.

**Odor Threshold:** Not available.

**Water/Oil Dist. Coeff.:** Not available.

**Ionicity (in Water):** Not available.

**Dispersion Properties:** Very slightly dispersed in cold water, hot water, diethyl ether, acetone.

**Solubility:** Very slightly soluble in cold water, hot water, diethyl ether, acetone.

## Section 10: Stability and Reactivity Data

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Not available.

**Incompatibility with various substances:** Reactive with oxidizing agents, moisture.

**Corrosivity:** Corrosive in presence of steel.

**Special Remarks on Reactivity:**

Do not mix with Aluminum or Copper. May cause polymerization when exposed to Nitric Acid, Chlorosulfonic Acid, Oleum

**Special Remarks on Corrosivity:** Not available.

**Polymerization:** Will not occur.

## Section 11: Toxicological Information

**Routes of Entry:** Absorbed through skin. Inhalation. Ingestion.

**Toxicity to Animals:** Acute oral toxicity (LD50): 194 mg/kg [Mouse].

**Chronic Effects on Humans:**

CARCINOGENIC EFFECTS: Classified 4 (No evidence.) by NTP. A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female [POSSIBLE]. May cause damage to the following organs: kidneys, liver, bladder, gastrointestinal tract, skin, central nervous system (CNS).

**Other Toxic Effects on Humans:**

Hazardous in case of skin contact (irritant). Slightly hazardous in case of inhalation (lung irritant).

**Special Remarks on Toxicity to Animals:** Not available.

**Special Remarks on Chronic Effects on Humans:** Not available.

**Special Remarks on other Toxic Effects on Humans:** Not available.

## Section 12: Ecological Information

**Ecotoxicity:** Not available.

**BOD5 and COD:** Not available.

**Products of Biodegradation:**

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** The products of degradation are as toxic as the product itself.

**Special Remarks on the Products of Biodegradation:** Not available.

## Section 13: Disposal Considerations



**Waste Disposal:**

## Section 14: Transport Information

**DOT Classification:** CLASS 3: Flammable liquid.

**Identification:** : Vinylidene chloride, Inhibited UNNA: 1303 PG: I

**Special Provisions for Transport:** Not available.

## Section 15: Other Regulatory Information

### Federal and State Regulations:

Pennsylvania RTK: Vinylidene Chloride Florida: Vinylidene Chloride Minnesota: Vinylidene Chloride Michigan critical material: Vinylidene Chloride Massachusetts RTK: Vinylidene Chloride New Jersey: Vinylidene Chloride TSCA 8(b) inventory: Vinylidene Chloride TSCA 8(a) PAIR: Vinylidene Chloride TSCA 8(d) H and S data reporting: Vinylidene Chloride: 8/4/95 CERCLA: Hazardous substances.: Vinylidene Chloride: 100 lbs. (45.36 kg)

### Other Regulations:

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

### Other Classifications:

### WHMIS (Canada):

CLASS B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F).

### DSCL (EEC):

R12- Extremely flammable. R20- Harmful by inhalation. R40- Possible risks of irreversible effects.

### HMIS (U.S.A.):

**Health Hazard:** 2

**Fire Hazard:** 4

**Reactivity:** 0

**Personal Protection:** g

### National Fire Protection Association (U.S.A.):

**Health:** 2

**Flammability:** 4

**Reactivity:** 2

**Specific hazard:**

### Protective Equipment:

Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

## Section 16: Other Information

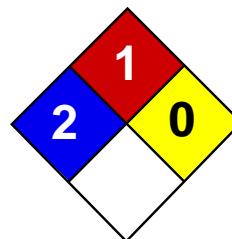
**References:** Not available.

**Other Special Considerations:** Not available.

**Created:** 10/10/2005 12:15 AM

**Last Updated:** 05/21/2013 12:00 PM

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Health	2
Fire	1
Reactivity	0
Personal Protection	H

## Material Safety Data Sheet Trichloroethylene MSDS

### Section 1: Chemical Product and Company Identification

**Product Name:** Trichloroethylene

**Catalog Codes:** SLT3310, SLT2590

**CAS#:** 79-01-6

**RTECS:** KX4560000

**TSCA:** TSCA 8(b) inventory: Trichloroethylene

**CI#:** Not available.

**Synonym:**

**Chemical Formula:** C<sub>2</sub>HCl<sub>3</sub>

**Contact Information:**

**Sciencelab.com, Inc.**

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: [ScienceLab.com](http://ScienceLab.com)

**CHEMTREC (24HR Emergency Telephone), call:**

1-800-424-9300

**International CHEMTREC, call:** 1-703-527-3887

**For non-emergency assistance, call:** 1-281-441-4400

### Section 2: Composition and Information on Ingredients

**Composition:**

Name	CAS #	% by Weight
Trichloroethylene	79-01-6	100

**Toxicological Data on Ingredients:** Trichloroethylene: ORAL (LD50): Acute: 5650 mg/kg [Rat]. 2402 mg/kg [Mouse]. DERMAL (LD50): Acute: 20001 mg/kg [Rabbit].

### Section 3: Hazards Identification

**Potential Acute Health Effects:** Hazardous in case of skin contact (irritant, permeator), of eye contact (irritant), of ingestion, of inhalation.

**Potential Chronic Health Effects:**

**CARCINOGENIC EFFECTS:** Classified + (PROVEN) by OSHA. Classified A5 (Not suspected for human.) by ACGIH.

**MUTAGENIC EFFECTS:** Not available. **TERATOGENIC EFFECTS:** Not available. **DEVELOPMENTAL TOXICITY:** Not available. The substance is toxic to kidneys, the nervous system, liver, heart, upper respiratory tract. Repeated or prolonged exposure to the substance can produce target organs damage.

### Section 4: First Aid Measures

**Eye Contact:**

Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Do not use an eye ointment. Seek medical attention.

**Skin Contact:**

After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

**Serious Skin Contact:**

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

**Inhalation:** Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

**Serious Inhalation:**

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

**Ingestion:**

Do not induce vomiting. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

**Serious Ingestion:** Not available.

### Section 5: Fire and Explosion Data

**Flammability of the Product:** May be combustible at high temperature.

**Auto-Ignition Temperature:** 420°C (788°F)

**Flash Points:** Not available.

**Flammable Limits:** LOWER: 8% UPPER: 10.5%

**Products of Combustion:** These products are carbon oxides (CO, CO<sub>2</sub>), halogenated compounds.

**Fire Hazards in Presence of Various Substances:** Not available.

**Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

**Fire Fighting Media and Instructions:**

SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

**Special Remarks on Fire Hazards:** Not available.

**Special Remarks on Explosion Hazards:** Not available.

### Section 6: Accidental Release Measures

**Small Spill:** Absorb with an inert material and put the spilled material in an appropriate waste disposal.

**Large Spill:**

Absorb with an inert material and put the spilled material in an appropriate waste disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

### Section 7: Handling and Storage

**Precautions:**

Keep locked up Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapour/

spray. Wear suitable protective clothing In case of insufficient ventilation, wear suitable respiratory equipment If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes

**Storage:**

Keep container dry. Keep in a cool place. Ground all equipment containing material. Carcinogenic, teratogenic or mutagenic materials should be stored in a separate locked safety storage cabinet or room.

## Section 8: Exposure Controls/Personal Protection

**Engineering Controls:**

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

**Personal Protection:**

Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

**Personal Protection in Case of a Large Spill:**

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

**Exposure Limits:**

TWA: 50 STEL: 200 (ppm) from ACGIH (TLV) TWA: 269 STEL: 1070 (mg/m<sup>3</sup>) from ACGIH Consult local authorities for acceptable exposure limits.

## Section 9: Physical and Chemical Properties

**Physical state and appearance:** Liquid.

**Odor:** Not available.

**Taste:** Not available.

**Molecular Weight:** 131.39 g/mole

**Color:** Clear Colorless.

**pH (1% soln/water):** Not available.

**Boiling Point:** 86.7°C (188.1°F)

**Melting Point:** -87.1°C (-124.8°F)

**Critical Temperature:** Not available.

**Specific Gravity:** 1.4649 (Water = 1)

**Vapor Pressure:** 58 mm of Hg (@ 20°C)

**Vapor Density:** 4.53 (Air = 1)

**Volatility:** Not available.

**Odor Threshold:** 20 ppm

**Water/Oil Dist. Coeff.:** The product is equally soluble in oil and water; log(oil/water) = 0

**Ionicity (in Water):** Not available.

**Dispersion Properties:** See solubility in water, methanol, diethyl ether, acetone.

**Solubility:**

Easily soluble in methanol, diethyl ether, acetone. Very slightly soluble in cold water.

## Section 10: Stability and Reactivity Data

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Not available.

**Incompatibility with various substances:** Not available.

**Corrosivity:**

Extremely corrosive in presence of aluminum. Non-corrosive in presence of glass.

**Special Remarks on Reactivity:** Not available.

**Special Remarks on Corrosivity:** Not available.

**Polymerization:** No.

### Section 11: Toxicological Information

**Routes of Entry:** Dermal contact. Eye contact. Inhalation. Ingestion.

**Toxicity to Animals:**

Acute oral toxicity (LD50): 2402 mg/kg [Mouse]. Acute dermal toxicity (LD50): 20001 mg/kg [Rabbit].

**Chronic Effects on Humans:**

CARCINOGENIC EFFECTS: Classified + (PROVEN) by OSHA. Classified A5 (Not suspected for human.) by ACGIH. The substance is toxic to kidneys, the nervous system, liver, heart, upper respiratory tract.

**Other Toxic Effects on Humans:** Hazardous in case of skin contact (irritant, permeator), of ingestion, of inhalation.

**Special Remarks on Toxicity to Animals:** Not available.

**Special Remarks on Chronic Effects on Humans:** Passes through the placental barrier in human. Detected in maternal milk in human.

**Special Remarks on other Toxic Effects on Humans:** Not available.

### Section 12: Ecological Information

**Ecotoxicity:** Not available.

**BOD5 and COD:** Not available.

**Products of Biodegradation:**

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** The products of degradation are more toxic.

**Special Remarks on the Products of Biodegradation:** Not available.

### Section 13: Disposal Considerations

**Waste Disposal:**

### Section 14: Transport Information

**DOT Classification:** CLASS 6.1: Poisonous material.

**Identification:** : Trichloroethylene : UN1710 PG: III

**Special Provisions for Transport:** Not available.

## Section 15: Other Regulatory Information

### Federal and State Regulations:

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Trichloroethylene California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Trichloroethylene Pennsylvania RTK: Trichloroethylene Florida: Trichloroethylene Minnesota: Trichloroethylene Massachusetts RTK: Trichloroethylene New Jersey: Trichloroethylene TSCA 8(b) inventory: Trichloroethylene CERCLA: Hazardous substances.: Trichloroethylene

**Other Regulations:** OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

### Other Classifications:

#### WHMIS (Canada):

CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC). CLASS D-2B: Material causing other toxic effects (TOXIC).

#### DSCL (EEC):

R36/38- Irritating to eyes and skin. R45- May cause cancer.

#### HMIS (U.S.A.):

**Health Hazard:** 2

**Fire Hazard:** 1

**Reactivity:** 0

**Personal Protection:** h

#### National Fire Protection Association (U.S.A.):

**Health:** 2

**Flammability:** 1

**Reactivity:** 0

**Specific hazard:**

#### Protective Equipment:

Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

## Section 16: Other Information

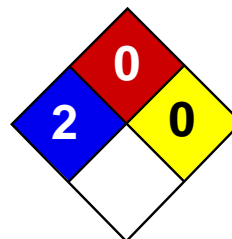
**References:** Not available.

**Other Special Considerations:** Not available.

**Created:** 10/10/2005 08:54 PM

**Last Updated:** 05/21/2013 12:00 PM

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Health	2
Fire	0
Reactivity	0
Personal Protection	G

## Material Safety Data Sheet Tetrachloroethylene MSDS

### Section 1: Chemical Product and Company Identification

**Product Name:** Tetrachloroethylene

**Catalog Codes:** SLT3220

**CAS#:** 127-18-4

**RTECS:** KX3850000

**TSCA:** TSCA 8(b) inventory: Tetrachloroethylene

**CI#:** Not available.

**Synonym:** Perchloroethylene; 1,1,2,2-Tetrachloroethylene; Carbon bichloride; Carbon dichloride; Ankilostin; Didakene; Dilatin PT; Ethene, tetrachloro-; Ethylene tetrachloride; Perawin; Perchlor; Perclene; Perclene D; Percosolve; Tetrachloroethene; Tetraleno; Tetralex; Tetravec; Tetroguer; Tetropil

**Chemical Name:** Ethylene, tetrachloro-

**Chemical Formula:** C<sub>2</sub>-Cl<sub>4</sub>

**Contact Information:**

**Sciencelab.com, Inc.**

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: [ScienceLab.com](http://ScienceLab.com)

**CHEMTREC (24HR Emergency Telephone), call:**

1-800-424-9300

**International CHEMTREC, call:** 1-703-527-3887

**For non-emergency assistance, call:** 1-281-441-4400

### Section 2: Composition and Information on Ingredients

**Composition:**

Name	CAS #	% by Weight
Tetrachloroethylene	127-18-4	100

**Toxicological Data on Ingredients:** Tetrachloroethylene: ORAL (LD50): Acute: 2629 mg/kg [Rat]. DERMAL (LD): Acute: >3228 mg/kg [Rabbit]. MIST(LC50): Acute: 34200 mg/m 8 hours [Rat]. VAPOR (LC50 ): Acute: 5200 ppm 4 hours [Mouse].

### Section 3: Hazards Identification

**Potential Acute Health Effects:**

Hazardous in case of skin contact (irritant), of inhalation. Slightly hazardous in case of skin contact (permeator), of eye contact (irritant), of ingestion.

**Potential Chronic Health Effects:**

**CARCINOGENIC EFFECTS:** Classified A3 (Proven for animal.) by ACGIH. Classified 2A (Probable for human.) by IARC, 2 (anticipated carcinogen) by NTP. **MUTAGENIC EFFECTS:** Mutagenic for bacteria and/or yeast. **TERATOGENIC EFFECTS:** Not available. **DEVELOPMENTAL TOXICITY:** Not available. The substance may be toxic to kidneys, liver, peripheral nervous system, respiratory tract, skin, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.



## Section 4: First Aid Measures

### Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

### Skin Contact:

In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

### Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

### Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

### Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

### Ingestion:

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

**Serious Ingestion:** Not available.

## Section 5: Fire and Explosion Data

**Flammability of the Product:** Non-flammable.

**Auto-Ignition Temperature:** Not applicable.

**Flash Points:** Not applicable.

**Flammable Limits:** Not applicable.

**Products of Combustion:** Not available.

**Fire Hazards in Presence of Various Substances:** Not applicable.

**Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

**Fire Fighting Media and Instructions:** Not applicable.

**Special Remarks on Fire Hazards:** Not available.

**Special Remarks on Explosion Hazards:** Not available.

## Section 6: Accidental Release Measures

**Small Spill:** Absorb with an inert material and put the spilled material in an appropriate waste disposal.

**Large Spill:**

Absorb with an inert material and put the spilled material in an appropriate waste disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

## Section 7: Handling and Storage

**Precautions:**

Do not ingest. Do not breathe gas/fumes/ vapor/spray. Avoid contact with skin. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, metals, acids, alkalis.

**Storage:** Keep container tightly closed. Keep container in a cool, well-ventilated area.

## Section 8: Exposure Controls/Personal Protection

**Engineering Controls:**

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value.

**Personal Protection:**

Safety glasses. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

**Personal Protection in Case of a Large Spill:**

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

**Exposure Limits:**

TWA: 25 (ppm) from OSHA (PEL) [United States] TWA: 25 STEL: 100 (ppm) from ACGIH (TLV) [United States] TWA: 170 (mg/m3) from OSHA (PEL) [United States] Consult local authorities for acceptable exposure limits.

## Section 9: Physical and Chemical Properties

**Physical state and appearance:** Liquid.

**Odor:** Ethereal.

**Taste:** Not available.

**Molecular Weight:** 165.83 g/mole

**Color:** Clear Colorless.

**pH (1% soln/water):** Not available.

**Boiling Point:** 121.3°C (250.3°F)

**Melting Point:** -22.3°C (-8.1°F)

**Critical Temperature:** 347.1°C (656.8°F)

**Specific Gravity:** 1.6227 (Water = 1)

**Vapor Pressure:** 1.7 kPa (@ 20°C)

**Vapor Density:** 5.7 (Air = 1)

**Volatility:** Not available.

**Odor Threshold:** 5 - 50 ppm

**Water/Oil Dist. Coeff.:** The product is more soluble in oil; log(oil/water) = 3.4

**Ionicity (in Water):** Not available.

**Dispersion Properties:** Not available.

**Solubility:**

Miscible with alcohol, ether, chloroform, benzene, hexane. It dissolves in most of the fixed and volatile oils. Solubility in water: 0.015 g/100 ml @ 25 deg. C It slowly decomposes in water to yield Trichloroacetic and Hydrochloric acids.

## Section 10: Stability and Reactivity Data

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Incompatible materials

**Incompatibility with various substances:** Reactive with oxidizing agents, metals, acids, alkalis.

**Corrosivity:** Non-corrosive in presence of glass.

**Special Remarks on Reactivity:**

Oxidized by strong oxidizing agents. Incompatible with sodium hydroxide, finely divided or powdered metals such as zinc, aluminum, magnesium, potassium, chemically active metals such as lithium, beryllium, barium. Protect from light.

**Special Remarks on Corrosivity:** Slowly corrodes aluminum, iron, and zinc.

**Polymerization:** Will not occur.

## Section 11: Toxicological Information

**Routes of Entry:** Absorbed through skin. Eye contact. Inhalation. Ingestion.

**Toxicity to Animals:**

WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 2629 mg/kg [Rat]. Acute dermal toxicity (LD50): >3228 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 5200 4 hours [Mouse].

**Chronic Effects on Humans:**

CARCINOGENIC EFFECTS: Classified A3 (Proven for animal.) by ACGIH. Classified 2A (Probable for human.) by IARC, 2 (Some evidence.) by NTP. MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast. May cause damage to the following organs: kidneys, liver, peripheral nervous system, upper respiratory tract, skin, central nervous system (CNS).

**Other Toxic Effects on Humans:**

Hazardous in case of skin contact (irritant), of inhalation. Slightly hazardous in case of skin contact (permeator), of ingestion.

**Special Remarks on Toxicity to Animals:**

Lowest Published Lethal Dose/Conc: LDL [Rabbit] - Route: Oral; Dose: 5000 mg/kg LDL [Dog] - Route: Oral; Dose: 4000 mg/kg LDL [Cat] - Route: Oral; Dose: 4000 mg/kg

**Special Remarks on Chronic Effects on Humans:**

May cause adverse reproductive effects and birth defects (teratogenic). May affect genetic material (mutagenic). May cause cancer.

**Special Remarks on other Toxic Effects on Humans:**

Acute Potential Health Effects: Skin: Causes skin irritation with possible dermal blistering or burns. Symptoms may include redness, itching, pain, and possible dermal blistering or burns. It may be absorbed through the skin with possible systemic effects. A single prolonged skin exposure is not likely to result in the material being absorbed in harmful amounts. Eyes: Contact causes transient eye irritation, lacrimation. Vapors cause eye/conjunctival irritation. Symptoms may include redness and pain. Inhalation: The main route to occupational exposure is by inhalation since it is readily absorbed through the lungs. It causes respiratory tract irritation, . It can affect behavior/central nervous system (CNS depressant and anesthesia ranging from slight inebriation to death, vertigo, somnolence, anxiety, headache, excitement, hallucinations, muscle incoordination, dizziness, lightheadness, disorientation, seizures, emotional instability, stupor, coma). It may cause pulmonary edema. Ingestion: It can cause nausea, vomiting, anorexia, diarrhea, bloody stool. It may affect the liver, urinary system (proteinuria, hematuria, renal failure, renal tubular disorder), heart (arrhythmias). It may affect behavior/central nervous system with symptoms similar to that of inhalation. Chronic Potential Health Effects: Skin: Prolonged or repeated skin contact may result in excessive drying of the skin, and irritation. Ingestion/Inhalation: Chronic exposure can affect the liver (hepatitis, fatty liver degeneration), kidneys, spleen, and heart (irregular heartbeat/arrhythmias, cardiomyopathy, abnormal EEG), brain, behavior/central nervous system/peripheral nervous system (impaired memory, numbness of extremities, peripheral neuropathy and other

## Section 12: Ecological Information

### Ecotoxicity:

Ecotoxicity in water (LC50): 18.4 mg/l 96 hours [Fish (Fathead Minnow)]. 18 mg/l 48 hours [Daphnia (daphnia)]. 5 mg/l 96 hours [Fish (Rainbow Trout)]. 13 mg/l 96 hours [Fish (Bluegill sunfish)].

**BOD5 and COD:** Not available.

### Products of Biodegradation:

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** The product itself and its products of degradation are not toxic.

**Special Remarks on the Products of Biodegradation:** Not available.

## Section 13: Disposal Considerations

### Waste Disposal:

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

## Section 14: Transport Information

**DOT Classification:** CLASS 6.1: Poisonous material.

**Identification:** : Tetrachloroethylene UNNA: 1897 PG: III

**Special Provisions for Transport:** Marine Pollutant

## Section 15: Other Regulatory Information

### Federal and State Regulations:

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Tetrachloroethylene California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Tetrachloroethylene Connecticut hazardous material survey.: Tetrachloroethylene Illinois toxic substances disclosure to employee act: Tetrachloroethylene Illinois chemical safety act: Tetrachloroethylene New York release reporting list: Tetrachloroethylene Rhode Island RTK hazardous substances: Tetrachloroethylene Pennsylvania RTK: Tetrachloroethylene Minnesota: Tetrachloroethylene Michigan critical material: Tetrachloroethylene Massachusetts RTK: Tetrachloroethylene Massachusetts spill list: Tetrachloroethylene New Jersey: Tetrachloroethylene New Jersey spill list: Tetrachloroethylene Louisiana spill reporting: Tetrachloroethylene California Director's List of Hazardous Substances: Tetrachloroethylene TSCA 8(b) inventory: Tetrachloroethylene TSCA 8(d) H and S data reporting: Tetrachloroethylene: Effective date: 6/1/87; Sunset date: 6/1/97 SARA 313 toxic chemical notification and release reporting: Tetrachloroethylene CERCLA: Hazardous substances.: Tetrachloroethylene: 100 lbs. (45.36 kg)

### Other Regulations:

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

### Other Classifications:

#### WHMIS (Canada):

CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

#### DSCL (EEC):

R40- Possible risks of irreversible effects. R51/53- Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. S23- Do not breathe gas/fumes/vapour/spray S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S37- Wear suitable gloves. S61- Avoid release to the environment. Refer to special instructions/Safety data sheets.

**HMIS (U.S.A.):**

**Health Hazard:** 2

**Fire Hazard:** 0

**Reactivity:** 0

**Personal Protection:** g

**National Fire Protection Association (U.S.A.):**

**Health:** 2

**Flammability:** 0

**Reactivity:** 0

**Specific hazard:**

**Protective Equipment:**

Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

**Section 16: Other Information**

**References:** Not available.

**Other Special Considerations:** Not available.

**Created:** 10/10/2005 08:29 PM

**Last Updated:** 05/21/2013 12:00 PM

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# MATERIAL SAFETY DATA SHEET

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## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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**MATHESON TRI-GAS, INC.**  
**150 Allen Road Suite 302**  
**Basking Ridge, New Jersey 07920**  
**Information: 1-800-416-2505**

**Emergency Contact:**  
**CHEMTREC 1-800-424-9300**  
**Calls Originating Outside the US:**  
**703-527-3887 (Collect Calls Accepted)**

**SUBSTANCE: CIS-1,2-DICHLOROETHYLENE**

**TRADE NAMES/SYNONYMS:**

CIS-ACETYLENE DICHLORIDE; 1,2-DICHLOROETHYLENE; C<sub>2</sub>H<sub>2</sub>CL<sub>2</sub>; MAT05125; RTECS  
KV9420000

**CHEMICAL FAMILY:** halogenated, aliphatic

**CREATION DATE:** Jan 24 1989

**REVISION DATE:** Dec 11 2008

---

## 2. COMPOSITION, INFORMATION ON INGREDIENTS

---

**COMPONENT:** CIS-1,2-DICHLOROETHYLENE

**CAS NUMBER:** 156-59-2

**PERCENTAGE:** 100.0

---

## 3. HAZARDS IDENTIFICATION

---

**NFPA RATINGS (SCALE 0-4):** HEALTH=2 FIRE=3 REACTIVITY=2



**EMERGENCY OVERVIEW:**

**COLOR:** colorless

**PHYSICAL FORM:** liquid

**ODOR:** pleasant odor

**MAJOR HEALTH HAZARDS:** respiratory tract irritation, skin irritation, eye irritation, central nervous system depression

**PHYSICAL HAZARDS:** Flammable liquid and vapor. Vapor may cause flash fire. May react on contact with air, heat, light or water.

**POTENTIAL HEALTH EFFECTS:**

**INHALATION:**

**SHORT TERM EXPOSURE:** irritation, nausea, vomiting, drowsiness, symptoms of drunkenness

**LONG TERM EXPOSURE:** no information on significant adverse effects

**SKIN CONTACT:**

**SHORT TERM EXPOSURE:** irritation

**LONG TERM EXPOSURE:** same as effects reported in short term exposure

**EYE CONTACT:**

**SHORT TERM EXPOSURE:** irritation

**LONG TERM EXPOSURE:** same as effects reported in short term exposure

**INGESTION:**

**SHORT TERM EXPOSURE:** symptoms of drunkenness

**LONG TERM EXPOSURE:** no information on significant adverse effects

---

## 4. FIRST AID MEASURES

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**INHALATION:** If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

**SKIN CONTACT:** Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

**EYE CONTACT:** Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

**INGESTION:** If vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention immediately.

**NOTE TO PHYSICIAN:** For ingestion, consider gastric lavage. Consider oxygen.

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## 5. FIRE FIGHTING MEASURES

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**FIRE AND EXPLOSION HAZARDS:** Severe fire hazard. Moderate explosion hazard. Vapor/air mixtures are explosive above flash point. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back.

**EXTINGUISHING MEDIA:** regular dry chemical, carbon dioxide, water, regular foam

Large fires: Use regular foam or flood with fine water spray.

**FIRE FIGHTING:** Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Withdraw immediately in case of rising sound from venting safety device or any

discoloration of tanks due to fire. For tank, rail car or tank truck: Evacuation radius: 800 meters (1/2 mile). Do not attempt to extinguish fire unless flow of material can be stopped first. Flood with fine water spray. Do not scatter spilled material with high-pressure water streams. Cool containers with water spray until well after the fire is out. Apply water from a protected location or from a safe distance. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas. Water may be ineffective.

**FLASH POINT:** 39 F (4 C) (CC)

**LOWER FLAMMABLE LIMIT:** 9.7%

**UPPER FLAMMABLE LIMIT:** 12.8%

**FLAMMABILITY CLASS (OSHA):** IB

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## 6. ACCIDENTAL RELEASE MEASURES

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### **OCCUPATIONAL RELEASE:**

Avoid heat, flames, sparks and other sources of ignition. Stop leak if possible without personal risk. Reduce vapors with water spray. Small spills: Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Large spills: Dike for later disposal. Remove sources of ignition. Keep unnecessary people away, isolate hazard area and deny entry.

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## 7. HANDLING AND STORAGE

---

**STORAGE:** Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.106. Grounding and bonding required. Keep separated from incompatible substances.

---

## 8. EXPOSURE CONTROLS, PERSONAL PROTECTION

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### **EXPOSURE LIMITS:**

**CIS-1,2-DICHLOROETHYLENE:**

**1,2-DICHLOROETHYLENE (ALL ISOMERS):**

200 ppm (790 mg/m<sup>3</sup>) OSHA TWA

200 ppm ACGIH TWA

200 ppm (790 mg/m<sup>3</sup>) NIOSH recommended TWA 10 hour(s)

**VENTILATION:** Provide local exhaust ventilation system. Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Ensure compliance with applicable exposure limits.

**EYE PROTECTION:** Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

**CLOTHING:** Wear appropriate chemical resistant clothing.



**GLOVES:** Wear appropriate chemical resistant gloves.

**RESPIRATOR:** The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA.

2000 ppm

Any supplied-air respirator operated in a continuous-flow mode.

Any powered, air-purifying respirator with organic vapor cartridge(s).

Any air-purifying respirator with a full facepiece and an organic vapor canister.

Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted organic vapor canister.

Any self-contained breathing apparatus with a full facepiece.

Any supplied-air respirator with a full facepiece.

Emergency or planned entry into unknown concentrations or IDLH conditions -

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

**Escape -**

Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted organic vapor canister.

Any appropriate escape-type, self-contained breathing apparatus.

**For Unknown Concentrations or Immediately Dangerous to Life or Health -**

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

---

## 9. PHYSICAL AND CHEMICAL PROPERTIES

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**PHYSICAL STATE:** liquid

**COLOR:** colorless

**ODOR:** pleasant odor

**MOLECULAR WEIGHT:** 96.94

**MOLECULAR FORMULA:** C<sub>2</sub>H<sub>2</sub>CL<sub>2</sub>

**BOILING POINT:** 140 F (60 C)

**FREEZING POINT:** -114 F (-81 C)

**VAPOR PRESSURE:** 400 mmHg @ 41 C

**VAPOR DENSITY (air=1):** 3.34

**SPECIFIC GRAVITY (water=1):** 1.2837

**WATER SOLUBILITY:** insoluble

**PH:** Not available

**VOLATILITY:** Not available

**ODOR THRESHOLD:** Not available

**EVAPORATION RATE:** Not available

**COEFFICIENT OF WATER/OIL DISTRIBUTION:** Not available

**SOLVENT SOLUBILITY:**

**Soluble:** acetone, benzene, ether, alcohol

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## 10. STABILITY AND REACTIVITY

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**REACTIVITY:** May decompose on contact with air, light, moisture, heat or storage and use above room temperature. Releases toxic, corrosive, flammable or explosive gases.

**CONDITIONS TO AVOID:** Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat. Keep out of water supplies and sewers.

**INCOMPATIBILITIES:** bases, metals, combustible materials, oxidizing materials, acids

**HAZARDOUS DECOMPOSITION:**

Thermal decomposition products: phosgene, halogenated compounds, oxides of carbon

**POLYMERIZATION:** May polymerize. Avoid contact with incompatible materials.

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## 11. TOXICOLOGICAL INFORMATION

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**CIS-1,2-DICHLOROETHYLENE:**

**TOXICITY DATA:** 13700 ppm inhalation-rat LC50

**LOCAL EFFECTS:**

Irritant: inhalation, skin, eye

**ACUTE TOXICITY LEVEL:**

Slightly Toxic: inhalation

**TARGET ORGANS:** central nervous system

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** respiratory disorders

**MUTAGENIC DATA:** Available.

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## 12. ECOLOGICAL INFORMATION

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Not available

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## 13. DISPOSAL CONSIDERATIONS

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Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001. Dispose in accordance with all applicable regulations.

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## 14. TRANSPORT INFORMATION

---

**U.S. DOT 49 CFR 172.101:**  
**PROPER SHIPPING NAME:** 1,2-Dichloroethylene  
**ID NUMBER:** UN1150  
**HAZARD CLASS OR DIVISION:** 3  
**PACKING GROUP:** II  
**LABELING REQUIREMENTS:** 3



**CANADIAN TRANSPORTATION OF DANGEROUS GOODS:**  
**SHIPPING NAME:** 1,2-Dichloroethylene  
**UN NUMBER:** UN1150  
**CLASS:** 3  
**PACKING GROUP/CATEGORY:** II

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## 15. REGULATORY INFORMATION

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**U.S. REGULATIONS:**

**CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):** Not regulated.

**SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355 Subpart B):** Not regulated.

**SARA TITLE III SECTION 304 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355 Subpart C):** Not regulated.

**SARA TITLE III SARA SECTIONS 311/312 HAZARDOUS CATEGORIES (40 CFR 370 Subparts B and C):**

ACUTE: Yes

CHRONIC: No

FIRE: Yes

REACTIVE: Yes

SUDDEN RELEASE: No

**SARA TITLE III SECTION 313 (40 CFR 372.65):**  
**1,2-DICHLOROETHYLENE (ALL ISOMERS)**

**OSHA PROCESS SAFETY (29 CFR 1910.119):** Not regulated.

**STATE REGULATIONS:**

**California Proposition 65:** Not regulated.

**CANADIAN REGULATIONS:**

**WHMIS CLASSIFICATION:** BD2

**NATIONAL INVENTORY STATUS:**

**U.S. INVENTORY (TSCA):** Listed on inventory.

**TSCA 12(b) EXPORT NOTIFICATION:** Not listed.

**CANADA INVENTORY (DSL/NDSL):** Not determined.

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**16. OTHER INFORMATION**

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## SAFETY DATA SHEET

Version 4.4  
Revision Date 04/02/2014  
Print Date 04/07/2014

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**1. PRODUCT AND COMPANY IDENTIFICATION****1.1 Product identifiers**

Product name : *trans*-1,2-Dichloroethylene

Product Number : D62209  
Brand : Aldrich  
Index-No. : 602-026-00-3  
REACH No. : A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

CAS-No. : 156-60-5

**1.2 Relevant identified uses of the substance or mixture and uses advised against**

Identified uses : Laboratory chemicals, Manufacture of substances

**1.3 Details of the supplier of the safety data sheet**

Company : Sigma-Aldrich  
3050 Spruce Street  
SAINT LOUIS MO 63103  
USA

Telephone : +1 800-325-5832  
Fax : +1 800-325-5052

**1.4 Emergency telephone number**

Emergency Phone # : (314) 776-6555

---

**2. HAZARDS IDENTIFICATION****2.1 Classification of the substance or mixture****GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

Flammable liquids (Category 2), H225  
Acute toxicity, Inhalation (Category 4), H332  
Acute aquatic toxicity (Category 3), H402  
Chronic aquatic toxicity (Category 3), H412

For the full text of the H-Statements mentioned in this Section, see Section 16.

**2.2 GHS Label elements, including precautionary statements**

Pictogram



Signal word

Danger

Hazard statement(s)

H225 Highly flammable liquid and vapour.  
H332 Harmful if inhaled.  
H412 Harmful to aquatic life with long lasting effects.

Precautionary statement(s)

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.  
P233 Keep container tightly closed.  
P240 Ground/bond container and receiving equipment.

P241	Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P271	Use only outdoors or in a well-ventilated area.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P303 + P361 + P353	IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P312	Call a POISON CENTER or doctor/ physician if you feel unwell.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
P403 + P235	Store in a well-ventilated place. Keep cool.
P501	Dispose of contents/ container to an approved waste disposal plant.

## 2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

#### 3.1 Substances

Synonyms : trans-1,2-Dichloroethene  
trans-Acetylene dichloride

Formula : C<sub>2</sub>H<sub>2</sub>Cl<sub>2</sub>  
Molecular Weight : 96.94 g/mol  
CAS-No. : 156-60-5  
EC-No. : 205-860-2  
Index-No. : 602-026-00-3

#### Hazardous components

Component	Classification	Concentration
<b>trans-Dichloroethylene</b>		
	Flam. Liq. 2; Acute Tox. 4; Aquatic Acute 3; Aquatic Chronic 3; H225, H332, H412	-

For the full text of the H-Statements mentioned in this Section, see Section 16.

### 4. FIRST AID MEASURES

#### 4.1 Description of first aid measures

##### General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

##### If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

##### In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

##### In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

##### If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

#### 4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

- 4.3 Indication of any immediate medical attention and special treatment needed**  
no data available

---

## 5. FIREFIGHTING MEASURES

### 5.1 Extinguishing media

#### Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

### 5.2 Special hazards arising from the substance or mixture

Carbon oxides, Hydrogen chloride gas

### 5.3 Advice for firefighters

Wear self contained breathing apparatus for fire fighting if necessary.

### 5.4 Further information

Use water spray to cool unopened containers.

---

## 6. ACCIDENTAL RELEASE MEASURES

### 6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

For personal protection see section 8.

### 6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

### 6.3 Methods and materials for containment and cleaning up

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

### 6.4 Reference to other sections

For disposal see section 13.

---

## 7. HANDLING AND STORAGE

### 7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

For precautions see section 2.2.

### 7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Light sensitive. Air and moisture sensitive.

### 7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

---

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1 Control parameters

#### Components with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
trans-Dichloroethylene	156-60-5	TWA	200 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Central Nervous System impairment Eye irritation		

## 8.2 Exposure controls

### Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

### Personal protective equipment

#### Eye/face protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

#### Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

#### Body Protection

Complete suit protecting against chemicals, Flame retardant antistatic protective clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

#### Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

#### Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

---

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on basic physical and chemical properties

- |   |   |
|---|---|
| a) Appearance                                   | Form: liquid, clear<br>Colour: light yellow                         |
| b) Odour  | no data available   |
| c) Odour Threshold                              | no data available   |
| d) pH   | no data available   |
| e) Melting point/freezing point                 | Melting point/range: -50 °C (-58 °F) - lit.                         |
| f) Initial boiling point and boiling range      | 48 °C (118 °F) - lit.   |
| g) Flash point                                  | 6.0 °C (42.8 °F) - closed cup                                       |
| h) Evaporation rate                             | no data available   |
| i) Flammability (solid, gas)                    | no data available   |
| j) Upper/lower flammability or explosive limits | Upper explosion limit: 12.8 %(V)<br>Lower explosion limit: 9.7 %(V) |
| k) Vapour pressure                              | no data available   |
| l) Vapour density                               | no data available   |
| m) Relative density                             | 1.257 g/mL at 25 °C (77 °F)   |
| n) Water solubility                             | no data available   |
| o) Partition coefficient: n-octanol/water       | no data available   |



- p) Auto-ignition temperature no data available
- q) Decomposition temperature no data available
- r) Viscosity no data available
- s) Explosive properties no data available
- t) Oxidizing properties no data available

## 9.2 Other safety information

no data available

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## 10. STABILITY AND REACTIVITY

### 10.1 Reactivity

no data available

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

Vapours may form explosive mixture with air.

### 10.4 Conditions to avoid

Heat, flames and sparks. Extremes of temperature and direct sunlight.

### 10.5 Incompatible materials

Oxidizing agents, Bases

### 10.6 Hazardous decomposition products

Other decomposition products - no data available  
In the event of fire: see section 5

---

## 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on toxicological effects

#### Acute toxicity

LD50 Oral - rat - 1,235 mg/kg

LD50 Oral - mouse - 2,122 mg/kg

Remarks: Behavioral:Altered sleep time (including change in righting reflex). Behavioral:Somnolence (general depressed activity). Behavioral:Ataxia.

LC50 Inhalation - rat - 24100 ppm

Remarks: Behavioral:Somnolence (general depressed activity).

LD50 Dermal - rabbit - > 5,000 mg/kg

Remarks: Prolonged skin contact may cause skin irritation and/or dermatitis. Nutritional and Gross Metabolic:Weight loss or decreased weight gain.

no data available

#### Skin corrosion/irritation

Skin - rabbit

Result: Skin irritation - 24 h

#### Serious eye damage/eye irritation

Eyes - rabbit

Result: Eye irritation

#### Respiratory or skin sensitisation

no data available

#### Germ cell mutagenicity

no data available

#### Carcinogenicity

- IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
- ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
- NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
- OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**Reproductive toxicity**

no data available

no data available

**Specific target organ toxicity - single exposure**

no data available

**Specific target organ toxicity - repeated exposure**

no data available

**Aspiration hazard**

no data available

**Additional Information**

RTECS: KV9400000

prolonged or repeated exposure can cause:., narcosis, To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Kidney -

---

## 12. ECOLOGICAL INFORMATION

### 12.1 Toxicity

Toxicity to daphnia and other aquatic invertebrates EC50 - Daphnia magna (Water flea) - 220.00 mg/l - 48 h

### 12.2 Persistence and degradability

no data available

### 12.3 Bioaccumulative potential

no data available

### 12.4 Mobility in soil

no data available

### 12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

### 12.6 Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Harmful to aquatic life.

---

## 13. DISPOSAL CONSIDERATIONS

### 13.1 Waste treatment methods

**Product**

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

**Contaminated packaging**

Dispose of as unused product.

---

**14. TRANSPORT INFORMATION****DOT (US)**

UN number: 1150      Class: 3      Packing group: II  
Proper shipping name: 1,2-Dichloroethylene  
Reportable Quantity (RQ): 1000 lbs  
Marine pollutant: No  
Poison Inhalation Hazard: No

**IMDG**

UN number: 1150      Class: 3      Packing group: II      EMS-No: F-E, S-D  
Proper shipping name: 1,2-DICHLOROETHYLENE  
Marine pollutant: No

**IATA**

UN number: 1150      Class: 3      Packing group: II  
Proper shipping name: 1,2-Dichloroethylene

---

**15. REGULATORY INFORMATION**

REACH No. : A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

**SARA 302 Components**

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**SARA 313 Components**

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

**SARA 311/312 Hazards**

Fire Hazard

**Massachusetts Right To Know Components**

	CAS-No.	Revision Date
trans-Dichloroethylene	156-60-5	1993-04-24

**Pennsylvania Right To Know Components**

	CAS-No.	Revision Date
trans-Dichloroethylene	156-60-5	1993-04-24

**New Jersey Right To Know Components**

	CAS-No.	Revision Date
trans-Dichloroethylene	156-60-5	1993-04-24

**California Prop. 65 Components**

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

---

**16. OTHER INFORMATION****Full text of H-Statements referred to under sections 2 and 3.**

Acute Tox.	Acute toxicity
Aquatic Acute	Acute aquatic toxicity
Aquatic Chronic	Chronic aquatic toxicity
Flam. Liq.	Flammable liquids
H225	Highly flammable liquid and vapour.
H332	Harmful if inhaled.
H402	Harmful to aquatic life.

**HMIS Rating**

Health hazard:                    2

Chronic Health Hazard: \*

Flammability: 3

Physical Hazard 0

**NFPA Rating**

Health hazard: 2

Fire Hazard: 3

Reactivity Hazard: 0

**Further information**

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**Preparation Information**

Sigma-Aldrich Corporation  
Product Safety – Americas Region  
1-800-521-8956

Version: 4.4

Revision Date: 04/02/2014

Print Date: 04/07/2014

# MATERIAL SAFETY DATA SHEET

## 1. Product and Company Identification

<b>Material name</b>	HYDROCHLORIC ACID, 33 - 40%
<b>Version #</b>	02
<b>Revision date</b>	12-07-2009
<b>CAS #</b>	Mixture
<b>Product Codes</b>	J.T.Baker: 5367, 5537, 5575, 5800, 5814, 5821, 5839, 5861, 5862, 5894, 5962, 5963, 5972, 5994, 6900, 7831, 9165, 9529, 9530, 9534, 9535, 9536, 9538, 9539, 9540, 9544, 9548, 9551, 9625 Mallinckrodt: 2062, 2515, 2612, 2624, 2626, 3861, 5583, 5587, H611, H613, H616, H987, H992, H999, V078, V628
<b>Synonym(s)</b>	Muriatic acid * hydrogen chloride, aqueous
<b>Manufacturer</b>	Mallinckrodt Baker, Inc.
<b>Address</b>	222 Red School Lane Phillipsburg, NJ 08865 US
<b>Customer Service</b>	800-582-2537
<b>24 Hour Emergency</b>	908-859-2151
<b>Chemtec</b>	800-244-4444

## 2. Hazards Identification

<b>Emergency overview</b>	DANGER -- POISON Corrosive. Causes skin and eye burns. May be fatal if swallowed or inhaled. Prolonged exposure may cause chronic effects.
<b>OSHA regulatory status</b>	This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
<b>Potential health effects</b>	
<b>Routes of exposure</b>	Inhalation. Ingestion. Skin contact. Eye contact.
<b>Eyes</b>	Risk of serious damage to eyes. Do not get this material in contact with eyes. Causes eye burns.
<b>Skin</b>	Causes skin burns. Do not get this material in contact with skin.
<b>Inhalation</b>	Causes burns. Prolonged inhalation may be harmful. May cause lung damage. Do not breathe dust/fume/gas/mist/vapors/spray.
<b>Ingestion</b>	Components of the product may be absorbed into the body by ingestion. Ingestion may produce burns to the lips, oral cavity, upper airway, esophagus and possibly the digestive tract. Ingestion of this product may cause nausea, vomiting and diarrhea. Do not ingest.
<b>Target organs</b>	Eyes. RESPIRATORY SYSTEM. Skin. Lungs.
<b>Signs and symptoms</b>	Contact with this material will cause burns to the skin, eyes and mucous membranes. Symptoms are prostration, gasping, pallor, and uncoordinated movements. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Symptoms may include redness, edema, drying, defatting and cracking of the skin. Irritation of nose and throat.
<b>Potential environmental effects</b>	Components of this product are hazardous to aquatic life. May cause long-term adverse effects in the environment.

## 3. Composition / Information on Ingredients

Hazardous components	CAS #	Percent
HYDROGEN CHLORIDE	7647-01-0	33 - 40
Non-hazardous components	CAS #	Percent
WATER	7732-18-5	60 - 67

## 4. First Aid Measures

---

### First aid procedures

<b>Eye contact</b>	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.
<b>Skin contact</b>	Remove and isolate contaminated clothing and shoes. Immediately flush skin with plenty of water. Get medical attention immediately. For minor skin contact, avoid spreading material on unaffected skin. Wash clothing separately before reuse.
<b>Inhalation</b>	Move to fresh air. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Get medical attention immediately.
<b>Ingestion</b>	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Do not induce vomiting without advice from poison control center. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Rinse mouth thoroughly. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.

### Notes to physician

In case of shortness of breath, give oxygen. Keep victim warm.

### General advice

Immediate medical attention is required. In case of shortness of breath, give oxygen. Keep victim warm. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

## 5. Fire Fighting Measures

---

<b>Flammable properties</b>	The product is not flammable. No unusual fire or explosion hazards noted.
<b>Extinguishing media</b>	
<b>Suitable extinguishing media</b>	Water.
<b>Protection of firefighters</b>	
<b>Protective equipment and precautions for firefighters</b>	In the event of fire, cool tanks with water spray. Use water spray to cool unopened containers. Cool containers exposed to flames with water until well after the fire is out.
<b>Specific methods</b>	In the event of fire, cool tanks with water spray. Use water spray to cool unopened containers.

## 6. Accidental Release Measures

---

<b>Personal precautions</b>	Keep unnecessary personnel away. Local authorities should be advised if significant spillages cannot be contained. Keep out of low areas. Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Ventilate closed spaces before entering them. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Keep upwind.
<b>Environmental precautions</b>	Prevent further leakage or spillage if safe to do so. Do not contaminate water.
<b>Methods for containment</b>	Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Prevent entry into waterways, sewer, basements or confined areas.
<b>Methods for cleaning up</b>	Should not be released into the environment.  Large Spills: Dike far ahead of spill for later disposal. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal.  Small Spills: Wipe up with absorbent material (e.g. cloth, fleece).  Never return spills in original containers for re-use. Following product recovery, flush area with water. Clean surface thoroughly to remove residual contamination.  J. T. Baker NEUTRASORB® acid neutralizers are recommended for spills of this product.

## 7. Handling and Storage

---

<b>Handling</b>	Do not get this material in contact with eyes. Do not get this material in contact with skin. Avoid breathing dust/fume/gas/mist/vapors/spray. Do not get this material on clothing. Do not use in areas without adequate ventilation. Avoid prolonged exposure. Wash thoroughly after handling. Handle and open container with care. Use caution when combining with water; DO NOT add water to acid, ALWAYS add acid to water while stirring to prevent release of heat, steam and fumes.
<b>Storage</b>	Store in a well-ventilated place. Keep container tightly closed. Keep out of the reach of children. Use care in handling/storage. Keep away from food, drink and animal feedingstuffs.

## 8. Exposure Controls / Personal Protection

---

### Occupational exposure limits

#### ACGIH

Components	Type	Value
HYDROGEN CHLORIDE (7647-01-0)	Ceiling	2.0000 ppm

#### U.S. - OSHA

Components	Type	Value
HYDROGEN CHLORIDE (7647-01-0)	Ceiling	5.0000 ppm 7.0000 mg/m <sup>3</sup>

<b>Engineering controls</b>	Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.
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### Personal protective equipment

<b>Eye / face protection</b>	Do not get in eyes. Chemical goggles are recommended. Wear safety glasses with side shields (or goggles). Face-shield. Provide eyewash station and safety shower.
<b>Skin protection</b>	Do not get this material in contact with skin. Do not get this material on clothing. Use chemical splash goggles and face shield (ANSI Z87.1 or approved equivalent). Wear appropriate chemical resistant clothing. Chemical resistant gloves. Structural firefighters protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations.
<b>Respiratory protection</b>	Do not breathe dust/fume/gas/mist/vapors/spray. Wear positive pressure self-contained breathing apparatus (SCBA).
<b>General hygiene considerations</b>	Do not get in eyes. Do not get this material in contact with skin. Do not get this material on clothing. When using, do not eat, drink or smoke. Keep away from food and drink. Handle in accordance with good industrial hygiene and safety practice.

## 9. Physical & Chemical Properties

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<b>Appearance</b>	Clear.
<b>Color</b>	Colorless.
<b>Odor</b>	Pungent.
<b>Odor threshold</b>	Not available.
<b>Physical state</b>	Liquid.
<b>Form</b>	Liquid.
<b>pH</b>	0.1 - 2.02
<b>Melting point</b>	-101.2 °F (-74 °C)
<b>Freezing point</b>	Not available.
<b>Boiling point</b>	217.4 °F (103 °C) estimated
<b>Flash point</b>	Not available.
<b>Evaporation rate</b>	Not available.

<b>Flammability</b>	Not available.
<b>Flammability limits in air, upper, % by volume</b>	Not available.
<b>Flammability limits in air, lower, % by volume</b>	Not available.
<b>Vapor pressure</b>	0 hPa estimated
<b>Vapor density</b>	Not available.
<b>Specific gravity</b>	1.05 estimated
<b>Relative density</b>	Not available.
<b>Solubility (water)</b>	Not available.
<b>Partition coefficient (n-octanol/water)</b>	Not available
<b>Auto-ignition temperature</b>	Not available.
<b>Decomposition temperature</b>	Not available.
<b>Percent volatile</b>	63.5 % estimated
<b>Molecular formula</b>	HCl

## 10. Chemical Stability & Reactivity Information

---

<b>Chemical stability</b>	Stable at normal conditions.
<b>Conditions to avoid</b>	Reacts violently with strong alkaline substances. This product may react with reducing agents. Do not mix with other chemicals.
<b>Incompatible materials</b>	Incompatible with bases. Amines. Acids. This product may react with reducing agents. Contact with metals may evolve flammable hydrogen gas.
<b>Hazardous decomposition products</b>	Hydrogen chloride. Chlorine. May decompose upon heating to produce corrosive and/or toxic fumes.
<b>Possibility of hazardous reactions</b>	Hazardous polymerization does not occur.

## 11. Toxicological Information

---

### Toxicological data

#### Product

HYDROCHLORIC ACID, 33 - 40% (Mixture)

#### Test Results

Acute Dermal LD50 Mouse: 3970 mg/kg estimated  
 Acute Inhalation LC50 Mouse: 3036 mg/l estimated  
 Acute Inhalation LC50 Rat: 8559 mg/l estimated  
 Acute Oral LD50 Rabbit: 2466 mg/kg estimated

#### Components

HYDROGEN CHLORIDE (7647-01-0)

#### Test Results

Acute Dermal LD50 Mouse: 1449 mg/kg  
 Acute Inhalation LC50 Mouse: 1108 mg/l 1.00 Hours  
 Acute Inhalation LC50 Rat: 3124 mg/l 1.00 Hours  
 Acute Oral LD50 Rabbit: 900 mg/kg

\* Estimates for product may be based on additional component data not shown.

<b>Acute effects</b>	Causes burns.
<b>Local effects</b>	Causes burns.
<b>Chronic effects</b>	Hazardous by OSHA criteria. Prolonged exposure may cause chronic effects.
<b>Carcinogenicity</b>	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

#### ACGIH Carcinogens

HYDROGEN CHLORIDE (CAS 7647-01-0)

A4 Not classifiable as a human carcinogen.



## IARC Monographs. Overall Evaluation of Carcinogenicity

HYDROGEN CHLORIDE (CAS 7647-01-0)

3 Not classifiable as to carcinogenicity to humans.

<b>Skin corrosion/irritation</b>	Hazardous by OSHA criteria.
<b>Epidemiology</b>	Not available.
<b>Neurological effects</b>	Not available.

## 12. Ecological Information

---

### Ecotoxicological data

<b>Product</b>	<b>Test Results</b>
HYDROCHLORIC ACID, 33 - 40% (Mixture)	LC50 Fish: 773 mg/l 96.00 Hours estimated
<b>Components</b>	<b>Test Results</b>
HYDROGEN CHLORIDE (7647-01-0)	LC50 Western mosquitofish (Gambusia affinis): 282 mg/l 96.00 Hours

\* Estimates for product may be based on additional component data not shown.

<b>Ecotoxicity</b>	Components of this product are hazardous to aquatic life. Because of the low pH of this product, it would be expected to produce significant ecotoxicity upon exposure to aquatic organisms and aquatic systems.
<b>Environmental effects</b>	Harmful to aquatic organisms.
<b>Persistence and degradability</b>	Not available.

## 13. Disposal Considerations

---

<b>Waste codes</b>	D002: Waste Corrosive material [pH <=2 or =>12.5, or corrosive to steel]
<b>Disposal instructions</b>	Dispose of this material and its container to hazardous or special waste collection point. Incinerate the material under controlled conditions in an approved incinerator. Dispose in accordance with all applicable regulations.
<b>Waste from residues / unused products</b>	Not applicable.

## 14. Transport Information

---

### DOT

#### Basic shipping requirements:

<b>UN number</b>	UN1789
<b>Proper shipping name</b>	HYDROCHLORIC ACID
<b>Hazard class</b>	8
<b>Packing group</b>	II

#### Additional information:

<b>ERG number</b>	157
-------------------	-----

### IATA

#### Basic shipping requirements:

<b>UN number</b>	1789
<b>Proper shipping name</b>	HYDROCHLORIC ACID
<b>Hazard class</b>	8
<b>Packing group</b>	II

### IMDG

#### Basic shipping requirements:

<b>UN number</b>	1789
<b>Proper shipping name</b>	HYDROCHLORIC ACID
<b>Hazard class</b>	8
<b>Packing group</b>	II



DOT



IATA



IMDG

## 15. Regulatory Information

**US federal regulations** This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.  
All components are on the U.S. EPA TSCA Inventory List.

**US EPCRA (SARA Title III) Section 302 - Extremely Hazardous Spill: Reportable quantity**

HYDROGEN CHLORIDE (CAS 7647-01-0) 5000 LBS

**US EPCRA (SARA Title III) Section 302 - Extremely Hazardous Substance: Threshold Planning Quantity**

HYDROGEN CHLORIDE (CAS 7647-01-0) 500 LBS

**US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration**

HYDROGEN CHLORIDE (CAS 7647-01-0) 1.0 %

**US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance**

HYDROGEN CHLORIDE (CAS 7647-01-0) Listed.

**CERCLA (Superfund) reportable quantity**

HYDROGEN CHLORIDE: 5000.0000

**Superfund Amendments and Reauthorization Act of 1986 (SARA)**

**Hazard categories** Immediate Hazard - Yes  
Delayed Hazard - Yes  
Fire Hazard - No  
Pressure Hazard - No  
Reactivity Hazard - No

**Section 311 hazardous chemical** Yes

**Inventory status**

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

\*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

**State regulations** This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

**US - New Jersey Community RTK (EHS Survey): Reportable threshold**

HYDROGEN CHLORIDE (CAS 7647-01-0) 500 LBS

**US - Pennsylvania RTK - Hazardous Substances: Listed substance**

HYDROGEN CHLORIDE (CAS 7647-01-0) Listed.

**Saf-T-Data** Health: 3 - Severe (Poison)  
Flammability: 0 - None  
Reactivity: 2 - Moderate  
Contact: 4 - Extreme (Corrosive)  
Lab Protective Equip: D - GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES  
Storage Color Code: W - White (Corrosive)

## 16. Labeling Info

---

**Label Hazard Warning** DANGER -- POISON  
Corrosive. Causes skin and eye burns. May be fatal if swallowed or inhaled. Prolonged exposure may cause chronic effects.

**Label Precautions** Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Use only with adequate ventilation. Keep container closed. Wash thoroughly after handling.

**Label First Aid** Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately. Immediately flush skin with plenty of water. Get medical attention. If gas/fume/vapor/dust/mist from the material is inhaled, remove the affected person immediately to fresh air. Get medical attention immediately. IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Do not induce vomiting without advice from poison control center. Do not use mouth-to-mouth method if victim ingested the substance.

## 17. Other Information

---

**NFPA ratings** Health: 3  
Flammability: 0  
Instability: 1

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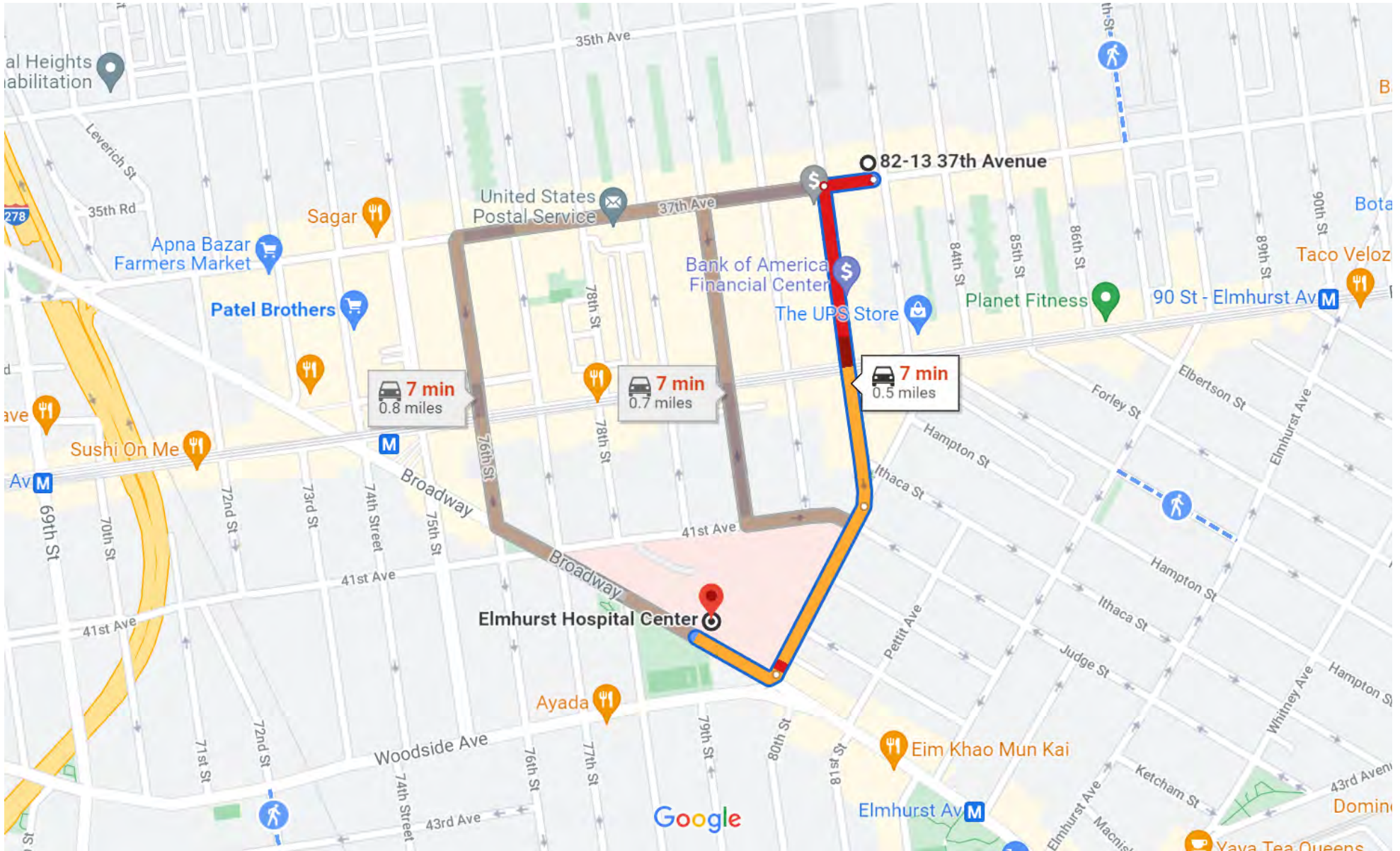
**Issue date** 12-07-2009

# **HOSPITAL MAP AND DIRECTIONS**



82-13 37th Ave, Jackson Heights, NY 11372 to Elmhurst Hospital Center

Drive 0.5 mile, 7 min






Map data ©2022 Google 500 ft



via 82nd St and Baxter Ave

7 min

	Fastest route, despite the usual traffic	0.5 mile
	<b>via 37th Ave and 76th St</b> Heavy traffic, as usual	<b>7 min</b> 0.8 mile
	<b>via 80th St</b> Heavy traffic, as usual	<b>7 min</b> 0.7 mile

### Explore Elmhurst Hospital Center

[Restaurants](#) [Hotels](#) [Gas stations](#) [Parking Lots](#) [More](#)

# **APPENDIX F: COMMUNITY AIR MONITORING PLAN**

# COMMUNITY AIR MONITORING PLAN

**Rockfarmer 37<sup>th</sup> Avenue**  
82-13 37<sup>th</sup> Avenue  
Jackson Heights, Queens County, New York 11372  
Block 1456, Lots 35 & 41  
NYSDEC Site No. C241212

**MAY 2022**

**PREPARED FOR:**

37<sup>th</sup> Avenue Owner LLC; Horizon 37<sup>th</sup> Ave, LLC; and RFC Ketcham 37<sup>th</sup> Ave, LLC  
42-01 235<sup>th</sup> Street  
Douglaston, New York 11363

**PREPARED BY:**

Vertex Engineering, PC  
147 West 35<sup>th</sup> Street, 19<sup>th</sup> Floor  
New York, New York 10001  
**PHONE** 646.553.3500

**VERTEX PROJECT NO:** 48122



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**APPENDICES**

Appendix A Air Monitoring Daily Field Form

**Community Air Monitoring Plan (CAMP)**  
**Rockfarmer 37<sup>th</sup> Avenue**  
**83-13 37<sup>th</sup> Avenue**  
**Jackson Heights, Queens County, New York**  
**NYSDEC Site No. C241212**

## **1.0 INTRODUCTION**

This Community Air Monitoring Plan (CAMP) has been developed to provide specific procedures for monitoring, documenting, and responding to potential airborne contaminants during remedial activities at 83-13 37<sup>th</sup> Avenue in Jackson Heights, Queens County, New York (Site). The purpose of this CAP is to protect the downwind community (i.e., off-site receptors including residences, businesses, and on-site workers not directly involved in the intrusive work) from potential releases associated with remedial work conducted at the Site. The CAMP requires real-time monitoring for volatile organic compound (VOC) and particulate (i.e., dust) contaminants at the downwind perimeter of each designated work area. The monitoring requirements outlined in the CAMP will be conducted during all ground intrusive activities.

The CAMP was prepared in accordance with Appendix 1A – New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan and Appendix 1B – Fugitive Dust and Particulate Monitoring in the New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation (DER)-10 Technical Guidance for Site Investigation and Remediation, May 3, 2010.

## **2.0 MONITORING REQUIREMENTS**

The air monitoring program will be implemented during all ground intrusive activities to mitigate exposure of field staff and the public. The air monitoring findings will be used to determine appropriate response actions.

Real-time air monitoring for VOCs and particulate levels at the perimeter of the work area would be performed. Continuous monitoring would be performed for all ground intrusive activities and during the handling of contaminated media. Based on the layout of the site, any work areas will be cordoned off with caution tape or other appropriate measure to prevent the community from entering the work area. At this time no major intrusive activities are foreseen or are planned for the site. Intrusive activities may include drilling of wells, drilling and collection of soil samples, development of wells, pumping of well water, and sampling of well water.

### **2.1 Meteorological Data**

Meteorological data will be measured at the start of each workday and periodically thereafter to establish background conditions. The meteorological data to be recorded may include wind speed, wind direction, temperature, barometric pressure, and relative humidity. The wind direction data will be used to determine the position of the air monitoring equipment in appropriate upwind and downwind locations.

### **2.2 VOC Monitoring, Response Levels, and Actions**

VOCs will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis during invasive work. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work will be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment will be calibrated at

least weekly for the contaminant(s) of concern or for an appropriate surrogate. The equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown.

All readings will be recorded and made available for NYSDEC and NYSDOH project managers. Exceedances of action levels will be reported to NYSDEC and NYSDOH project managers.

### **2.3 Particulate Monitoring, Response Levels, and Actions**

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the work area at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The

equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter ( $\text{mcg}/\text{m}^3$ ) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed  $150 \text{ mcg}/\text{m}^3$  above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than  $150 \text{ mcg}/\text{m}^3$  above the upwind level, work will be stopped, and a re-evaluation of activities initiated. Work will resume if dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within  $150 \text{ mcg}/\text{m}^3$  of the upwind level and in preventing visible dust migration.

All readings will be recorded and made available for NYSDEC and NYSDOH project managers. Exceedances of action levels will be reported to NYSDEC and NYSDOH project managers.

### 3.0 POTENTIAL CORRECTIVE ACTIONS

Air emission control and fugitive dust suppression techniques will be implemented during the remedial work activities, on an as needed basis, to limit emissions from the Site.

The following VOC control techniques may be used during remedial activities:

- Collection of purge/development groundwater in covered containers.
- Use of VOC suppression foams.
- Restricting square footage of open excavations.
- Limiting handling, stockpiling and movement of soils around the site.
- Storage of excess sample and drill cuttings in drums; and
- Use of polyethylene sheeting to cover soil stockpiles and open areas.

The following dust suppression techniques may be used during remedial activities:

- Water spray (soil, concrete, roads, equipment, excavation faces).
- Storing and hauling materials in properly tarped or covered containers.
- Restricting vehicle speed.
- Restricting square footage of open excavations.
- Maintaining a clean work site; and
- Use of polyethylene sheeting to cover soil stockpiles.

#### **4.0 QUALITY ASSURANCE/QUALITY CONTROL**

Quality assurance/quality control (QA/QC) procedures will be used to provide performance information regarding accuracy, precision, sensitivity, representation, completeness, and comparability associated with the monitoring activities of the CAMP.

To ensure quality of the air monitoring data, equipment will be operated in accordance with the manufacturer's specifications, including calibration of all field instruments, which will be performed prior to the initiation of field work and on a schedule indicated by the manufacturer.

## **5.0 REPORTING**

All air monitoring data must be recorded on daily log sheets and made available for review by the NYSDEC and NYSDOH project managers. A copy of the Air Monitoring Daily Field Form is included in Appendix A. Calibration measurements will be recorded in a field activity logbook.

Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH project managers.



# **APPENDIX A**

## **AIR MONITORING DAILY FIELD FORM**



# **APPENDIX G: OPERATIONS & MAINTENANCE MANUAL**

# OPERATION AND MAINTENANCE MANUAL

## SUB-SLAB DEPRESSURIZATION SYSTEM

**Rockfarmer 37<sup>th</sup> Avenue**  
82-13 37<sup>th</sup> Avenue  
Jackson Heights, Queens County, New York 11372  
Block 1456, Lots 35 & 41  
NYSDEC Site No. C241212

**MAY 2022**

**PREPARED FOR:**

37<sup>th</sup> Avenue Owner LLC; Horizon 37<sup>th</sup> Ave, LLC; and RFC Ketcham 37<sup>th</sup> Ave, LLC  
42-01 235<sup>th</sup> Street  
Douglaston, New York 11363

**PREPARED BY:**

Vertex Engineering, PC  
147 West 35<sup>th</sup> Street, 19<sup>th</sup> Floor  
New York, New York 10001  
**PHONE 646.553.3500**

**VERTEX PROJECT NO: 48122**

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Appendix A	SSDS Layout and Details Figures
Appendix B	Component Specifications

**Operation and Maintenance (O&M) Manual**  
**Rockfarmer 37<sup>th</sup> Avenue**  
**82-13 37<sup>th</sup> Avenue**  
**Jackson Heights, Queens County, New York**  
**NYSDEC Site No. C241212**

## **1.0 INTRODUCTION**

This Operation and Maintenance (O&M) Manual contains information to operate and maintain the active sub-slab depressurization system (SSDS) at 82-13 37<sup>th</sup> Avenue in Jackson Heights, Queens County, New York (Site). The SSDS was designed by a licensed New York Professional Engineer (P.E.) based on the remedial investigation findings (elevated soil vapor concentrations), pilot study findings, radius of influence (ROI) and operational parameter calculations, Site building construction (basement floor plan, utility locations, etc.), and Site limitations in the basement including ceiling clearance height, active tenant spaces, utilities, foundation, and interior finishes. The active SSDS was installed below the basement of the Site building.

The active SSDS was constructed to mitigate potential vapor intrusion associated with the documented groundwater and soil vapor impacts at the Site. The SSDS was designed to collect and vent contaminant vapors and prevent the potential migration of vapors, that may build up beneath the slab, through the building slab or other pathways to the indoor air of the Site building. The active SSDS uses an electric-powered fan and vapor collection piping to draw vapors from beneath the building's concrete slab foundation. The collected vapor is then conveyed through piping and vented to the atmosphere. This process creates conditions of lower pressure (i.e., negative pressure) beneath the slab as compared to the indoor air of the Site building and reduced vapor concentrations, limiting infiltration of sub-slab vapors into the building. The SSDS began operation at the Site on July 16, 2021.

A copy of this O&M Manual should be maintained by the Site owner. The O&M Manual is not to be used as a stand-alone document, but as a component of the Site Management Plan (SMP).

## 1.1 Emergency Contact Numbers

In the event of an emergency pertaining to the SSDS, the current owner’s representative should contact the appropriate parties from the contact list below.

Contact	Phone Number
Medical, Fire, Police	911
New York State Department of Environmental Conservation	(518) 402-9814
New York State Department of Health – Environmental Health	(800) 458-1158
Richard J. Tobia, P.E. (Vertex Engineering, PC)	(908) 458-9604
Timothy Biercz (The Vertex Companies, Inc.)	(908) 333-4317

## 1.2 Performance Criteria

The SSDS has been designed to achieve a minimum of 0.005 inches water column (WC) in the most remote sub-slab area of the Site building. The vacuum at the riser should be >1.0-inch WC or greater. A baseline of 3.25 inches WC and a flow rate of 169 cubic feet per minute (cfm) has been measured during commissioning of the system. Further baseline testing shall be performed to establish baseline conditions as these may change after commissioning as the soils below the slab dry out and pathways area established. A visual and audible alarm, which signals when vacuum is lost at the riser, was installed on the SSDS.

### **1.3 Termination of Mitigation System Operation**

The active SSDS will operate continuously at the Site. The SSDS will not be discontinued without written approval from the New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH).



## 2.0 SYSTEM COMPONENTS

The SSDS at the Site consists of 14 below-grade extraction points, which consist of five-foot lengths of two-inch diameter slotted poly vinyl chloride (PVC) well screen (0.020-inch slot size) with socks, set in ¾-inch clean stone, with caps at the ends of each horizontal piping run. One extraction point consists of a one-foot length of slotted PVC well screen. The below-grade horizontal piping runs consist of solid two-inch, three-inch, and four-inch Schedule 40 PVC pipe. Vertical piping consisting of four-inch diameter Schedule 40 steel transitions from the basement floor to the loading dock in the northeastern corner of the Site.

Three Dwyer Minihelic® 0-10 inches of water column pressure gauges are installed along the below grade piping runs to monitor vacuum and to act as sample points within the runs.

Three “valves” consisting of 12-inch sections of rubber hose in-line with the below-grade piping were installed to adjust flow. Air flow can be adjusted by pinching the hose if needed.

The SSDS includes one Dayton® high pressure direct drive radial blade blower (200 cubic feet per minute and five inches of water column). In accordance with NYSDOH guidance, the exhaust was located at least 10 feet from any operable openings or air intakes. The blower is connected electrically to its own circuit in an existing electrical panel and improved with an exhaust silencer for noise reduction.

Ten permanent, sub-slab monitoring points (Mini Vapor Pin®) were installed at various locations within the building slab.

An alarm (Radon Away™ Checkpoint IIA) was installed on the system to warn of a loss of system vacuum.

The SSDS layout and details figures are provided in **Appendix A** and component specifications are included in **Appendix B**.

### **3.0 SYSTEM MAINTENANCE**

The SSDS is designed to operate continuously (24 hours a day, seven days a week, 365 days a year). No active interactions are necessary to maintain system operation. Periodic system inspections are recommended to confirm that the blower and system continues to operate as designed. In addition, non-routine maintenance may be necessary in case of system damage, equipment failures, or other unexpected events. The following sections detail the routine and non-routine inspection and maintenance activities that should be performed at the Site.

The maintenance inspections should be performed by a person with knowledge of the mechanical systems present in the Site building and familiar with the Site.

#### **3.1 Routine Maintenance and Monitoring**

Routine maintenance should be completed at a minimum every 12 months. Instruments should be calibrated in accordance with manufacturer's instructions prior to use.

##### **3.1.1 Site Conditions**

The routine maintenance and monitoring of Site conditions will include the following:

- Evaluation of general property conditions (i.e., tenant operations, building structural condition, etc.).
- Visual inspection of the condition of concrete slab (i.e., cracks, widening joints without sealant) to ensure proper seal.
- Screening of sub-slab soil vapor concentrations at the monitoring points and risers with a photoionization detector (PID).
- Visual inspection and screening with a PID of slab penetrations that may have been made (i.e., anchor bolts).

- Inspection of the exhaust location to verify no air intakes have been added to the building in the vicinity or that the exhaust location is blocked from the wind.

Widening joints and/or slab penetrations should be sealed with a caulk. If air intakes were added to the Site building, the SSDS exhaust location may have to be moved to ensure a minimum of 10 feet between the intake and exhaust. Obstructions to air flow in the vicinity of the exhaust should be removed.

### **3.1.2 Blower**

During routine maintenance, the blower should be inspected as follows:

- Visual inspection of the blower to ensure that it is operating as designed with no visible damage.
- Ensure that the fan spins easily and that it is not producing excessive vibration or noise.
- Inspect power to blower by operating dedicated switch.
- Inspect anti-vibration mounts and rubber transition fittings for wear, ageing, and damage.

The blower does not contain any oil or grease parts. System components will be replaced and/or repaired as needed. The SSDS blower does not require periodic servicing and should be returned to the manufacturer/supplier for service. Repairs or alterations made to the SSDS blower by others will void the unit's warranty.

### **3.1.3 Piping**

The routine maintenance inspection of system piping will include the following:

- Inspect system pipes, fittings, rubber seals and/or enclosures to ensure that no damage has occurred.

- Listen for leaks. Leaks may produce a whistling noise.
- Inspect system piping to ensure that no unauthorized piping connections have been made to the system.
- Inspect exhaust silencer to ensure no damage has occurred.
- Inspect Dwyer Minihelic<sup>®</sup> pressure gauges to ensure that no damage has occurred.

If piping damage is identified, repair or adjustments will be made, as appropriate. The pressure gauges do not require lubrication or periodic servicing. If damage is observed or the gauges are not working properly, they should be returned to the manufacturer/supplier for repair or replaced. Repairs or alterations to the gauges by others will void the unit's warranty. The gauges are factory calibrated and cannot be recalibrated in the field.

#### **3.1.4 System Operation**

The following readings should be collected during the routine monitoring:

- Vacuum response readings from three Dwyer Minihelic<sup>®</sup> pressure gauges.
- PID readings from 10 sub-slab monitoring points.
- Flow reading from the riser located in the basement storage room.
- Test the alarm system by removing tubing connecting the riser to the alarm panel. The SSDS should go into alarm. The system should go back on-line when the tubing is reconnected to the riser. If the system is in alarm when there is a vacuum present in the riser, inspect the tubing and riser pipe tap to ensure that there are no blockages.

#### **3.2 Non-Routine Monitoring**

Non-routine monitoring may be conducted following a major storm event. Following a major storm event, such as a hurricane, tropical storm, or other severe storm with high winds, a visual inspection of the blower, exterior piping, and exhaust should be made.

The operator of the building should notify the owner of any planned breaches of the slab that may damage the SSDS. The owner shall be notified of planned breaches in writing a minimum of five business days prior to the planned breach. For emergency breaches, the owner shall be notified as soon as possible or within 24 hours of the breach.

Any breach of the slab shall be repaired within 30 days utilizing the same methods as construction. Disturbance and repair work should be conducted in accordance with applicable worker health and safety laws and regulations. Repairs to the slab shall be documented in photographs and writing. Anchor bolts or utility piping that may penetrate the slab shall be epoxied or sealed in some other fashion to prevent a pathway to indoor air.

### **3.3 Non-Routine Maintenance**

Non-routine maintenance may be required during the operation of the SSDS. These situations may include the following: the building owner/tenant report that the SSDS is not operating properly; the SSDS becomes damaged during normal building operations; or the building has undergone renovations that may reduce the effectiveness of the SSDS.

Activities conducted during non-routine maintenance may include evaluation of the building for structural or HVAC system changes; evaluation for other changes to the building including new combustion appliance or deterioration of concrete slab; and ensure proper operation of the blower. Repair or adjustments will be made to the SSDS, as appropriate.

#### **3.3.1 Blower Malfunction**

A malfunctioning blower should be reported to the property manager and repairs initiated as soon as possible. The blower shall be replaced with same or similar blower with equal performance specifications.

### **3.3.2 System Damage**

Damage to the SSDS (i.e., piping) should be reported to the property manager and repairs initiated as soon possible. Small temporary repairs with sealant or tape can be made as the pipe is under negative pressure and there is only air being transmitted within.

### **3.3.3 Power Outages**

The blower and alarm should be inspected after power outages lasting more than 48 hours. A malfunctioning blower or alarm should be reported to the property manager and repairs completed as soon as possible. The blower should restart automatically after the outage is restored.

### **3.3.4 Building Renovations**

Prior to any building renovations that may potentially impact the SSDS components or limit system access, a review of the proposed renovations should be conducted to confirm the system will not be affected by the renovations.

## **4.0 REPORTING**

All system reading and measurements shall be maintained in a system logbook, to be kept on-site and maintained by the Site building owner. System readings shall be compared to previous readings to determine if system performance has been altered. Readings that differ by more than 10% shall be checked further. Maintenance shall be performed when monitoring detects abnormal pressures (vacuum).

The results of the SSDS inspections and maintenance activities will be reported to the NSYDEC project manager in the Period Review Report (PRR).

### **4.1 Limitations**

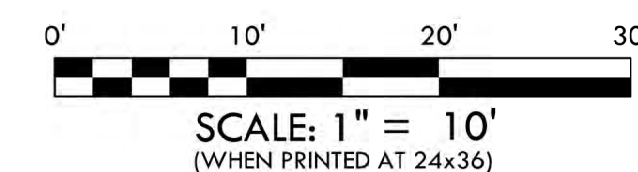
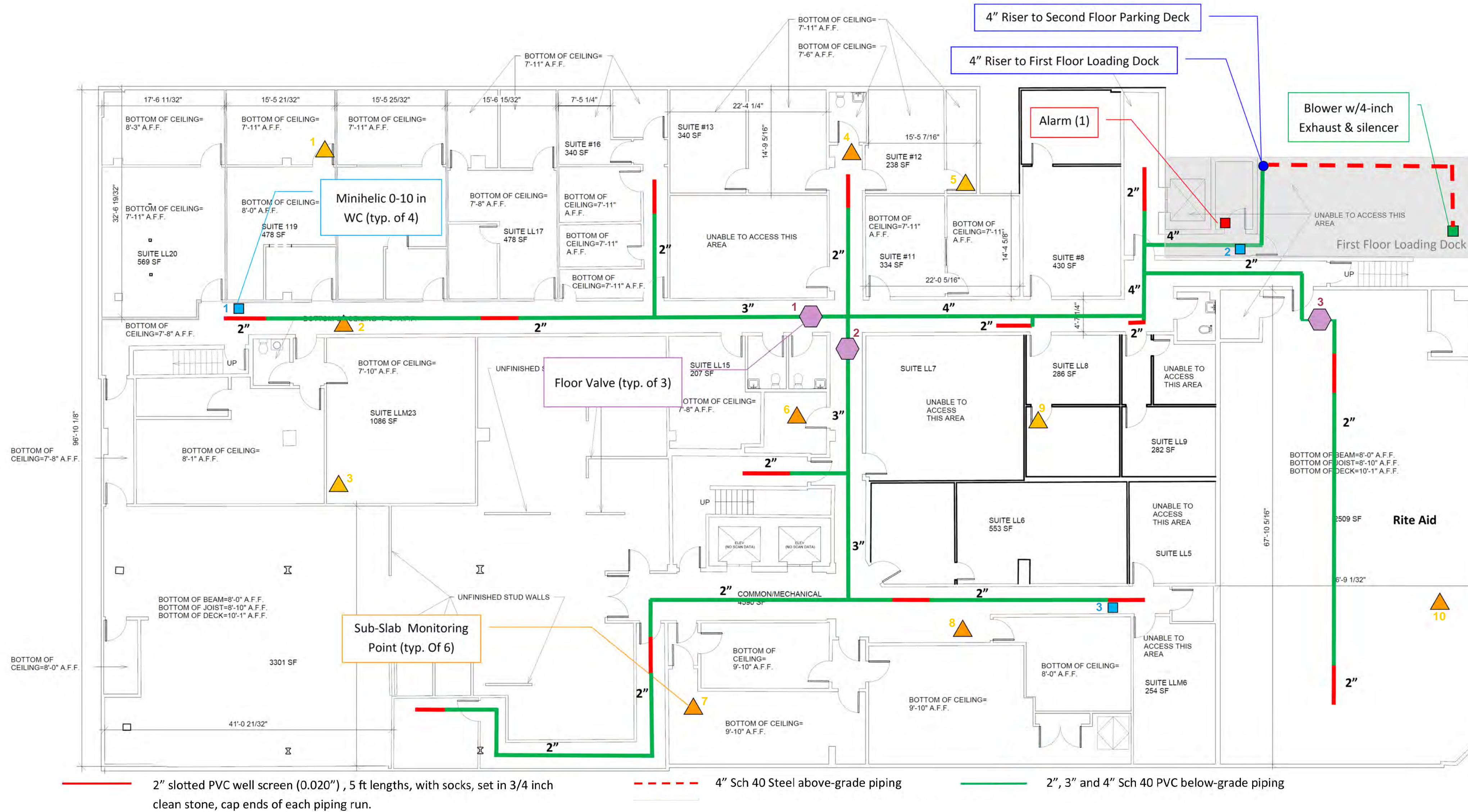
There is uncertainty with any measurement result due to statistical variations and other factors such as daily and seasonal variations, operation of the property, and possible interference with the necessary test conditions that may or may not influence the results.



# APPENDIX A

## SSDS LAYOUT AND DETAILS FIGURE

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**NOTE**

- IT IS A VIOLATION OF NY STATE LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT IN ANY WAY.
- NO NEW MECHANICAL UNITS TO BE INSTALLED.
- THE WORK IS IN COMPLIANCE WITH 2016 ENERGY CODE.

TABULAR ENERGY ANALYSIS - NYCEEC		
TO THE BEST OF MY KNOWLEDGE, BELIEF, AND PROFESSIONAL JUDGEMENT, THIS APPLICATION IS IN COMPLIANCE WITH THE NYCEEC.		
WORK ITEM	PROPOSED DESIGN VALUE	CODE PRESCRIBED VALUE & CITATION
BUILDING ENVELOPE	NO CHANGE	N/A
MECHANICAL SYSTEMS	NO CHANGE	N/A
SERVICE WATER HEAT	NO CHANGE	N/A
ELECTRICAL POWER & LIGHTING SYSTEMS	NO CHANGE	N/A

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 147 West 35th St, 19th Fl, New York, NY 10001  
 Main: 908.448.2627 | VERTEXENG.COM

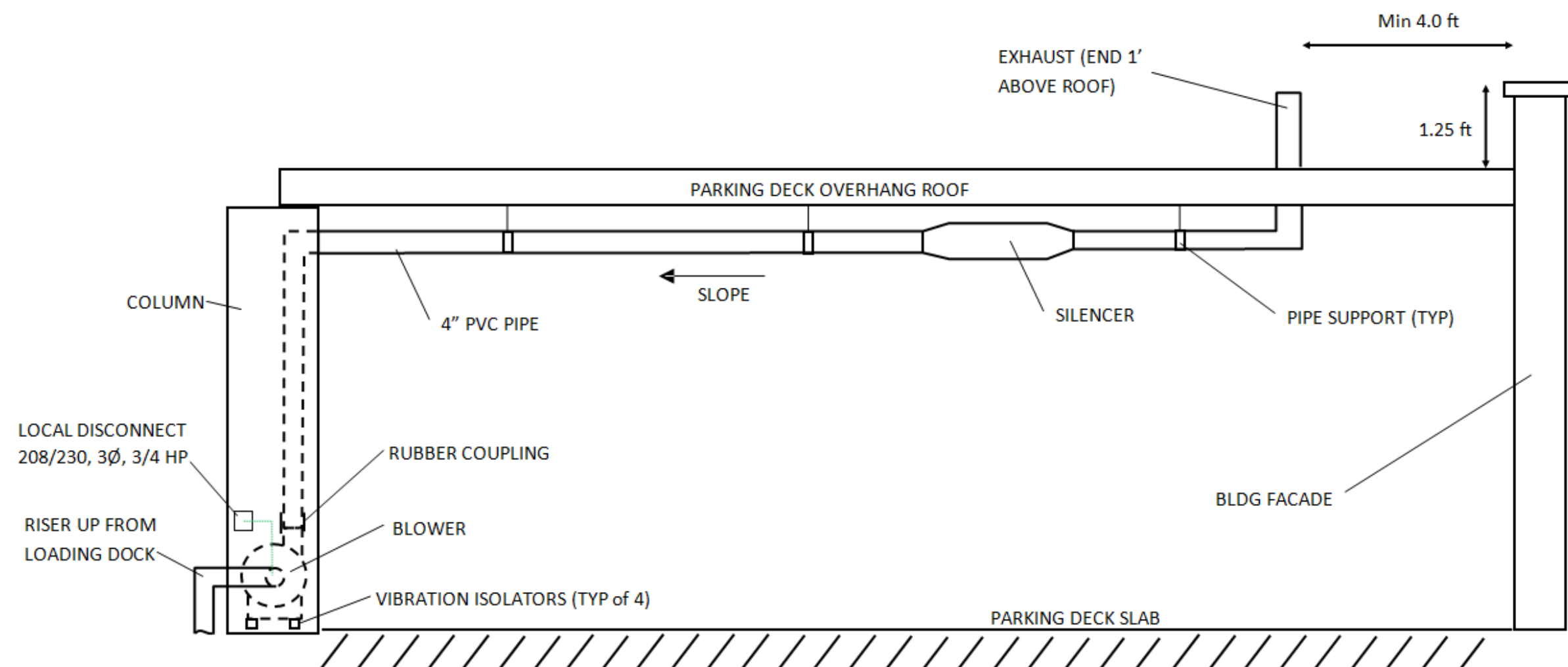
Richard J. Tobic, PE  
 PE License No. 095039-1  
 New York Registered  
 Engineering Firm No. F-15099

**SSDS LAYOUT**  
 SITE: ROCKFARMER 37TH AVENUE  
 SITE CODE C241212  
 82-13 37TH AVENUE  
 JACKSON HEIGHTS, QUEENS COUNTY, NEW YORK

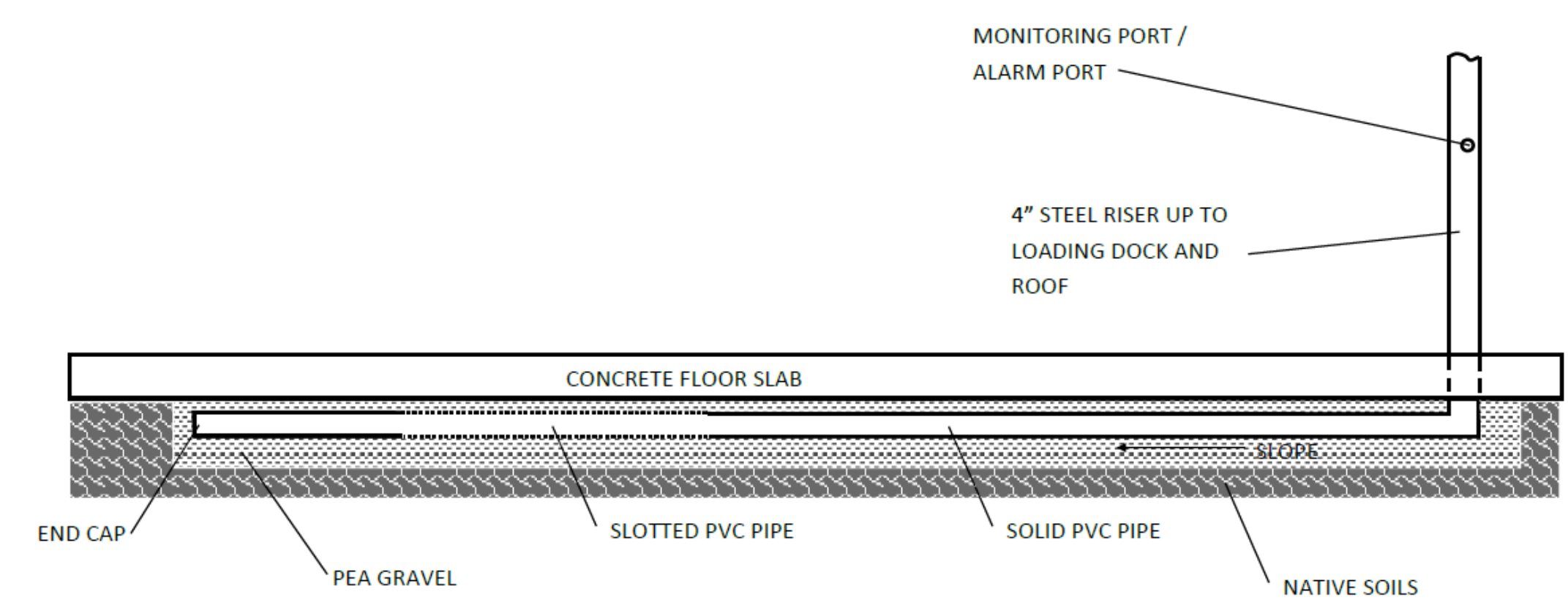
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DATE: 05/21/2021  
 DRAWN BY: JJA  
 CHECKED BY: MK  
 JOB #: 48122

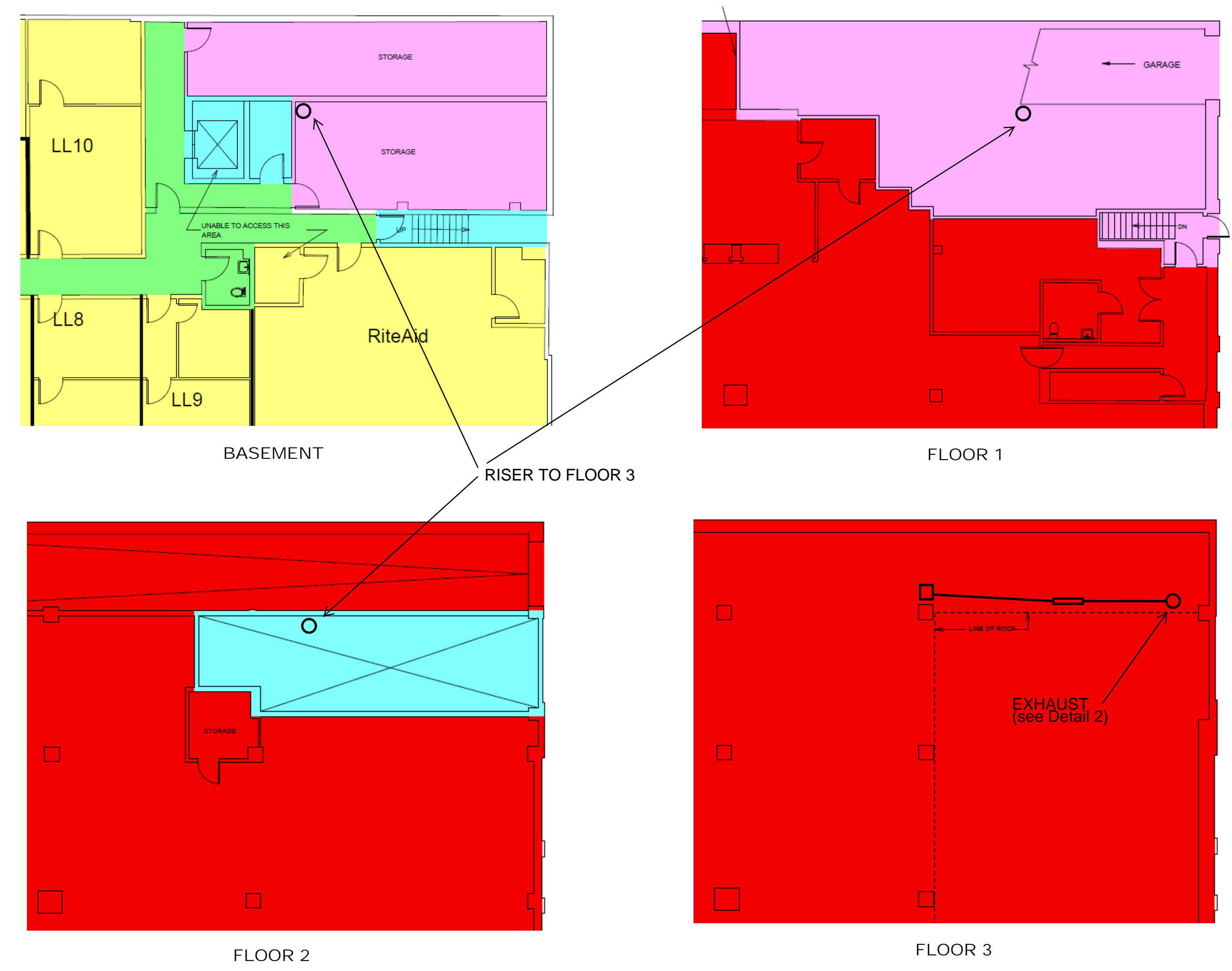
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DETAIL 1: BLOWER AND EXHAUST DETAIL (Floor 2)



DETAIL 2: SUB-SLAB VAPOR COLLECTION PIPING DETAIL



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- NO NEW MECHANICAL UNITS TO BE INSTALLED.
- THE WORK IS IN COMPLIANCE WITH 2016 ENERGY CODE.

**Note**

- Contractor shall:**
- Comply with all OSHA requirements and training in accordance with 1910.120.
  - Follow their own H&S plan or the Site-Specific H&S plan, whichever is more protective. VERTEX is not responsible for contractor H&S.
  - Obtain local permits for all work, as required.
  - Verify site conditions prior to the start of work.
  - Be responsible for identifying and verifying the location of all utilities within the limits of disturbance.
  - Be responsible for the means and methods for implementation of the scope of work.
  - Coordinate work and schedule with Engineer and Owner and provide a safe demarcated work area.
  - Perform all work in accordance with all drawings and other information provided by Engineer and Owner.
  - Install all materials and appurtenances in accordance with manufacturer's instructions.
  - Coordinate delivery of all materials and support equipment.
  - Restore area to pre-construction conditions.
- Submittals:**
- Provide material cut sheets for Engineer approval if different than that specified.
  - Proposed changes to plans shall be submitted in writing for Engineer/Owner approval.
  - Utilize loading dock and landlord room as staging area.
- Installation:**
- Install above-grade piping with slope to allow for condensate drainage.
  - Install monitoring ports and valves where shown on drawings.
  - Install sub-slab monitoring points within building slab.
  - Provide 115V outlet for alarm operation.
  - Construct all above grade metal vent piping and fittings to be gas tight.
  - Firestop all wall and floor penetrations.
  - Pull electric from 2nd Floor mechanical room.

**General:**

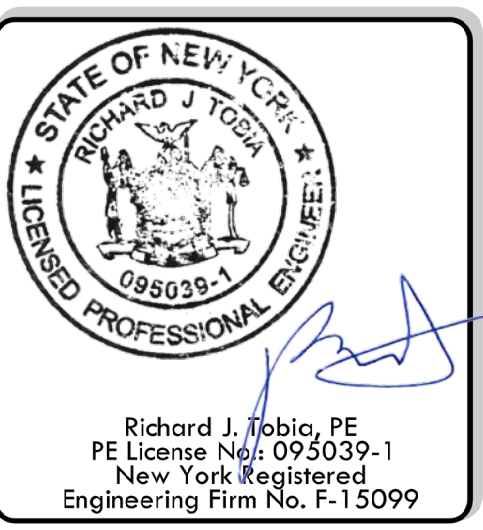
- The Vapor Mitigation System (VMS) presented in these plans and specifications shall be utilized to prevent vapor intrusion into the building.
  - The basis of design is an active sub-slab depressurization system described in these plans.
  - The VMS construction shall consist of, but not be limited to, the following:
    - Supply and install vapor vent risers with ancillary monitoring equipment.
    - Supply and install below grade collection piping.
    - Supply and install exhaust fan and appurtenances.
- Vapor Vent System:**
- A vapor vent system shall be installed beneath the slab as detailed in this drawing set.
  - The exhaust shall be located at least 20 feet above the ground surface, air intakes, and windows.
  - All vent piping shall be sloped to a sub-grade drainage point.
  - Materials of construction shall comply with the applicable Plumbing and Mechanical Codes.
  - Riser pipe sample ports and gauges shall be installed within accessible sections.
  - The riser pipes shall be fully supported through the entire height of the building such that no downward force is exerted on the sub-slab venting piping.
- Materials:**
- All materials are to be delivered to the project site in their original unbroken packages bearing the manufacturer's label showing brand, weight, volume, and batch number.
  - Materials are to be stored at the project site in strict compliance with the manufacturer's instructions.
- Blower: Radial Blower Grainger 48LX13, 3 Phase, 208/230V, 3/4 HP  
 Silencer: McMaster Carr, 5-inch, galvanized steel  
 Alarm: Radon Away Checkpoint IIa  
 Vacuum Gauge: Dwyer Minihelic 2-5003 0-10" WC  
 Above Grade Pipe: Cast Iron or Steel  
 Below Grade Pipe: PVC, solid and perforated

TABULAR ENERGY ANALYSIS - NYCEEC		
TO THE BEST OF MY KNOWLEDGE, BELIEF, AND PROFESSIONAL JUDGEMENT, THIS APPLICATION IS IN COMPLIANCE WITH THE NYCEEC.		
WORK ITEM	PROPOSED DESIGN VALUE	CODE PRESCRIBED VALUE & CITATION
BUILDING ENVELOPE	NO CHANGE	N/A
MECHANICAL SYSTEMS	NO CHANGE	N/A
SERVICE WATER HEAT	NO CHANGE	N/A
ELECTRICAL POWER & LIGHTING SYSTEMS	NO CHANGE	N/A

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**SDS DETAILS AND NOTES**  
 SITE: ROCKFARMER 37TH AVENUE  
 SITE CODE C241212  
 82-13 37TH AVENUE  
 JACKSON HEIGHTS, QUEENS COUNTY, NEW YORK

NO.	REVISIONS
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DATE: 05/21/2021  
 DRAWN BY: JJA  
 CHECKED BY: MK  
 JOB #: 48122

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# APPENDIX B

## COMPONENT SPECIFICATIONS



**INSTALLATION & OPERATING INSTRUCTIONS**  
**Instruction P/N IN015 Rev E**  
**FOR CHECKPOINT IIa™ P/N 28001-2 & 28001-3**  
**RADON SYSTEM ALARM**

**INSTALLATION INSTRUCTIONS**  
(WALL MOUNTING)

Select a suitable wall location near a vertical section of the suction pipe. The unit should be mounted about four or five feet above the floor and as close to the suction pipe as possible. Keep in mind that with the plug-in transformer provided, the unit must also be within six feet of a 120V receptacle. **NOTE: The Checkpoint IIa is calibrated for vertical mounting, horizontal mounting will affect switchpoint calibration.**

Drill two 1/4" holes 4" apart horizontally where the unit is to be mounted.

Install the two 1/4" wall anchors provided.

Hang the CHECKPOINT IIa from the two mounting holes located on the mounting bracket. Tighten the mounting screws so the unit fits snugly and securely against the wall.

Drill a 5/16" hole into the side of the vent pipe about 6" higher than the top of the unit.

Insert the vinyl tubing provided about 1" inside the suction pipe.

Cut a suitable length of vinyl tubing and attach it to the pressure switch connector on the CHECKPOINT IIa.

**CALIBRATION AND OPERATION.**

The CHECKPOINT IIa units are calibrated and sealed at the factory to alarm when the vacuum pressure falls below the factory setting and should not normally require field calibration. Factory Settings are:

**28001-2 -.25" WC Vacuum**

**28001-3 -.10" WC Vacuum**

**To Verify Operation:**

With the exhaust fan off or the pressure tubing disconnected and the CHECKPOINT IIa plugged in, both the red indicator light and the audible alarm should be on.

Turn the fan system on or connect the pressure tubing to the fan piping. The red light and the audible alarm should go off. The green light should come on.

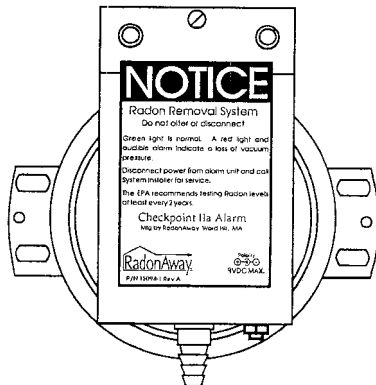
Now turn the fan off. The red light and audible alarm should come on in about two or three seconds and the green light should go out.

**WARRANTY INFORMATION**

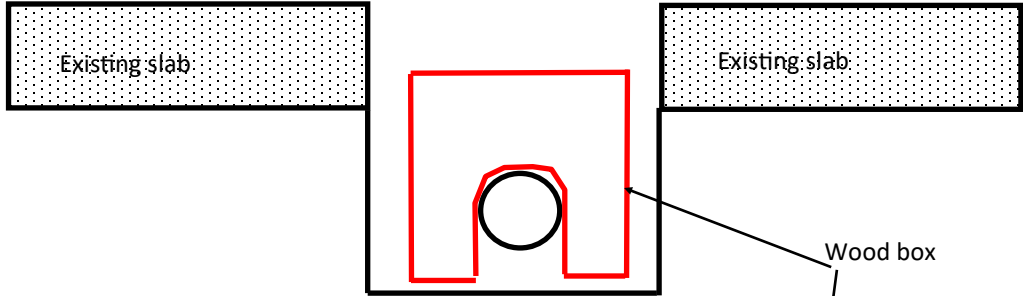
Subject to applicable consumer protection legislation, RadonAway warrants that the CHECKPOINT IIa will be free from defective material and workmanship for a period of (1) year from the date of purchase. Warranty is contingent on installation in accordance with the instructions provided. This warranty does not apply where repairs or alterations have been made or attempted by others; or the unit has been abused or misused. Warranty does not include damage in shipment unless the damage is due to the negligence of RadonAway. All other warranties, expressed or written, are not valid. To make a claim under these limited warranties, you must return the defective item to RadonAway with a copy of the purchase receipt. RadonAway is not responsible for installation or removal cost associated with this warranty. In no case is RadonAway liable beyond the repair or replacement of the defective product FOB RadonAway.

**THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. THERE IS NO WARRANTY OF MERCHANTABILITY. ALL OTHER WARRANTIES, EXPRESSED OR WRITTEN, ARE NOT VALID.**

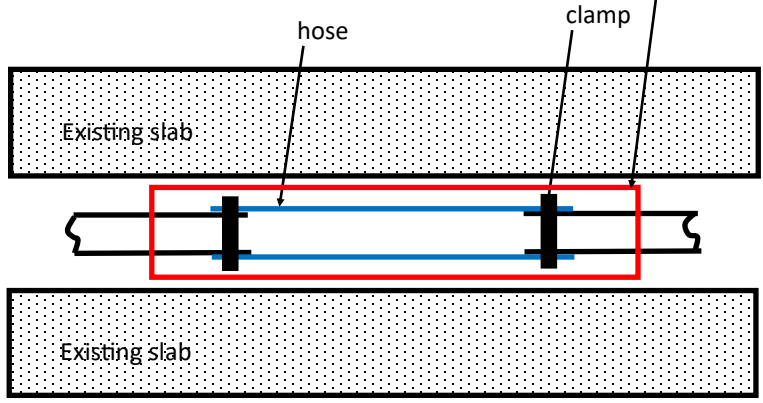
For service under these warranties, contact RadonAway for a Return Material Authorization (RMA) number and shipping information. **No returns can be accepted without an RMA.** If factory return is required, the customer assumes all shipping costs to and from factory.



Manufactured by:  
RadonAway  
Ward Hill, MA  
(978)-521-3703



PROFILE



PLAN



## Weather-Resistant Suction Water Hose



- Temperature Range: -25° to 200° F
- Maximum Vacuum: 29" of Hg @ 72° F
- Material: EPDM Rubber
- Color: Black with Blue Stripe
- Compatible Hose Fittings: [Cam-and-Groove](#) or [Easy-Fit Barbed](#)

Offering excellent UV and ozone resistance, this EPDM rubber hose is a good fit for outdoor applications, such as emptying tanks and trucks and cleaning up standing water and spills.

ID	OD	Bend Radius	Max. Continuous Lg., ft.	Per Ft.		
				1-99	100-Up	
<b>150 psi @ 72° F Max. Pressure</b>						
1"	1 7/16"	4"	100	<a href="#">1548N11</a>	\$7.25	\$5.99
1 1/4"	1 5/8"	4"	100	<a href="#">1548N12</a>	8.28	6.83
1 1/2"	1 7/8"	4"	100	<a href="#">1548N13</a>	8.78	7.24
2"	2 7/16"	7"	100	<a href="#">1548N14</a>	9.75	8.03
2 1/2"	2 15/16"	10"	100	<a href="#">1548N15</a>	13.00	11.83
3"	3 7/16"	14"	100	<a href="#">1548N16</a>	14.59	12.03
4"	4 1/2"	18"	100	<a href="#">1548N17</a>	21.26	17.52
6"	6 5/8"	24"	100	<a href="#">1548N18</a>	42.47	35.02

Please read and save these instructions. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage! Retain instructions for future reference.

# Dayton® High Pressure Direct Drive Radial Blade Blowers

## Description

Dayton high pressure direct drive radial blade blowers are used for small exhaust systems where air is laden with dust or where dust-collection bags are necessary. Applications include handling long stringy material, paper trim, fibrous material such as textile scrap, wool and ensilage. Not suitable for coarse material, heavy or abrasive dust. Dynamically balanced, self-cleaning cast aluminum wheels. 16 ga housing and motor base. Maximum operating temperature 180°F (82°C). Finished in baked-on gray polyester/epoxy. Blower can be assembled for CW or CCW rotation and any one of eight standard discharge positions. See Figure 2. Dayton motors packed separately when blowers are ordered complete.

## General Safety Information

1. Follow all local electrical and safety codes, as well as the National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA) in the United States.
2. Blower must be securely and adequately grounded. This can be accomplished by wiring with a grounded, metal-clad raceway system, by using a separate ground wire connected to the bare metal of blower frame, or other suitable means.
3. Always disconnect power source before working on or near a motor or its connected load. If the power disconnect point is out-of-sight, lock it in the open position and tag to prevent unexpected application of power.
4. Be careful when touching the exterior of an operating motor – it may be hot enough to be painful or cause injury. With modern motors, this condition is normal when operated at rated load and voltage – modern motors are built to operate at higher temperatures.
5. Protect the power cable from coming in contact with sharp objects.
6. Do not kink power cable and never allow the cable to come in contact with oil, grease, hot surfaces, or chemicals.
7. Make certain that the power source conforms to the requirements of your equipment.
8. When cleaning electrical or electronic equipment, always use an approved cleaning agent such as dry cleaning solvent.
9. Not recommended as a hazardous location blower. Do not use where explosive fumes or gases are present.
10. If blower is operated without an inlet or outlet duct, guard openings in accordance with OSHA regulations to prevent contact with rotating blower wheel.



Figure 1 – High Pressure Direct Drive Radial Blade Blowers

**⚠ WARNING** Keep hands away from inlet while blower is in operation.

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# Dayton® High Pressure Direct Drive Radial Blade Blowers

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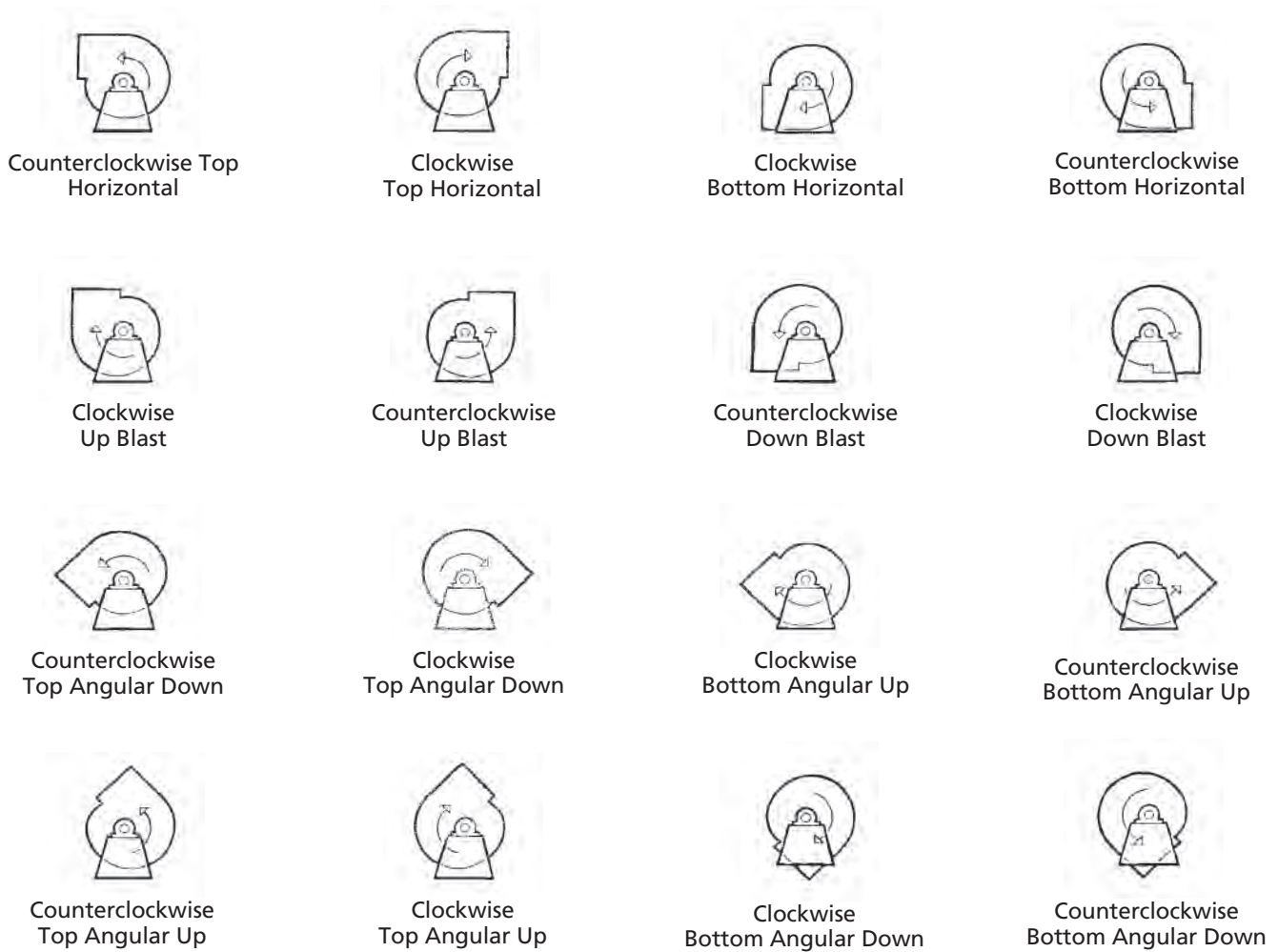


Figure 2 – Rotation and Discharge Positions

**NOTES:**

1. Direction of rotation is determined from drive side of fan.
2. For fan inverted for ceiling suspension, or side mounting, direction of rotation and discharge is determined when fan is resting on floor.

3. Reprinted from AMCA, STD. 99-2406-83, with the express written permission from the Air Movement and Control Assoc. Int., Inc., 30 West University Dr., Arlington Heights, IL 60004-1893.

**Models 48LX10, 48LX11, 48LX12, 48LX13, 48LX14, 48LX15, 48LX16 and 48LX17****Troubleshooting Chart**

Symptom	Possible Cause(s)	Corrective Action
Noise	<ol style="list-style-type: none"> <li>1. Foreign objects in housing</li> <li>2. Loose set screw on wheel</li> <li>3. Incorrect wheel rotation</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove</li> <li>2. Tighten</li> <li>3. Reverse rotation</li> </ol>
Motor bearing noise	Lack of bearing lubrication	Lubricate
Excessive vibration	<ol style="list-style-type: none"> <li>1. Loose wheel on shaft</li> <li>2. Loose mounting bolts</li> <li>3. Motor out of balance</li> <li>4. Wheel out of balance</li> <li>5. Accumulation of material on wheel</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten setscrews</li> <li>2. Tighten</li> <li>3. Replace</li> <li>4. Replace or rebalance</li> <li>5. Clean</li> </ol>
Motor overloaded	System static pressure less than 1" water column	Increase system static pressure

**⚠ CAUTION** *Must not be used where static pressure is less than shown in table. Severe motor overload will result. Motor overload protection, closely matched to motor full-load current, is highly recommended.*

# Dayton® High Pressure Direct Drive Radial Blade Blowers

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## Specifications

Model	WHEEL (in.)		MOTOR INFORMATION					CFM @ STATIC PRESSURE SHOWN												dBA @ 5 ft.	Shpg. Wt. lbs.	
	Dia.	Bore	HP	Frame	PH	Voltage	RPM	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"			
48LX10	7 <sup>3</sup> / <sub>4</sub>	1/2	1/3	48	1	115	3500	256	216	165	70										74	29
48LX11	7 <sup>3</sup> / <sub>4</sub>	1/2	1/3	48	3	208-230/460	3500	256	216	165	70										74	29
48LX12	8 <sup>15</sup> / <sub>16</sub>	5/8	3/4	56	1	115/208-230	3500	445	399	346	282	195									77	42.5
48LX13	8 <sup>15</sup> / <sub>16</sub>	5/8	3/4	56	3	208-230/460	3500	445	399	346	282	195									77	36.5
48LX14	10 <sup>9</sup> / <sub>16</sub>	5/8	1 <sup>1</sup> / <sub>2</sub>	56	1	115/208-230	3500	746	692	635	575	508	431	329							84	55.5
48LX15	10 <sup>9</sup> / <sub>16</sub>	5/8	1 <sup>1</sup> / <sub>2</sub>	56	3	208-230/460	3500	746	692	635	575	508	431	329							84	48.5
48LX16	12 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>8</sub>	3	182T	3	208-230/460	3500	1145	1090	1033	974	911	842	765	672	549					90	100
48LX17	13 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>8</sub>	5	184T	3	208-230/460	3500	*	*	*	*	1685	1587	1482	1367	1236	1081	874	474	92	114.5	

\* Motor overload will result if blower is operated at static pressure below performance shown  
dBA values shown are estimated sound pressure levels.

## Installation

1. Mount on a rigid, flat, level foundation. Bolt the blower securely into position.
2. With power disconnected, check the interior of the fan housing to be sure it is free of debris. Rotate the wheel to insure that it is not rubbing or binding. Check the clearance of the wheel and the inlet ring. If rubbing exists, loosen the bolts on the ring and shift the ring until clearance is obtained. If still rubbing, loosen the set screw on the wheel and shift the wheel rearward to obtain clearance. Retighten the set screw.

## Operation

1. Before connecting the motor to the electric supply, check the electrical characteristics as indicated on the motor nameplate to insure proper voltage and phase.

**⚠ CAUTION** *A ground wire must run from the blower motor housing to a suitable electrical ground such as a properly grounded metallic raceway or a ground wire system.*

2. After electrical connections are completed, apply just enough power to start the unit. Be sure that the rotation of the wheel is correct as indicated by directional arrows on the unit. If proper rotation, apply full electrical power.
3. With the air system in full operation and all ducts attached, measure

current input to the motor and compare with the nameplate rating to determine if the motor is operating under safe load conditions.

## Maintenance

**⚠ WARNING** *Before attempting any repair work, be certain that all power to the motor and electrical accessories are turned off and locked in off position.*

- A. Periodically remove dirt from blower wheel and housing.
- B. Check tightness of wheel set screw.
- C. After disconnecting the power source, check the wiring to see if insulation is damaged or frayed.
- D. Relubricate motor per manufacturers' instructions. Remove any excess lubricants.

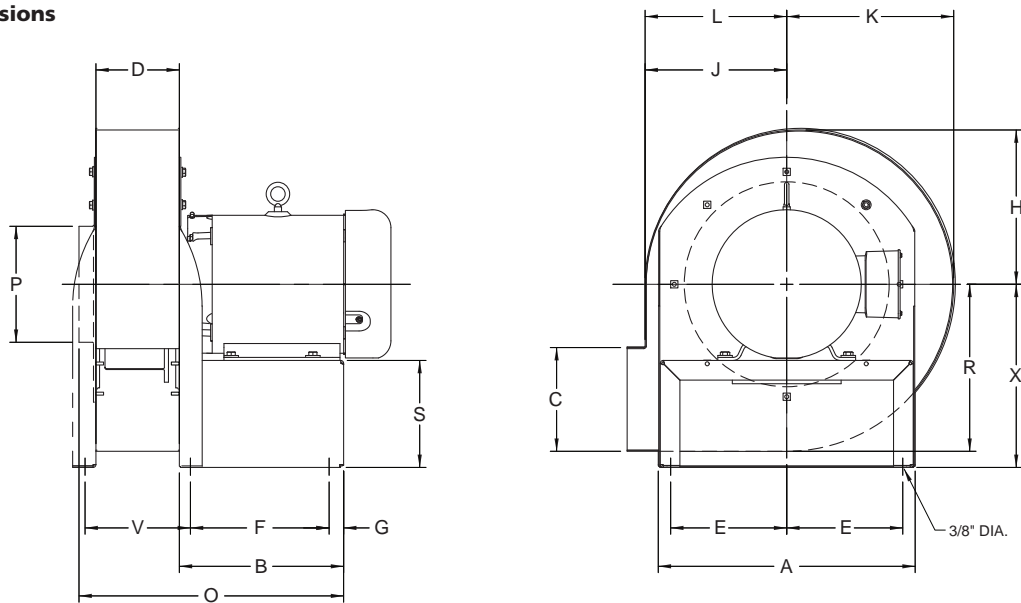
# Models 48LX10, 48LX11, 48LX12, 48LX13, 48LX14, 48LX15, 48LX16 and 48LX17

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## Dimensions

Model	WHEEL			HIGH PRESSURE DIRECT DRIVE RADIAL BLADE BLOWER																
	Dia.	W	Bore	A	B	C	D	E	F	G	H	J	K	L	O	P	R	S	V	X
48LX10	7 <sup>3</sup> / <sub>4</sub>	2 <sup>5</sup> / <sub>16</sub>	1/2	11	8	3	3	5	7	1/2	5 <sup>3</sup> / <sub>8</sub>	4 <sup>7</sup> / <sub>8</sub>	5 <sup>7</sup> / <sub>8</sub>	5 <sup>7</sup> / <sub>8</sub>	12 <sup>1</sup> / <sub>4</sub>	4	6 <sup>5</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>	-	8 <sup>1</sup> / <sub>2</sub>
48LX11	7 <sup>3</sup> / <sub>4</sub>	2 <sup>5</sup> / <sub>16</sub>	1/2	11	8	3	3	5	7	1/2	5 <sup>3</sup> / <sub>8</sub>	4 <sup>7</sup> / <sub>8</sub>	5 <sup>7</sup> / <sub>8</sub>	5 <sup>7</sup> / <sub>8</sub>	12 <sup>1</sup> / <sub>4</sub>	4	6 <sup>5</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>	-	8 <sup>1</sup> / <sub>2</sub>
48LX12	8 <sup>15</sup> / <sub>16</sub>	2 <sup>13</sup> / <sub>16</sub>	5/8	12 <sup>1</sup> / <sub>8</sub>	8	3 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>8</sub>	7	1/2	6 <sup>3</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>4</sub>	6 <sup>7</sup> / <sub>8</sub>	6 <sup>3</sup> / <sub>4</sub>	12 <sup>3</sup> / <sub>4</sub>	5	7 <sup>1</sup> / <sub>2</sub>	6 <sup>3</sup> / <sub>8</sub>	-	9 <sup>7</sup> / <sub>8</sub>
48LX13	8 <sup>15</sup> / <sub>16</sub>	2 <sup>13</sup> / <sub>16</sub>	5/8	12 <sup>1</sup> / <sub>8</sub>	8	3 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>8</sub>	7	1/2	6 <sup>3</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>4</sub>	6 <sup>7</sup> / <sub>8</sub>	6 <sup>3</sup> / <sub>4</sub>	12 <sup>3</sup> / <sub>4</sub>	5	7 <sup>1</sup> / <sub>2</sub>	6 <sup>3</sup> / <sub>8</sub>	-	9 <sup>7</sup> / <sub>8</sub>
48LX14	10 <sup>9</sup> / <sub>16</sub>	3	5/8	14 <sup>3</sup> / <sub>4</sub>	9	4	3 <sup>1</sup> / <sub>2</sub>	6 <sup>7</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	3/4	7 <sup>1</sup> / <sub>4</sub>	6 <sup>1</sup> / <sub>2</sub>	8	7 <sup>5</sup> / <sub>8</sub>	14	6	8 <sup>5</sup> / <sub>8</sub>	8 <sup>1</sup> / <sub>4</sub>	-	11 <sup>3</sup> / <sub>4</sub>
48LX15	10 <sup>9</sup> / <sub>16</sub>	3	5/8	14 <sup>3</sup> / <sub>4</sub>	9	4	3 <sup>1</sup> / <sub>2</sub>	6 <sup>7</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	3/4	7 <sup>1</sup> / <sub>4</sub>	6 <sup>1</sup> / <sub>2</sub>	8	7 <sup>5</sup> / <sub>8</sub>	14	6	8 <sup>5</sup> / <sub>8</sub>	8 <sup>1</sup> / <sub>4</sub>	-	11 <sup>3</sup> / <sub>4</sub>
48LX16	12 <sup>1</sup> / <sub>2</sub>	3	1 <sup>1</sup> / <sub>8</sub>	17	11 <sup>1</sup> / <sub>4</sub>	5	4	8	9 <sup>3</sup> / <sub>4</sub>	3/4	8 <sup>1</sup> / <sub>4</sub>	7 <sup>1</sup> / <sub>2</sub>	9	9 <sup>5</sup> / <sub>8</sub>	17	7	10	6 <sup>1</sup> / <sub>8</sub>	-	10 <sup>5</sup> / <sub>8</sub>
48LX17	13 <sup>1</sup> / <sub>2</sub>	4 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>8</sub>	17 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>4</sub>	7 <sup>1</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>4</sub>	8	9 <sup>9</sup> / <sub>16</sub>	1	10 <sup>1</sup> / <sub>2</sub>	9 <sup>5</sup> / <sub>8</sub>	11 <sup>3</sup> / <sub>8</sub>	11	18 <sup>7</sup> / <sub>8</sub>	8	11 <sup>1</sup> / <sub>2</sub>	8 <sup>1</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>4</sub>	12 <sup>5</sup> / <sub>8</sub>

Figure 3 – Dimensions



# For Repair Parts, call 1-800-323-0620

**24 hours a day - 365 days a year**

Please provide the following information:

- Model number
- Serial number (if any)
- Part description and number as shown in parts list

Address parts correspondence to:  
 Grainger Parts  
 P.O. Box 3074  
 1657 Shermer Road  
 Northbrook, IL 60065-3074 U.S.A.

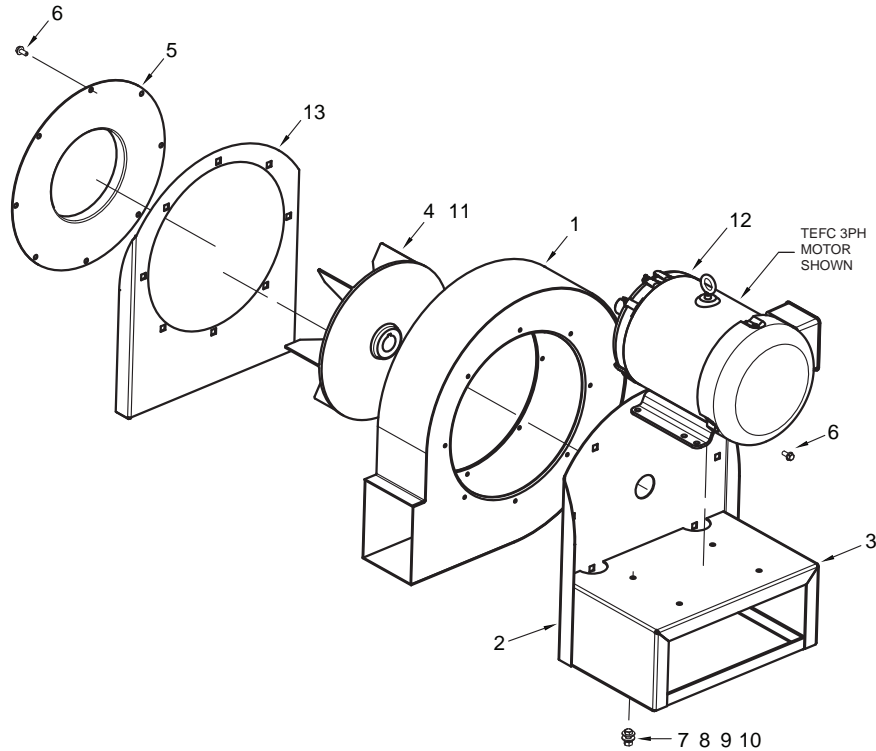


Figure 4 – Repair Parts Illustration

## Repair Parts List

Reference Number	Description	Part Numbers for Model:							
		48LX10	48LX11	48LX12	48LX13	48LX14	48LX15	48LX16	48LX17
1	Housing	201-08-4005	201-08-4005	201-09-4003	201-09-4003	201-11-4005	201-11-4005	201-12-4004	201-14-4005
2	Base Upright	618-08-7001	618-08-7001	---	---	---	---	---	---
3	Motor Base Assembly	203-08-7001	203-08-7001	203-09-3007	203-09-3007	203-11-3024	203-11-3024	203-12-4011	203-14-4011
4	Wheel	602-08-4001	602-08-4001	602-09-4002	602-09-4002	602-11-4002	602-11-4002	602-12-4031	602-14-4003
5	Inlet Ring	609-08-4002	609-08-4002	609-09-4001	609-09-4001	609-11-4003	609-11-4003	609-12-4003	609-14-4001
6	Hex Hd. Thd Cut Screw *	#10 x 1/2" (8 Req'd)	#10 x 1/2" (8 Req'd)	#10 x 1/2" (14 Req'd)	#10 x 1/2" (14 Req'd)	#10 x 1/2" (14 Req'd)	#10 x 1/2" (14 Req'd)	5/16-18 x 3/4" (16 Req'd)	5/16-18 x 3/4" (16 Req'd)
7	Hex Hd Bolt *	5/16-18 x 3/4" (4 Req'd)	5/16-18 x 3/4" (4 Req'd)	5/16-18 x 3/4" (4 Req'd)	5/16-18 x 3/4" (4 Req'd)	5/16-18 x 3/4" (4 Req'd)	5/16-18 x 3/4" (4 Req'd)	5/16-18 x 3/4" (4 Req'd)	5/16-18 x 1" (4 Req'd)
8	Hex Hd Nut *	5/16-18 (4 Req'd)	5/16-18 (4 Req'd)	5/16-18 (4 Req'd)	5/16-18 (4 Req'd)	5/16-18 (4 Req'd)	5/16-18 (4 Req'd)	5/16-18 (4 Req'd)	5/16-18 (4 Req'd)
9	Split Washer *	5/16 (4 Req'd)	5/16 (4 Req'd)	5/16 (4 Req'd)	5/16 (4 Req'd)	5/16 (4 Req'd)	5/16 (4 Req'd)	5/16 (4 Req'd)	5/16 (4 Req'd)
10	Flat Washer *	5/16 (8 Req'd)	5/16 (8 Req'd)	5/16 (8 Req'd)	5/16 (8 Req'd)	5/16 (8 Req'd)	5/16 (8 Req'd)	5/16 (8 Req'd)	5/16 (8 Req'd)
11	Setscrew	†	†	†	†	†	†	†	†
12	Motor	3015239	3015240	3015241	3015242	3015243	3015244	3015245	3015246
13	Inlet Side Upright	---	---	---	---	---	---	---	617-13-7002

**NOTE: 1 Models 48LX10 and 48LX11 have (2) piece motor base and upright. All others have a welded motor base/upright.**

(\*) Standard hardware item, available locally.

(†) Available with wheel.

ENGLISH

## Models 48LX10, 48LX11, 48LX12, 48LX13, 48LX14, 48LX15, 48LX16 and 48LX17

### **LIMITED WARRANTY**

**DAYTON ONE-YEAR LIMITED WARRANTY.** Dayton® High Pressure Direct Drive Radial Blade Blowers, Models covered in this manual, are warranted by Dayton Electric Mfg. Co. (Dayton) to the original user against defects in workmanship or materials under normal use for one year after date of purchase. Any part which is determined to be defective in material or workmanship and returned to an authorized service location, as Dayton designates, shipping costs prepaid, will be, as the exclusive remedy, repaired or replaced at Dayton's option. For limited warranty claim procedures, see PROMPT DISPOSITION below. This limited warranty gives purchasers specific legal rights which vary from jurisdiction to jurisdiction.

**LIMITATION OF LIABILITY.** To the extent allowable under applicable law, Dayton's liability for consequential and incidental damages is expressly disclaimed. Dayton's liability in all events is limited to and shall not exceed the purchase price paid.

**WARRANTY DISCLAIMER.** Dayton has made a diligent effort to provide product information and illustrate the products in this literature accurately; however, such information and illustrations are for the sole purpose of identification, and do not express or imply a warranty that the products are MERCHANTABLE, or FIT FOR A PARTICULAR PURPOSE, or that the products will necessarily conform to the illustrations or descriptions. Except as provided below, no warranty or affirmation of fact, expressed or implied, other than as stated in the "LIMITED WARRANTY" above is made or authorized by Dayton.

**PRODUCT SUITABILITY.** Many jurisdictions have codes and regulations governing sales, construction, installation, and/or use of products for certain purposes, which may vary from those in neighboring areas. While Dayton attempts to assure that its products comply with such codes, it cannot guarantee compliance, and cannot be responsible for how the product is installed or used. Before purchase and use of a product, review the product applications, and all applicable national and local codes and regulations, and be sure that the product, installation, and use will comply with them.

Certain aspects of disclaimers are not applicable to consumer products; e.g., (a) some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you; (b) also, some jurisdictions do not allow a limitation on how long an implied warranty lasts, consequently the above limitation may not apply to you; and (c) by law, during the period of this Limited Warranty, any implied warranties of implied merchantability or fitness for a particular purpose applicable to consumer products purchased by consumers, may not be excluded or otherwise disclaimed.

**PROMPT DISPOSITION.** Dayton will make a good faith effort for prompt correction or other adjustment with respect to any product which proves to be defective within limited warranty. For any product believed to be defective within limited warranty, first write or call dealer from whom the product was purchased. Dealer will give additional directions. If unable to resolve satisfactorily, write to Dayton at address below, giving dealer's name, address, date, and number of dealer's invoice, and describing the nature of the defect. Title and risk of loss pass to buyer on delivery to common carrier. If product was damaged in transit to you, file claim with carrier.

**Manufactured for Dayton Electric Mfg. Co., 100 Grainger Parkway, Lake Forest, Illinois 60045 U.S.A.**



Favor de leer y guardar estas instrucciones. Lea cuidadosamente antes de intentar ensamblar, instalar, operar o dar mantenimiento al producto descrito. Protéjase a sí mismo y a los demás al cumplir con toda la información de seguridad. El no cumplir las instrucciones puede ocasionar lesiones personales y/o daños a la propiedad. Guarde estas instrucciones para referencia futura.

# Sopladores de paletas radiales de transmisión directa de alta presión Dayton®

## Descripción

Los sopladores de paletas radiales de transmisión directa de alta presión de Dayton se usan en sistemas pequeños de escape en donde el aire se encuentra cargado de polvo o donde se requieren bolsas de recolección de polvo. Las aplicaciones incluyen el manejo de materiales largos con hebras, recortes de papel, materiales fibrosos como los residuos textiles, lana y ensilaje. No es adecuado para material grueso, pesado o polvo abrasivo. Cuenta con ruedas de aluminio fundido de autolimpieza dinámicamente balanceadas, alojamiento calibre 16 y base para el motor. La temperatura máxima de funcionamiento es de 82° C (180° F). Tiene un acabado en resina epóxica y poliéster gris horneado. El soplador puede ser ensamblado para rotación en sentido de las agujas del reloj o en sentido contrario, y en una de las ocho posiciones estándar de descarga. Vea la Figura 2. Cuando se ordenan sopladores completos, los motores Dayton se empaquetan por separado.

## Información general sobre seguridad

1. Siga todos los códigos eléctricos y de seguridad locales, así como el Código Eléctrico Nacional (NEC) y la Ley de Salud y Seguridad Ocupacional (OSHA) de los Estados Unidos.
2. El soplador debe ponerse a tierra de manera segura y apropiada. Esto puede lograrse al cablear con un sistema de canal blindado puesto a tierra, usando un alambre de tierra por separado conectado al metal descubierto del marco del ventilador o de otra manera que sea apropiada.
3. Desconecte siempre el suministro eléctrico antes de trabajar en un motor o cerca de él o con carga conectada. Si el punto de desconexión del suministro eléctrico no está a la vista, asegure y bloquee en la posición abierta y etiquete para evitar la energización inesperada.
4. Tenga cuidado al tocar el exterior de un motor en funcionamiento, podría estar suficientemente caliente para provocar dolor o una lesión. Esta situación es algo normal en los motores modernos cuando funcionan con la carga y voltaje nominales. Los motores modernos se construyen para funcionar a temperaturas más elevadas.
5. Evite que el cable eléctrico se ponga en contacto con objetos afilados.
6. No tuerza el cable eléctrico y nunca permita que se ponga en contacto con aceite, grasa, superficies calientes o sustancias químicas.
7. Verifique que el suministro eléctrico cumpla con los requisitos del equipo.
8. Cuando limpie equipo eléctrico o electrónico, use siempre un agente limpiador aprobado, como un solvente para limpieza en seco, por ejemplo.
9. No se recomienda usar el soplador en un lugar peligroso. No debe usarse donde se encuentren presentes humos o gases explosivos.
10. Si se hace funcionar el soplador sin un conducto de entrada o salida, proteja las aberturas de acuerdo con los reglamentos de OSHA para evitar el contacto con la rueda giratoria del ventilador.



Figura 1 – Sopladores de paletas radiales de transmisión directa de alta presión

**⚠ ADVERTENCIA** Mantenga las manos lejos de la entrada de aire mientras el soplador está funcionando.



# Sopladores de paletas radiales de transmisión directa de alta presión Dayton®



Sentido contrario de las manecillas  
Parte superior horizontal



Sentido de las manecillas  
Parte superior horizontal



Sentido de las manecillas  
Parte inferior horizontal



Sentido contrario de las manecillas  
Parte inferior horizontal



Sentido de las manecillas  
Chorro hacia arriba



Sentido contrario de las manecillas  
Chorro hacia arriba



Sentido contrario de las manecillas  
Chorro hacia abajo



Sentido de las manecillas  
Chorro hacia abajo



Sentido contrario de las manecillas  
Angular superior hacia abajo



Sentido de las manecillas  
Angular superior hacia abajo



Sentido de las manecillas  
Angular inferior hacia arriba



Sentido contrario de las manecillas  
Angular inferior hacia arriba



Sentido contrario de las manecillas  
Angular superior hacia arriba



Sentido de las manecillas  
Angular superior hacia arriba



Sentido de las manecillas  
Angular inferior hacia abajo



Sentido contrario de las manecillas  
Angular inferior hacia abajo

**Figura 2 - Rotación y posiciones de descarga**

## NOTAS:

1. La dirección de rotación se determina desde el lado impulsor del ventilador.
2. En el caso de ventiladores invertidos para suspensión del techo o montaje lateral, la dirección de rotación y descarga se determina cuando el ventilador está apoyado sobre el piso.

3. Reimpresión de AMCA, STD. 99-2406-83, con el permiso expreso por escrito de Air Movement and Control Assoc. Int., Inc., 30 West University Dr., Arlington Heights, IL 60004-1893.

## Modelos 48LX10, 48LX11, 48LX12, 48LX13, 48LX14, 48LX15, 48LX16 y 48LX17

### Tabla de solución de problemas

Síntoma	Causa(s) posible(s)	Acción correctiva
Ruido	<ol style="list-style-type: none"> <li>Objetos externos en el alojamiento</li> <li>Tornillo de sujeción de la rueda suelto</li> <li>Rotación incorrecta de la rueda</li> </ol>	<ol style="list-style-type: none"> <li>Retirar</li> <li>Apretar</li> <li>Invertir la rotación</li> </ol>
Ruido del rodamiento del motor	Falta de lubricación del rodamiento	Lubricar
Vibración excesiva	<ol style="list-style-type: none"> <li>Rueda suelta en el eje</li> <li>Pernos de montaje sueltos</li> <li>Motor fuera de balance</li> <li>Rueda fuera de balance</li> <li>Acumulación de material en la rueda</li> </ol>	<ol style="list-style-type: none"> <li>Apretar los tornillos de sujeción</li> <li>Apretar</li> <li>Reemplazar</li> <li>Reemplazar o rebalancear</li> <li>Limpiar</li> </ol>
Sobrecarga del motor	Presión estática del sistema menor de 1 pulg. de columna de agua	Aumentar la presión estática del sistema

**⚠ PRECAUCIÓN** *No debe usarse en donde la presión estática sea menor a la mostrada en la tabla. Podría ocasionarse una sobrecarga severa del motor. Se recomienda ampliamente la protección de sobrecarga del motor muy semejante a la corriente de carga completa del motor.*

# Sopladores de paletas radiales de transmisión directa de alta presión Dayton®

## Especificaciones

Modelo	RUEDA (pulg)		DATOS DEL MOTOR				SE MUESTRA CFM A PRESIÓN ESTÁTICA										dBA a 5 ft.	Lbs. peso envío				
	Diám.	Barreno	HP	Bastidor	PH	Voltaje	RPM	1"	2"	3"	4"	5"	6"	7"	8"	9"			10"	11"	12"	
48LX10	7 <sup>3</sup> / <sub>4</sub>	1/2	1/3	48	1	115	3500	256	216	165	70										74	29
48LX11	7 <sup>3</sup> / <sub>4</sub>	1/2	1/3	48	3	208-230/460	3500	256	216	165	70										74	29
48LX12	8 <sup>15</sup> / <sub>16</sub>	5/8	3/4	56	1	115/208-230	3500	445	399	346	282	195									77	42.5
48LX13	8 <sup>15</sup> / <sub>16</sub>	5/8	3/4	56	3	208-230/460	3500	445	399	346	282	195									77	36.5
48LX14	10 <sup>9</sup> / <sub>16</sub>	5/8	1 <sup>1</sup> / <sub>2</sub>	56	1	115/208-230	3500	746	692	635	575	508	431	329							84	55.5
48LX15	10 <sup>9</sup> / <sub>16</sub>	5/8	1 <sup>1</sup> / <sub>2</sub>	56	3	208-230/460	3500	746	692	635	575	508	431	329							84	48.5
48LX16	12 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>8</sub>	3	182T	3	208-230/460	3500	1145	1090	1033	974	911	842	765	672	549					90	100
48LX17	13 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>8</sub>	5	184T	3	208-230/460	3500	*	*	*	*	1685	1587	1482	1367	1236	1081	874	474		92	114.5

(\*) Puede provocarse sobrecarga del motor si el soplador funciona con una presión estática por debajo del desempeño mostrado.

(#) Los valores mostrados son niveles calculados de presión firme.

## Instalación

1. Verifique que todos los pernos y tornillos estén apretados antes de montar el soplador sobre una base rígida, plana y nivelada. Emperne el soplador de manera segura en su posición.
2. Después de desconectar el suministro eléctrico, verifique el interior del alojamiento del ventilador para verificar que esté libre de residuos. Gire la rueda para verificar que no exista fricción o adhesión. Verifique el espacio libre de la rueda y el collarín de entrada. Si existe fricción, afloje los pernos del collarín y deslícelo hasta que se obtenga el espacio libre deseado. Si todavía existe fricción, afloje el tornillo de sujeción de la rueda y deslícela hacia atrás para obtener el espacio libre deseado. Vuelva a apretar el tornillo de sujeción.

## Funcionamiento

1. Antes de conectar el motor al suministro eléctrico, verifique las especificaciones eléctricas que se indican en la placa nominal del motor para garantizar la fase y el voltaje apropiados.

**PRECAUCIÓN** *Un alambre de puesta a tierra debe ir desde el alojamiento del motor del soplador hasta un dispositivo a tierra adecuado, por ejemplo, un canal metálico o un sistema de alambres puestos a tierra.*

2. Después de completar las conexiones eléctricas, conecte solamente el suministro eléctrico necesario para arrancar el equipo. Verifique que la rotación de la rueda sea la correcta según se indica por las flechas de dirección del equipo. Si gira de manera apropiada, aplique todo el suministro eléctrico.
3. Con el sistema de aire funcionando a toda su capacidad y todos los conductos conectados, mida la

corriente de entrada al motor y compare con las especificaciones de la placa del producto para determinar si el motor está funcionando en condiciones de carga segura.

## Mantenimiento

**ADVERTENCIA** *Antes de intentar realizar cualquier trabajo de reparación, verifique que todo el suministro eléctrico del motor y los accesorios eléctricos estén apagados y que estén en posición cerrada.*

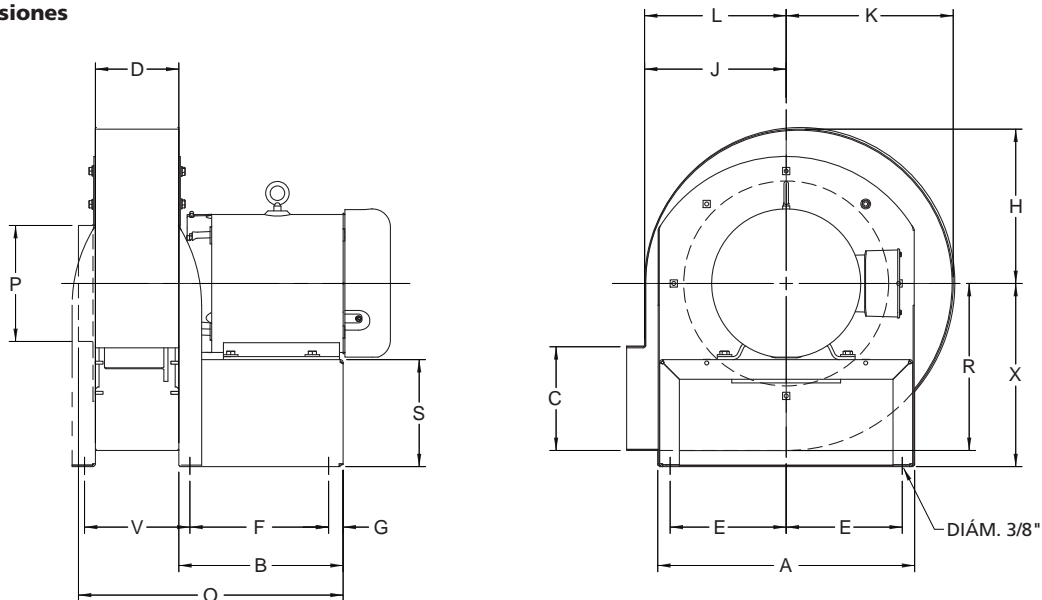
- A. Retire regularmente los residuos de la rueda y alojamiento del soplador.
- B. Verifique que el tornillo de sujeción de la rueda esté apretado.
- C. Después de desconectar el suministro eléctrico, verifique el cableado para saber si el aislante está dañado o pelado.
- D. Vuelva a lubricar el motor de acuerdo a las instrucciones del fabricante. Retire el exceso de lubricantes.

# Modelos 48LX10, 48LX11, 48LX12, 48LX13, 48LX14, 48LX15, 48LX16 y 48LX17

## Dimensiones

Dimensiones (pulgadas)																				
Modelo	RUEDA			SOPLADOR DE PALETAS RADIALES DE TRANSMISIÓN DIRECTA DE ALTA PRESIÓN																
	Diám.	Anch.	Barreno	A	B	C	D	E	F	G	H	J	K	L	O	P	R	S	V	X
48LX10	7 <sup>3</sup> / <sub>4</sub>	2 <sup>5</sup> / <sub>16</sub>	1/2	11	8	3	3	5	7	1/2	5 <sup>3</sup> / <sub>8</sub>	4 <sup>7</sup> / <sub>8</sub>	5 <sup>7</sup> / <sub>8</sub>	5 <sup>7</sup> / <sub>8</sub>	12 <sup>1</sup> / <sub>4</sub>	4	6 <sup>5</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>	-	8 <sup>1</sup> / <sub>2</sub>
48LX11	7 <sup>3</sup> / <sub>4</sub>	2 <sup>5</sup> / <sub>16</sub>	1/2	11	8	3	3	5	7	1/2	5 <sup>3</sup> / <sub>8</sub>	4 <sup>7</sup> / <sub>8</sub>	5 <sup>7</sup> / <sub>8</sub>	5 <sup>7</sup> / <sub>8</sub>	12 <sup>1</sup> / <sub>4</sub>	4	6 <sup>5</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>	-	8 <sup>1</sup> / <sub>2</sub>
48LX12	8 <sup>15</sup> / <sub>16</sub>	2 <sup>13</sup> / <sub>16</sub>	5/8	12 <sup>1</sup> / <sub>8</sub>	8	3 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>8</sub>	7	1/2	6 <sup>3</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>4</sub>	6 <sup>7</sup> / <sub>8</sub>	6 <sup>3</sup> / <sub>4</sub>	12 <sup>3</sup> / <sub>4</sub>	5	7 <sup>1</sup> / <sub>2</sub>	6 <sup>3</sup> / <sub>8</sub>	-	9 <sup>7</sup> / <sub>8</sub>
48LX13	8 <sup>15</sup> / <sub>16</sub>	2 <sup>13</sup> / <sub>16</sub>	5/8	12 <sup>1</sup> / <sub>8</sub>	8	3 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>8</sub>	7	1/2	6 <sup>3</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>4</sub>	6 <sup>7</sup> / <sub>8</sub>	6 <sup>3</sup> / <sub>4</sub>	12 <sup>3</sup> / <sub>4</sub>	5	7 <sup>1</sup> / <sub>2</sub>	6 <sup>3</sup> / <sub>8</sub>	-	9 <sup>7</sup> / <sub>8</sub>
48LX14	10 <sup>9</sup> / <sub>16</sub>	3	5/8	14 <sup>3</sup> / <sub>4</sub>	9	4	3 <sup>1</sup> / <sub>2</sub>	6 <sup>7</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	3/4	7 <sup>1</sup> / <sub>4</sub>	6 <sup>1</sup> / <sub>2</sub>	8	7 <sup>5</sup> / <sub>8</sub>	14	6	8 <sup>5</sup> / <sub>8</sub>	8 <sup>1</sup> / <sub>4</sub>	-	11 <sup>3</sup> / <sub>4</sub>
48LX15	10 <sup>9</sup> / <sub>16</sub>	3	5/8	14 <sup>3</sup> / <sub>4</sub>	9	4	3 <sup>1</sup> / <sub>2</sub>	6 <sup>7</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	3/4	7 <sup>1</sup> / <sub>4</sub>	6 <sup>1</sup> / <sub>2</sub>	8	7 <sup>5</sup> / <sub>8</sub>	14	6	8 <sup>5</sup> / <sub>8</sub>	8 <sup>1</sup> / <sub>4</sub>	-	11 <sup>3</sup> / <sub>4</sub>
48LX16	12 <sup>1</sup> / <sub>2</sub>	3	1 <sup>1</sup> / <sub>8</sub>	17	11 <sup>1</sup> / <sub>4</sub>	5	4	8	9 <sup>3</sup> / <sub>4</sub>	3/4	8 <sup>1</sup> / <sub>4</sub>	7 <sup>1</sup> / <sub>2</sub>	9	9 <sup>5</sup> / <sub>8</sub>	17	7	10	6 <sup>1</sup> / <sub>8</sub>	-	10 <sup>5</sup> / <sub>8</sub>
48LX17	13 <sup>1</sup> / <sub>2</sub>	4 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>8</sub>	17 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>4</sub>	7 <sup>1</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>4</sub>	8	9 <sup>9</sup> / <sub>16</sub>	1	10 <sup>1</sup> / <sub>2</sub>	9 <sup>5</sup> / <sub>8</sub>	11 <sup>3</sup> / <sub>8</sub>	11	18 <sup>7</sup> / <sub>8</sub>	8	11 <sup>1</sup> / <sub>2</sub>	8 <sup>1</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>4</sub>	12 <sup>5</sup> / <sub>8</sub>

Figura 3 – Dimensiones



# Si necesita partes de reparación, en México llame al 001-800-527-2331, en EE.UU. llame al 1-800-323-0620.

## Las 24 horas del día, los 365 días del año

Favor de proporcionar la información siguiente:

- Número de modelo
- Número de serie (de haberla)
- Descripción de la parte y el número como se muestra en la lista de partes.

Envíe la correspondencia relativa a partes de reparación a:

Grainger Parts  
P.O. Box 3074  
1657 Shermer Road  
Northbrook, IL 60065-3074 U.S.A.

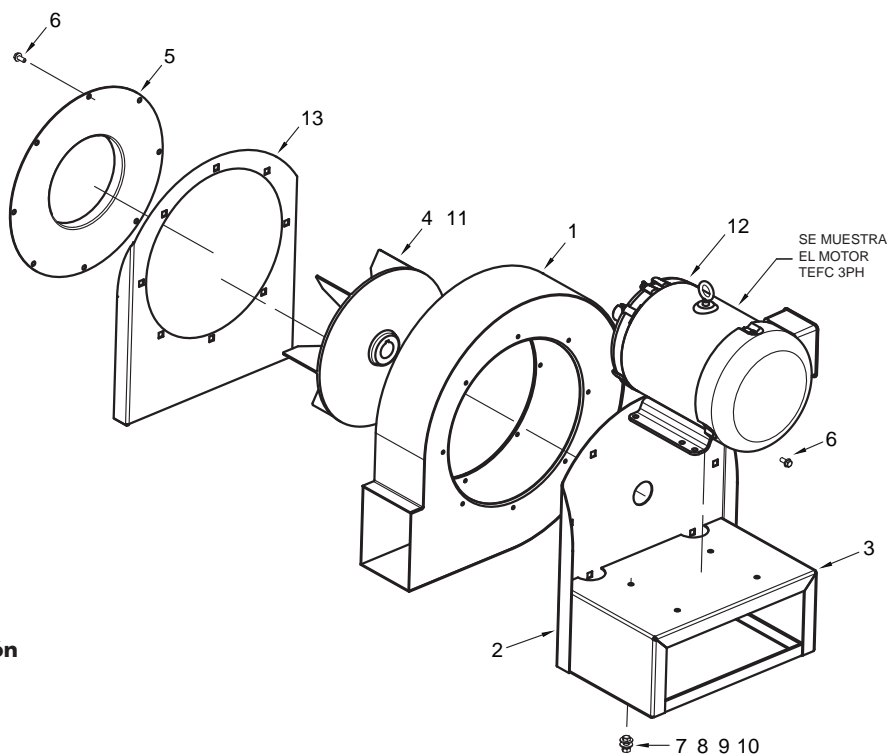


Figura 4 – Ilustración de partes de reparación

## Lista de partes de reparación

### Números de parte para el modelo:

Referencia	Descripción	48LX10	48LX11	48LX12	48LX13	48LX14	48LX15	48LX16	48LX17
1	Carcasa	201-08-4005	201-08-4005	201-09-4003	201-09-4003	201-11-4005	201-11-4005	201-12-4004	201-14-4005
2	Base vertical	618-08-7001	618-08-7001	---	---	---	---	---	---
3	Ensamble de la base del motor	203-08-7001	203-08-7001	203-09-3007	203-09-3007	203-11-3024	203-11-3024	203-12-4011	203-14-4011
4	Rueda	602-08-4001	602-08-4001	602-09-4002	602-09-4002	602-11-4002	602-11-4002	602-12-4031	602-14-4003
5	Anillo de entrada	609-08-4002	609-08-4002	609-09-4001	609-09-4001	609-11-4003	609-11-4003	609-12-4003	609-14-4001
6	Tornillo de corte de cabeza hex.*	#10 x 1/2" (8 Req.)	#10 x 1/2" (8 Req.)	#10 x 1/2" (14 Req.)	#10 x 1/2" (14 Req.)	#10 x 1/2" (14 Req.)	#10 x 1/2" (14 Req.)	5/16-18 x 3/4" (16 Req.)	5/16-18 x 3/4" (16 Req.)
7	Perno de cabeza hex.*	5/16-18 x 3/4" (4 Req.)	5/16-18 x 3/4" (4 Req.)	5/16-18 x 3/4" (4 Req.)	5/16-18 x 3/4" (4 Req.)	5/16-18 x 3/4" (4 Req.)	5/16-18 x 3/4" (4 Req.)	5/16-18 x 3/4" (4 Req.)	5/16-18 x 1" (4 Req.)
8	Tuerca de cabeza hex.*	5/16-18 (4 Req.)	5/16-18 (4 Req.)	5/16-18 (4 Req.)	5/16-18 (4 Req.)	5/16-18 (4 Req.)	5/16-18 (4 Req.)	5/16-18 (4 Req.)	5/16-18 (4 Req.)
9	Arandela hendida*	5/16 (4 Req.)	5/16 (4 Req.)	5/16 (4 Req.)	5/16 (4 Req.)	5/16 (4 Req.)	5/16 (4 Req.)	5/16 (4 Req.)	5/16 (4 Req.)
10	Arandela plana*	5/16 (8 Req.)	5/16 (8 Req.)	5/16 (8 Req.)	5/16 (8 Req.)	5/16 (8 Req.)	5/16 (8 Req.)	5/16 (8 Req.)	5/16 (8 Req.)
11	Tornillo de fijación	†	†	†	†	†	†	†	†
12	Motor	3015239	3015240	3015241	3015242	3015243	3015244	3015245	3015246
13	Vertical del lado de entrada	---	---	---	---	---	---	---	617-13-7002

**NOTA: Los modelos 48LX10 y 48LX11 tienen base de motor y vertical de (2) piezas. todos los demás tienen una base/vertical de motor soldada.**

(\*) Accesorio estándar, disponible con el distribuidor local.

(†) Disponible con rueda.

## Modelos 48LX10, 48LX11, 48LX12, 48LX13, 48LX14, 48LX15, 48LX16 y 48LX17

### **GARANTÍA LIMITADA**

**GARANTÍA LIMITADA DE DAYTON POR UN AÑO.** El usuario original de los Sopladores de Paletas Radiales de Transmisión Directa de Alta Presión de Dayton® y los Modelos cubiertos en este manual están garantizados por Dayton Electric Mfg. Co. (Dayton) por un año contra defectos de mano de obra o materiales cuando se les somete a un uso normal a partir de la fecha de compra. Cualquier parte que se encuentre defectuosa tanto en los materiales como en la mano de obra y que sea devuelta a un centro de servicio autorizado designado por Dayton, con costos de envío pagados con anticipación, será reparada o reemplazada a criterio de Dayton como remedio exclusivo. Para conocer los procedimientos de reclamación cubiertos por la garantía limitada, vea **ATENCIÓN OPORTUNA** abajo. Esta garantía limitada le confiere a los compradores derechos legales específicos que varían de una jurisdicción a otra.

**LÍMITES DE RESPONSABILIDAD.** Hasta el punto que las leyes aplicables lo permitan, la responsabilidad de Dayton por daños consiguientes e incidentales está expresamente excluida. La responsabilidad de Dayton en todos los eventos está limitada y no debe exceder el precio de compra pagado por el producto.

**EXCLUSIÓN DE RESPONSABILIDAD DE LA GARANTÍA.** Dayton se ha esforzado diligentemente para proporcionar información sobre el producto y mostrar ilustraciones de él en este folleto informativo de manera veraz. Sin embargo, dicha información e ilustraciones tienen como único propósito el identificar el producto y no expresan ni implican una garantía de que los productos son **VENDIBLES** o **ADECUADOS PARA UN PROPÓSITO ESPECÍFICO** o que los productos se ajustan necesariamente a las ilustraciones o descripciones. Con excepción de lo establecido a continuación, Dayton no hace ni autoriza ninguna garantía o afirmación de hecho, expresa o implícita que no sea estipulada en la "GARANTÍA LIMITADA" indicada arriba.

**ADAPTACIÓN DEL PRODUCTO.** Muchas jurisdicciones tienen códigos y reglamentos que rigen las ventas, la construcción, la instalación y/o el uso del producto para ciertos propósitos que pueden ser diferentes a aquéllos que se aplican en zonas vecinas. Si bien Dayton trata de que sus productos cumplan con dichos códigos, no puede garantizar su conformidad y no puede hacerse responsable por la forma en que su producto se instala o es utilizado. Antes de comprar y usar el producto, revise su aplicación y todos los códigos y reglamentos nacionales y locales aplicables y asegúrese que el producto, la instalación y el uso los cumplan.

Ciertos aspectos de limitación de responsabilidad no se aplican a los productos del consumidor, es decir, (a) algunas jurisdicciones no permiten la exclusión o limitación de daños incidentales o resultantes, de modo que las limitaciones o exclusiones anteriores pudieran no aplicarse en su caso; (b) también, algunas jurisdicciones no permiten limitar el tiempo que dura una garantía implícita, por lo tanto, la anterior limitación pudiera no aplicarse en su caso; y (c) por ley, durante el período que dure esta Garantía Limitada, cualquier garantía implícita de comercialización o de adecuación para un propósito en particular, aplicable a los productos del consumidor comprados por consumidores, no puede ser excluida o denegada de alguna otra forma.

**ATENCIÓN OPORTUNA.** Dayton hará un esfuerzo de buena fe para corregir puntualmente o hacer otros ajustes con respecto a cualquier producto que resulte defectuoso dentro de los términos de esta garantía limitada. Para cualquier producto que se considere defectuoso dentro del período de la garantía limitada, escriba primero o llame al distribuidor que le vendió el producto. El distribuidor le dará instrucciones adicionales. Si no puede resolver el problema de forma satisfactoria, escriba a Dayton a la dirección que aparece abajo, dando el nombre del distribuidor, su dirección, la fecha, el número de la factura del distribuidor y describa la naturaleza del defecto. La propiedad del artículo y el riesgo de pérdida pasarán al comprador en el momento de la entrega del artículo a la compañía transportista. Si el producto se daña durante el transporte, deberá presentar una reclamación a la compañía transportista.

**Fabricado para Dayton Electric Mfg. Co., 100 Grainger Parkway, Lake Forest, Illinois 60045 EE.UU.**



*Veillez lire et conserver ces instructions. Lisez soigneusement ces instructions avant d'essayer de monter, d'installer, de faire fonctionner ou d'entretenir le produit décrit. Protégez-vous et protégez autrui en respectant toutes les consignes de sécurité. Le non-respect de ces consignes peut entraîner des blessures corporelles et/ou des dommages matériels! Conservez ces consignes pour pouvoir les consulter ultérieurement.*

# Ventilateurs à pales radiales, à entraînement direct et à haute pression Dayton®

## Description

Les ventilateurs à pales radiales, à entraînement direct et à haute pression de Dayton font partie des petits systèmes d'évacuation d'air chargé de poussière ou lorsque les sacs à poussière sont nécessaires. Ils soufflent les matériaux à longs filaments, les bouts de papier et les matériaux fibreux tels que les débris du textile, la laine et l'ensilage. Ils ne peuvent pas souffler les matériaux plus épais, lourds ou la poussière abrasive. Roulettes en aluminium moulé, auto-nettoyantes et équilibrées dynamiquement. Socle de moteur et boîtier de 16 ga. Température de fonctionnement maximum : 82°C (180°F). Fini au polyester/époxy gris. Le ventilateur est doté de huit positions de soufflage et peut être assemblé pour une rotation dans le sens horaire ou antihoraire. Voir la figure 2. Les moteurs Dayton sont emballés séparément lorsque les ventilateurs sont commandés de manière complète.

## Consignes de sécurité générales

1. Veillez respecter toutes les consignes de sécurité et les réglementations électriques locales, ainsi que le code électrique national (National Electrical Code/NEC) et la loi sur la santé et la sécurité professionnelle des États-Unis (Occupational Safety and Health Act/OSHA)
2. Le ventilateur doit être correctement mis à la terre. Pour cela, câblez-le à l'aide d'un système de canalisations blindées mises à la terre, en utilisant un fil de terre distinct, connecté au métal nu du boîtier du ventilateur ou en utilisant toute autre méthode adéquate.
3. Coupez toujours la source d'alimentation électrique avant de réparer le moteur ou de travailler à proximité de ce dernier ou de la charge qui lui est connectée. Si le point de débranchement de la source d'alimentation n'est pas visible, verrouillez-le en position ouverte et marquez-le pour empêcher tout passage de courant imprévu.
4. Soyez prudent lorsque vous touchez la partie extérieure d'un moteur en marche car vous pourriez vous brûler. En effet, les moteurs

modernes sont conçus pour fonctionner, à la charge et tension nominales, à des températures plus élevées.

5. Empêchez le câble d'alimentation d'entrer en contact avec des objets pointus.
6. Ne pincez pas le câble d'alimentation et ne le laissez jamais entrer en contact avec de l'huile, de la graisse, des surfaces chaudes ou des produits chimiques.
7. Vérifiez que la source d'alimentation est compatible avec la configuration de votre équipement.
8. Lorsque vous nettoyez un appareil électrique ou électronique, utilisez toujours un nettoyant approuvé, tel qu'un solvant de nettoyage à sec.
9. N'utilisez pas cet appareil dans un endroit dangereux, là où il y a des fumées ou des gaz explosifs par exemple.
10. Si le ventilateur n'est pas équipé d'une gaine d'entrée ou de sortie, protégez les orifices aux termes des réglementations de l'OSHA, afin d'empêcher tout contact avec la roue tournante du ventilateur.



**Figure 1 – Ventilateurs à pales radiales, à entraînement direct et à haute pression**

**AVERTISSEMENT** Éloignez vos mains de l'orifice d'entrée lorsque le ventilateur fonctionne.



# Ventilateurs à pales radiales, à entraînement direct et à haute pression Dayton®



Dans le sens inverse des aiguilles d'une montre  
La partie horizontale est en haut



Dans le sens des aiguilles d'une montre  
La partie horizontale est en haut



Dans le sens des aiguilles d'une montre  
La partie horizontale est en bas



Dans le sens inverse des aiguilles d'une montre  
La partie horizontale est en bas



Dans le sens des aiguilles d'une montre  
Souffle vers le haut



Dans le sens inverse des aiguilles d'une montre  
Souffle vers le haut



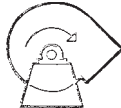
Dans le sens inverse des aiguilles d'une montre  
Souffle vers le bas



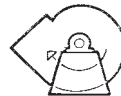
Dans le sens des aiguilles d'une montre  
Souffle vers le bas



Dans le sens inverse des aiguilles d'une montre  
La partie angulaire en haut souffle vers le bas



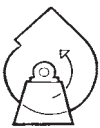
Dans le sens des aiguilles d'une montre  
La partie angulaire en haut souffle vers le bas



Dans le sens des aiguilles d'une montre  
La partie angulaire en bas souffle vers le haut



Dans le sens inverse des aiguilles d'une montre  
La partie angulaire en bas souffle vers le haut



Dans le sens inverse des aiguilles d'une montre  
La partie angulaire en haut souffle vers le haut



Dans le sens des aiguilles d'une montre  
La partie angulaire en haut souffle vers le haut



Dans le sens des aiguilles d'une montre  
La partie angulaire en bas souffle vers le bas.



Dans le sens inverse des aiguilles d'une montre  
La partie angulaire en bas souffle vers le bas.

Figure 2 – Positions de rotation et de soufflage

**NOTES:**

1. Le sens de la rotation dépend du côté d'entraînement du ventilateur
2. Pour les ventilateurs inversés devant être suspendus au plafond ou montés sur le côté, le sens de la rotation et du soufflage est déterminé lorsque le ventilateur est posé par terre.

3. Réimprimer à partir de AMCA, STD. 99-2406-83, avec la permission écrite expresse de l'association 'Air Movement Control Assoc. Int., Inc., 30 West University Dr., Arlington Heights, IL 60004-1893.

## Modèles 48LX10, 48LX11, 48LX12, 48LX13, 48LX14, 48LX15, 48LX16 et 48LX17

### Guide de dépannage

Symptôme	Cause(s) possible(s)	Mesure corrective
Bruit	<ol style="list-style-type: none"> <li>1. Des objets étrangers se trouvent dans le boîtier</li> <li>2. Les vis de fixation de la roue sont desserrées</li> <li>3. La roue ne tourne pas dans le bon sens</li> </ol>	<ol style="list-style-type: none"> <li>1. Retirez-les.</li> <li>2. Resserrez-les</li> <li>3. Inversez le sens de rotation de la roue</li> </ol>
Le moteur fait du bruit	Les roulements ne sont pas assez lubrifiés	Lubrifiez-les
Vibrations excessives	<ol style="list-style-type: none"> <li>1. La roue est desserrée sur l'arbre</li> <li>2. Les boulons de montage sont desserrés</li> <li>3. Le moteur est déséquilibré</li> <li>4. La roue est déséquilibrée</li> <li>5. Des matériaux se sont accumulés sur la roue</li> </ol>	<ol style="list-style-type: none"> <li>1. Resserrez les vis de fixation</li> <li>2. Resserrez-les</li> <li>3. Remplacez-le</li> <li>4. Remplacez-la ou rééquilibrez-la</li> <li>5. Nettoyez-la</li> </ol>
Le moteur est surchargé	La pression statique du système est inférieure à 1 po de colonne d'eau	Augmentez la pression statique du système

**⚠ ATTENTION** *N'utilisez pas cet appareil lorsque la pression statique est inférieure à celle illustrée dans le tableau car le moteur serait gravement surchargé. Nous vous conseillons vivement d'installer une protection contre les surcharges, correspondant à l'intensité de pleine charge du moteur.*

# Ventilateurs à pales radiales, à entraînement direct et à haute pression Dayton®

## Spécifications

Modèle	ROUE (po)		INFORMATIONS MOTEUR					CFM @ PRESSION STATIQUE MONTRÉE												dBA @ 5 pi	Expéd. Pds. lb	
	Dia.	Alésage	HP	Cadre	PH	Tension	TR/MIN	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"			
48LX10	7 <sup>3</sup> / <sub>4</sub>	1/2	1/3	48	1	115	3500	256	216	165	70										74	29
48LX11	7 <sup>3</sup> / <sub>4</sub>	1/2	1/3	48	3	208-230/460	3500	256	216	165	70										74	29
48LX12	8 <sup>15</sup> / <sub>16</sub>	5/8	3/4	56	1	115/208-230	3500	445	399	346	282	195									77	42.5
48LX13	8 <sup>15</sup> / <sub>16</sub>	5/8	3/4	56	3	208-230/460	3500	445	399	346	282	195									77	36.5
48LX14	10 <sup>9</sup> / <sub>16</sub>	5/8	1 <sup>1</sup> / <sub>2</sub>	56	1	115/208-230	3500	746	692	635	575	508	431	329							84	55.5
48LX15	10 <sup>9</sup> / <sub>16</sub>	5/8	1 <sup>1</sup> / <sub>2</sub>	56	3	208-230/460	3500	746	692	635	575	508	431	329							84	48.5
48LX16	12 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>8</sub>	3	182T	3	208-230/460	3500	1145	1090	1033	974	911	842	765	672	549					90	100
48LX17	13 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>8</sub>	5	184T	3	208-230/460	3500	*	*	*	*	1685	1587	1482	1367	1236	1081	874	474	92	114.5	

(\*) Le moteur deviendra surchargé si le ventilateur fonctionne à une pression statique inférieure aux performances illustrées.

(#) Les valeurs illustrées sont des niveaux de pression saines estimées.

## Installation

- Montez sur une fondation rigide, plane et nivelée. Vissez le ventilateur fermement en place.
- Alors que la source d'alimentation est toujours coupée, vérifiez que l'intérieur du boîtier du ventilateur ne contient pas de débris. Faites tourner la roue pour vérifier qu'elle ne frotte pas ou qu'elle n'est pas grippée. Vérifiez le dégagement entre la roue et l'anneau d'entrée. S'il y a frottement, desserrez les boulons de l'anneau et déplacez ce dernier jusqu'à l'obtention d'un dégagement adéquat. Si la roue frotte toujours, desserrez les vis de fixation de la roue et déplacez cette dernière vers l'arrière jusqu'à l'obtention du dégagement voulu. Resserrez les vis de fixation.

## Fonctionnement

- Avant de brancher le moteur sur l'alimentation électrique, vérifiez les spécifications électriques indiquées sur la plaque signalétique du moteur pour garantir que la tension et la phase sont adéquates.

**ATTENTION** *Un fil de terre doit être acheminé à partir du boîtier du moteur du ventilateur vers une mise à la terre électrique adéquate, telle une canalisation métallique correctement mise à la terre ou un système de fil de terre.*

- Une fois les branchements électriques terminés, alimentez suffisamment l'appareil pour le faire démarrer. Vérifiez que le sens de rotation de la roue est correct et correspond aux flèches directionnelles situées sur l'appareil. Si la roue tourne dans le bon sens, enclenchez la puissance électrique maximale.
- Lorsque le système d'aération fonctionne et que toutes les conduites sont attachées, mesurez l'entrée de courant vers le

moteur et comparez-la à l'inscription de la plaque signalétique pour déterminer si le moteur fonctionne dans des conditions de charge sûres.

## Maintenance

**AVERTISSEMENT** *Avant d'essayer de réparer l'appareil, vérifiez que l'alimentation du moteur et des accessoires électriques est coupée et verrouillée en position d'arrêt.*

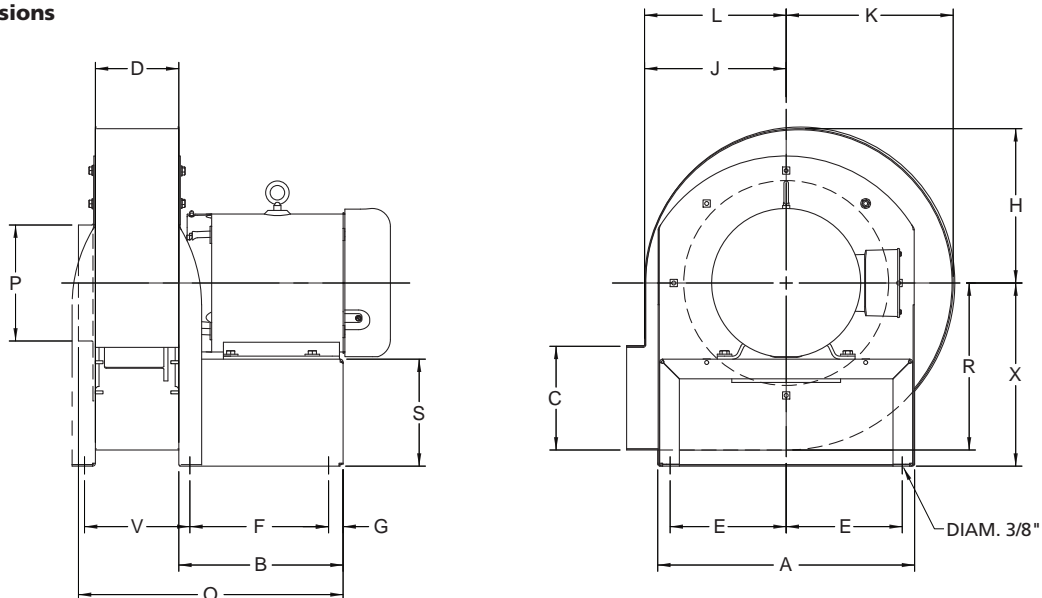
- De temps à autre, enlevez la poussière qui se trouve sur la roue et dans le boîtier du ventilateur.
- Vérifiez que les vis de fixation de la roue sont bien serrées.
- Une fois la source d'alimentation déconnectée, vérifiez que l'isolation du câblage n'est ni endommagée, ni effilochée.
- Lubrifiez à nouveau le moteur en suivant les instructions du fabricant. Éliminez tout lubrifiant excédentaire.

# Modèles 48LX10, 48LX11, 48LX12, 48LX13, 48LX14, 48LX15, 48LX16 et 48LX17

## Dimensions

Modèle	ROUE			VENTILATEUR À PALES RADIALES, À ENTRAÎNEMENT DIRECT ET À HAUTE PRESSION																
	Diam.	W	Alésage	A	B	C	D	E	F	G	H	J	K	L	O	P	R	S	V	X
48LX10	7 <sup>3</sup> / <sub>4</sub>	2 <sup>5</sup> / <sub>16</sub>	1/2	11	8	3	3	5	7	1/2	5 <sup>3</sup> / <sub>8</sub>	4 <sup>7</sup> / <sub>8</sub>	5 <sup>7</sup> / <sub>8</sub>	5 <sup>7</sup> / <sub>8</sub>	12 <sup>1</sup> / <sub>4</sub>	4	6 <sup>5</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>	-	8 <sup>1</sup> / <sub>2</sub>
48LX11	7 <sup>3</sup> / <sub>4</sub>	2 <sup>5</sup> / <sub>16</sub>	1/2	11	8	3	3	5	7	1/2	5 <sup>3</sup> / <sub>8</sub>	4 <sup>7</sup> / <sub>8</sub>	5 <sup>7</sup> / <sub>8</sub>	5 <sup>7</sup> / <sub>8</sub>	12 <sup>1</sup> / <sub>4</sub>	4	6 <sup>5</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>	-	8 <sup>1</sup> / <sub>2</sub>
48LX12	8 <sup>15</sup> / <sub>16</sub>	2 <sup>13</sup> / <sub>16</sub>	5/8	12 <sup>1</sup> / <sub>8</sub>	8	3 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>8</sub>	7	1/2	6 <sup>3</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>4</sub>	6 <sup>7</sup> / <sub>8</sub>	6 <sup>3</sup> / <sub>4</sub>	12 <sup>3</sup> / <sub>4</sub>	5	7 <sup>1</sup> / <sub>2</sub>	6 <sup>3</sup> / <sub>8</sub>	-	9 <sup>7</sup> / <sub>8</sub>
48LX13	8 <sup>15</sup> / <sub>16</sub>	2 <sup>13</sup> / <sub>16</sub>	5/8	12 <sup>1</sup> / <sub>8</sub>	8	3 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>8</sub>	7	1/2	6 <sup>3</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>4</sub>	6 <sup>7</sup> / <sub>8</sub>	6 <sup>3</sup> / <sub>4</sub>	12 <sup>3</sup> / <sub>4</sub>	5	7 <sup>1</sup> / <sub>2</sub>	6 <sup>3</sup> / <sub>8</sub>	-	9 <sup>7</sup> / <sub>8</sub>
48LX14	10 <sup>9</sup> / <sub>16</sub>	3	5/8	14 <sup>3</sup> / <sub>4</sub>	9	4	3 <sup>1</sup> / <sub>2</sub>	6 <sup>7</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	3/4	7 <sup>1</sup> / <sub>4</sub>	6 <sup>1</sup> / <sub>2</sub>	8	7 <sup>5</sup> / <sub>8</sub>	14	6	8 <sup>5</sup> / <sub>8</sub>	8 <sup>1</sup> / <sub>4</sub>	-	11 <sup>3</sup> / <sub>4</sub>
48LX15	10 <sup>9</sup> / <sub>16</sub>	3	5/8	14 <sup>3</sup> / <sub>4</sub>	9	4	3 <sup>1</sup> / <sub>2</sub>	6 <sup>7</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	3/4	7 <sup>1</sup> / <sub>4</sub>	6 <sup>1</sup> / <sub>2</sub>	8	7 <sup>5</sup> / <sub>8</sub>	14	6	8 <sup>5</sup> / <sub>8</sub>	8 <sup>1</sup> / <sub>4</sub>	-	11 <sup>3</sup> / <sub>4</sub>
48LX16	12 <sup>1</sup> / <sub>2</sub>	3	1 <sup>1</sup> / <sub>8</sub>	17	11 <sup>1</sup> / <sub>4</sub>	5	4	8	9 <sup>3</sup> / <sub>4</sub>	3/4	8 <sup>1</sup> / <sub>4</sub>	7 <sup>1</sup> / <sub>2</sub>	9	9 <sup>5</sup> / <sub>8</sub>	17	7	10	6 <sup>1</sup> / <sub>8</sub>	-	10 <sup>5</sup> / <sub>8</sub>
48LX17	13 <sup>1</sup> / <sub>2</sub>	4 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>8</sub>	17 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>4</sub>	7 <sup>1</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>4</sub>	8	9 <sup>9</sup> / <sub>16</sub>	1	10 <sup>1</sup> / <sub>2</sub>	9 <sup>5</sup> / <sub>8</sub>	11 <sup>3</sup> / <sub>8</sub>	11	18 <sup>7</sup> / <sub>8</sub>	8	11 <sup>1</sup> / <sub>2</sub>	8 <sup>1</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>4</sub>	12 <sup>5</sup> / <sub>8</sub>

Figure 3 – Dimensions



FRANÇAIS

# **Si vous désirez des pièces de rechange, composez le 1-800-323-0620**

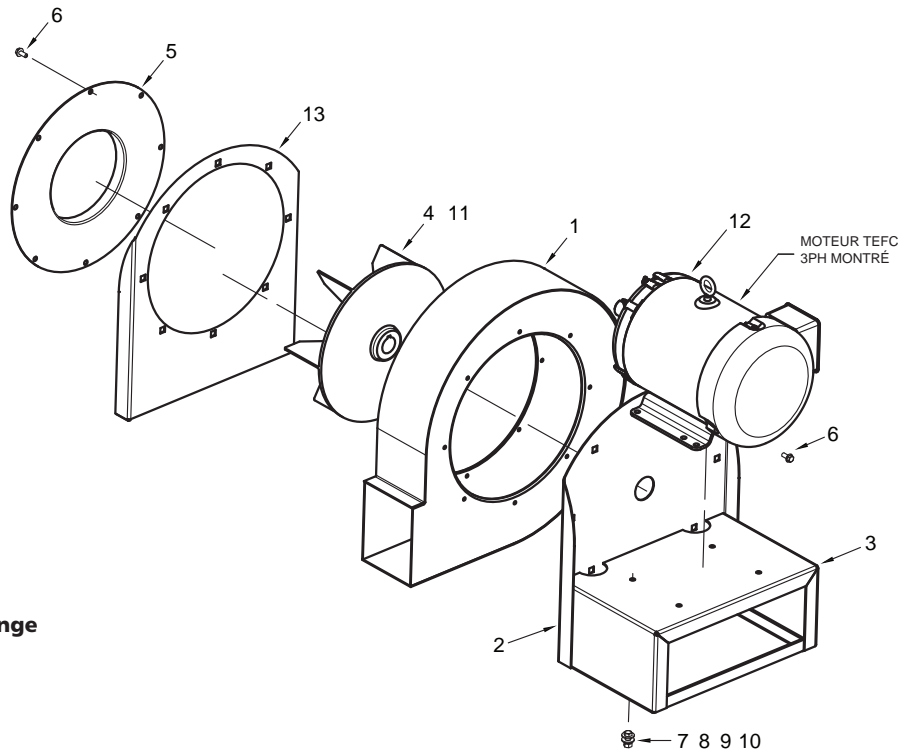
**24 heures par jour - 365 jours par an**

*Veuillez fournir les informations suivantes :*

- Numéro de modèle
- Numéro de série (s'il existe)
- Description et numéro des pièces illustrées dans la liste des pièces

*Adressez toute votre correspondance concernant les pièces détachées à :*

Grainger Parts  
P.O. Box 3074  
1657 Shermer Road  
Northbrook, IL 60065-3074 U.S.A.



**Figure 4 – Illustrations des pièces de rechange**

## **Repair Parts List**

Numéro de référence	Description	Numéros de pièces pour le modèle:							
		48LX10	48LX11	48LX12	48LX13	48LX14	48LX15	48LX16	48LX17
1	Logement	201-08-4005	201-08-4005	201-09-4003	201-09-4003	201-11-4005	201-11-4005	201-12-4004	201-14-4005
2	Montant de base	618-08-7001	618-08-7001	---	---	---	---	---	---
3	Ensemble de base du moteur	203-08-7001	203-08-7001	203-09-3007	203-09-3007	203-11-3024	203-11-3024	203-12-4011	203-14-4011
4	Roue	602-08-4001	602-08-4001	602-09-4002	602-09-4002	602-11-4002	602-11-4002	602-12-4031	602-14-4003
5	Anneau d'admission	609-08-4002	609-08-4002	609-09-4001	609-09-4001	609-11-4003	609-11-4003	609-12-4003	609-14-4001
6	Vis coupe fileté à tête hex.*	#10 x 1/2" (8 exigés)	#10 x 1/2" (8 exigés)	#10 x 1/2" (14 exigés)	#10 x 1/2" (14 exigés)	#10 x 1/2" (14 exigés)	#10 x 1/2" (14 exigés)	5/16-18 x 3/4" (16 exigés)	5/16-18 x 3/4" (16 exigés)
7	Boulon à tête hex *	5/16-18 x 3/4" (4 exigés)	5/16-18 x 3/4" (4 exigés)	5/16-18 x 3/4" (4 exigés)	5/16-18 x 3/4" (4 exigés)	5/16-18 x 3/4" (4 exigés)	5/16-18 x 3/4" (4 exigés)	5/16-18 x 3/4" (4 exigés)	5/16-18 x 1" (4 exigés)
8	Écrou à tête hex *	5/16-18 (4 exigés)	5/16-18 (4 exigés)	5/16-18 (4 exigés)	5/16-18 (4 exigés)	5/16-18 (4 exigés)	5/16-18 (4 exigés)	5/16-18 (4 exigés)	5/16-18 (4 exigés)
9	Rondelle fendue *	5/16 (4 exigés)	5/16 (4 exigés)	5/16 (4 exigés)	5/16 (4 exigés)	5/16 (4 exigés)	5/16 (4 exigés)	5/16 (4 exigés)	5/16 (4 exigés)
10	Rondelle plate *	5/16 (8 exigés)	5/16 (8 exigés)	5/16 (8 exigés)	5/16 (8 exigés)	5/16 (8 exigés)	5/16 (8 exigés)	5/16 (8 exigés)	5/16 (8 exigés)
11	Vis de fixation	†	†	†	†	†	†	†	†
12	Moteur	3015239	3015240	3015241	3015242	3015243	3015244	3015245	3015246
13	Montant côté admission	---	---	---	---	---	---	---	617-13-7002

**REMARQUE : 1 Les modèles 48LX10 et 48LX11 sont dotés de (2) pièces pour base et montant de moteur. Tous les autres sont dotés d'une base/d'un montant de moteur soudé(e).**

(\*) Élément matériel standard, disponible localement.

(†) Disponible avec la roue.

**F R A N Ç A I S**

## Modèles 48LX10, 48LX11, 48LX12, 48LX13, 48LX14, 48LX15, 48LX16 et 48LX17

### **GARANTIE LIMITÉE**

**GARANTIE LIMITÉE D'UN AN DE DAYTON.** Ventilateurs à pales radiales, à entraînement direct et à haute pression de Dayton® - Les modèles couverts dans ce manuel sont garantis par Dayton Electric Mfg. Co. (Dayton) auprès de leurs utilisateurs d'origine, contre tout défaut de fabrication ou de matériaux, lors d'une utilisation normale, pendant un an après la date d'achat. Toute pièce dont les matériaux ou la fabrication sont considérés comme défectueux et qui est renvoyée à un centre de réparation agréé, désigné par Dayton, tous frais d'expédition payés, sera soit réparée, soit remplacée, selon le bon vouloir de Dayton. Pour les procédures de recours en garantie limitée, consultez la section DÉCISION IMMÉDIATE ci-dessous. Cette garantie limitée offre aux acheteurs des droits légaux ou spécifiques qui peuvent varier d'une juridiction à l'autre.

**LIMITATION DE RESPONSABILITÉ.** Aux termes des lois applicables, Dayton décline toute responsabilité pour tout dommage consécutif et indirect. Dans tous les cas, la responsabilité de Dayton est limitée au prix d'achat du produit et ne dépassera pas ce dernier.

**EXONÉRATION DE GARANTIE.** Dans ce manuel, Dayton a fait son possible pour fournir des informations concernant ses produits et pour illustrer ces derniers de façon adéquate ; cependant, de telles informations et illustrations ne sont fournies qu'à des fins d'identification et n'impliquent aucune garantie de qualité MARCHANDE, D'ADAPTATION À UN USAGE PRÉVU ou de conformité. À moins que cela ne soit stipulé ci-dessous, Dayton ne fait et n'autorise aucune garantie ou déclaration de fait, expresse, implicite ou autre que celles stipulées dans la « GARANTIE LIMITÉE » ci-dessus.

**PERTINENCE DU PRODUIT.** De nombreuses juridictions ont des codes et des réglementations régissant la vente, la construction, l'installation et/ou l'utilisation de produits pour un usage spécial, qui varient par rapport aux codes et aux réglementations locales. Bien que Dayton essaye de garantir la conformité de ses produits à de tels codes, elle ne peut la garantir totalement et ne peut être tenue responsable de la manière dont le produit est installé ou utilisé. Avant l'achat et l'utilisation d'un produit, étudiez ses applications ainsi que tous les codes et réglementations nationales et locales et vérifiez que le produit, son installation et son utilisation sont conformes à ces codes et réglementations.

Certains aspects des exonérations ne s'appliquent pas à des produits de consommation ; par ex. (a) certaines juridictions n'autorisent pas l'exclusion et la limitation des dommages consécutifs ou indirects, et les limitations et exclusions ci-dessus ne s'appliquent éventuellement pas à votre cas ; (b) de plus, certaines juridictions n'autorisent pas les limites de durée de garantie implicite et, en conséquence, les limites citées ci-dessus ne s'appliquent éventuellement pas à votre cas ; et (c) aux termes de la législation en vigueur, durant la durée de couverture de cette garantie limitée, toute garantie de qualité marchande implicite ou d'adaptation à un usage prévu applicable aux produits de consommation achetés par les consommateurs ne peut-être exclue ou déclinée.

**DÉCISION IMMÉDIATE.** Dayton fera tout son possible pour réparer ou remplacer, dans les plus brefs délais, tout produit défectueux couvert par la garantie limitée. Si un des produits que vous avez achetés est défectueux et que le problème est couvert par la garantie, écrivez ou appelez le revendeur du produit. Ce dernier vous indiquera la procédure à suivre. Si le problème n'est toujours pas réglé, écrivez à Dayton à l'adresse ci-dessous, en donnant le nom du revendeur, son adresse, la date et le numéro de facture et décrivez la nature du problème. Le titre de propriété et le risque de perte de la marchandise deviennent la responsabilité de l'acheteur lorsque le produit est livré par un transporteur public. Si le produit est endommagé durant son transport, déposez une plainte auprès du transporteur.

**Fabriqué par Dayton Electric Mfg. Co., 100 Grainger Parkway, Lake Forest, Illinois 60045 U.S.A.**



### Scope:

This standard operating procedure describes the installation and use of the Mini Vapor Pin® 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 Mini Vapor Pin® for the collection of sub-slab soil-gas samples or pressure readings.

### Equipment Needed:

- Assembled Mini Vapor Pin® [FLX-VP™ barb fitting with O-ring, Mini Vapor Pin® base, and silicone sleeve (Figure 1)]. *As shown on Figure 1, the silicone sleeve only extends onto the flat portion of the Mini Vapor Pin® for installation. It will slide onto the Mini Vapor Pin® as it is hammered into place;*
- Hammer drill;
- 5/8-inch (16mm) diameter hammer bit (hole must be 5/8-inch (16mm) diameter to ensure seal. (Hilti™ TE-YX 5/8" x 22" (400 mm) #00206514 or equivalent);
- 3/4-inch (19mm) diameter bottle brush;
- Wet/Dry vacuum with HEPA filter (optional);
- VAPOR PIN® installation/extraction tool;
- Dead blow hammer;
- Mini Vapor Pin® secure cover with O-ring;
- Mini Vapor Pin® drilling guide.



Figure 1. Assembled Mini Vapor Pin®

### 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) 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 a seal. ***The drilled hole must be perpendicular to the slab for the mandatory Secure Cover to seat correctly. It is strongly recommended that the Mini-Vapor Pin® drilling guide be used for this purpose (Figure 2).***
- 4) Remove the drill bit, brush the hole with the bottle brush, and remove the loose cuttings with the vacuum.





Figure 2. Mini Vapor Pin® Drilling Guide

- 5) Ensure the diameter of the hole will accommodate the Mini Vapor Pin® by inserting the top of the Mini Vapor Pin® into the hole. It should be easily inserted (Figure 3). If the Mini Vapor Pin® is tight, ream the hole with the bit and re-try.

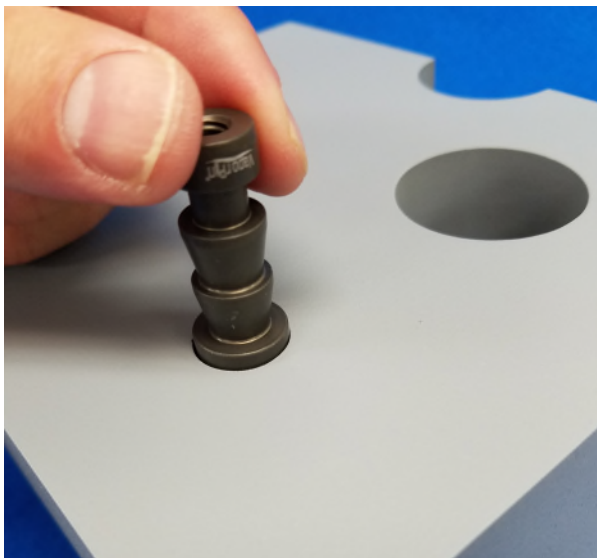


Figure 3. Testing the Hole Diameter

- 6) Place the lower end of the assembled Mini Vapor Pin® into the drilled hole (Figure 4). Place the small hole located in the handle of the installation/extraction tool over the barb fitting and tap the Mini Vapor Pin® into place using a dead blow hammer (Figure 5) until the top of the Mini Vapor Pin® is flush with the slab (Figure 6).

Make sure the installation/extraction tool is aligned parallel to the Mini Vapor Pin® to avoid damaging the barb fitting. During installation, the silicone sleeve will slide onto the Mini Vapor Pin®.

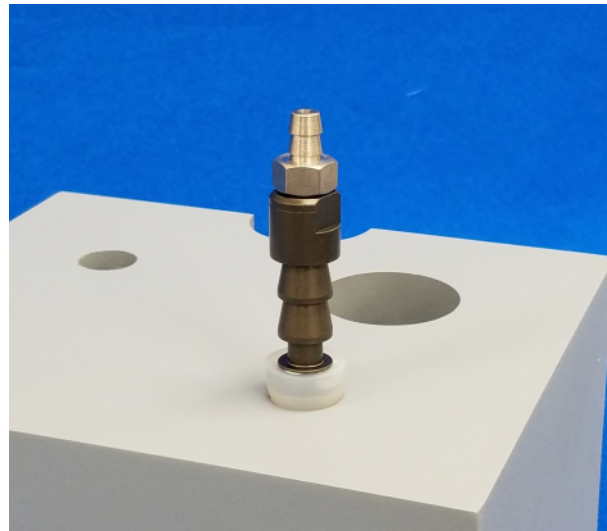


Figure 4. Mini Vapor Pin® Installation (Step 1)

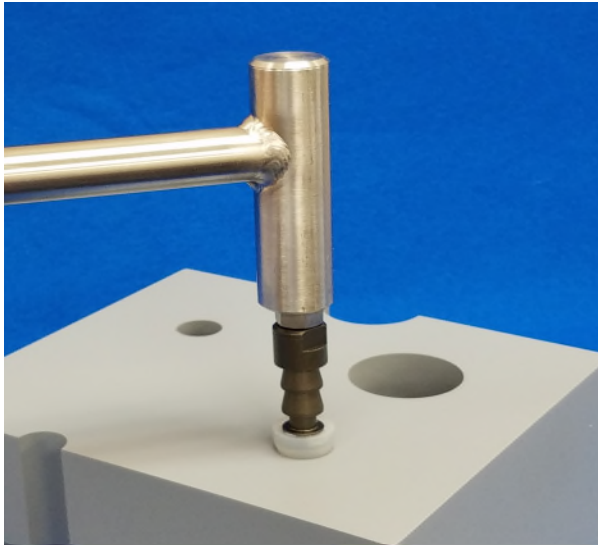


Figure 5. Mini Vapor Pin® Installation (Step 2)



Figure 6. Mini Vapor Pin® Installation Complete

- 7) Remove the barb fitting and screw the Mini Pin™ Secure Cover onto the Mini Pin™ (Figure 7). Allow 2 hours or more (consult applicable guidance for your situation) for the sub-slab soil-gas conditions to re-equilibrate prior to sampling.

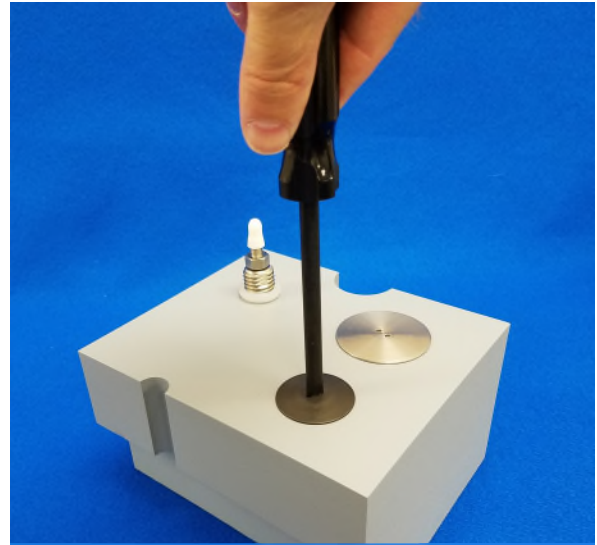


Figure 7. Spanner Tool and Secure Cover

- 8) Remove the Secure Cover, re-install the barb fitting and connect the Nylaflow® sample tubing to the barb and begin sampling. This connection can be made using a short piece of Tygon™ tubing to join the Nylaflow® tubing. Push the Nylaflow® tubing as close to the top of the barb fitting as possible to minimize contact between soil gas and Tygon™ tubing (Figure 8).

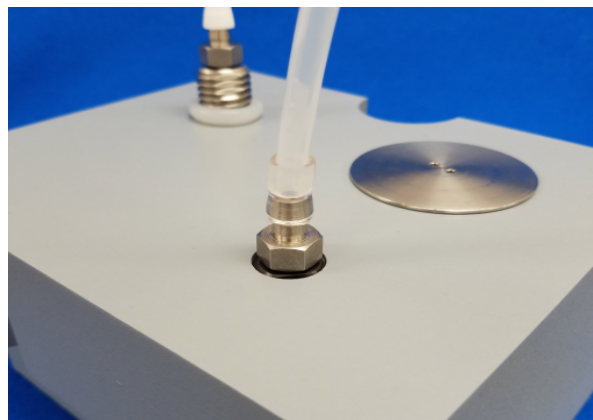


Figure 8. Mini Vapor Pin® Sample Connection

If you wish to directly connect to a Swagelok fitting, TO-17 tube, or quick connect, use those accessories instead of the barb fitting (Figure 9).

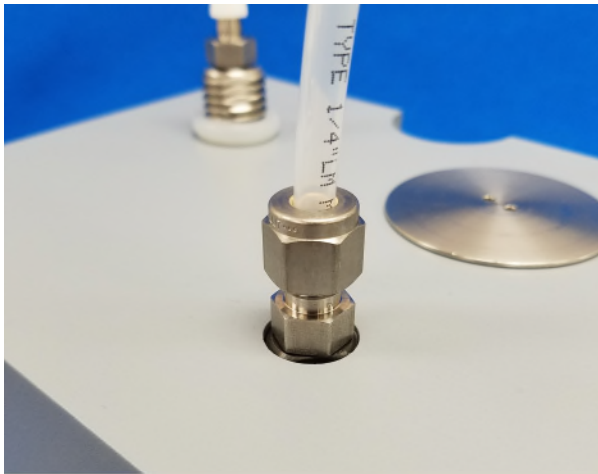


Figure 9. Mini Vapor Pin® with Swagelok® Connection

9) 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 10).



Figure 10. Water dam used for leak detection

10) Collect sub-slab soil gas sample or pressure reading. When finished, replace the barb fitting or accessory with the Mini Vapor Pin® Secure Cover until the next event (Figure 11).



Figure 11. Mini Vapor Pin® with Secure Cover

The Mini Vapor Pin® is designed to be used repeatedly; however, accessories, replacement parts and supplies may be required periodically. These parts are available on-line at [www.vaporpin.com](http://www.vaporpin.com).



## SERIES 2-5000 | MINIHELIC® II DIFFERENTIAL PRESSURE GAGE



### FEATURES/BENEFITS

- Removable lens and rear-housing provides easy, cost-effective servicing
- Accuracy and value provides an excellent solution for OEM and user applications
- Durable housing materials make it well-suited for rough environments and total high pressure

### APPLICATIONS

- Room positive pressure sensing
- Cabinet air-purging
- Medical respiratory equipment
- Air samplers
- Electronic air cooling systems
- Laminar flow hoods
- Local indication on filter status
- Face velocity on fume hood
- Duct pressures

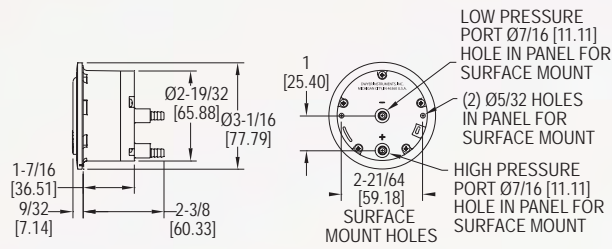
### DESCRIPTION

Combining clean design, small size and low cost with enough accuracy for all but the most demanding applications our **Series 2-5000 Minihelic® II Gage** offers the latest in design features for a dial type differential pressure gage. It is our most compact gage but is easy to read and can safely operate at total pressures up to 30 psig.

### SPECIFICATIONS

<b>Service</b>	Air and compatible gases.
<b>Wetted Materials</b>	Consult factory.
<b>Housing</b>	Glass filled nylon; polycarbonate lens.
<b>Accuracy</b>	±5% of FS at 70°F (21.1°C).
<b>Pressure Limits</b>	30 psig (2.067 bar) continuous to either pressure connection.
<b>Temperature Limits</b>	20 to 120°F (-6.67 to 48.9°C).
<b>Mounting Orientation</b>	Diaphragm in vertical position. Consult factory for other position orientations.
<b>Process Connections</b>	Barbed, for 3/16" ID tubing (standard); 1/8" male NPT (optional).
<b>Weight</b>	6 oz (170.1g).
<b>Agency Approvals</b>	Meets the technical requirements of EU Directive 2011/65/EU (RoHS II)
<b>Caution: FOR USE ONLY WITH AIR OR COMPATIBLE NON-CORROSIVE GASES</b>	

## DIMENSIONS



## HOW TO ORDER

Use the **bold** characters from the chart below to construct a product code.

**2-5001**    **-AT**

### SERIES/RANGE

- 2-5000-0:** 0 to 0.5 in w.c
- 2-5001:** 0 to 1 in w.c
- 2-5002:** 0 to 2 in w.c
- 2-5003:** 0 to 3 in w.c
- 2-5005:** 0 to 5 in w.c
- 2-5205:** 0 to 5 psid
- 2-5210:** 0 to 10 psid
- 2-5000-125PA:** 0 to 125 Pa
- 2-5000-250PA:** 0 to 250 Pa
- 2-5000-500PA:** 0 to 500 Pa
- 2-5000-750PA:** 0 to 750 Pa

### OPTIONS

- AT:** Aluminum tag
- BB:** Bottom barb connection
- FC:** Factory calibration
- NIST:** NIST traceable calibration certificate
- NPT:** NPT connection

## ACCESSORIES

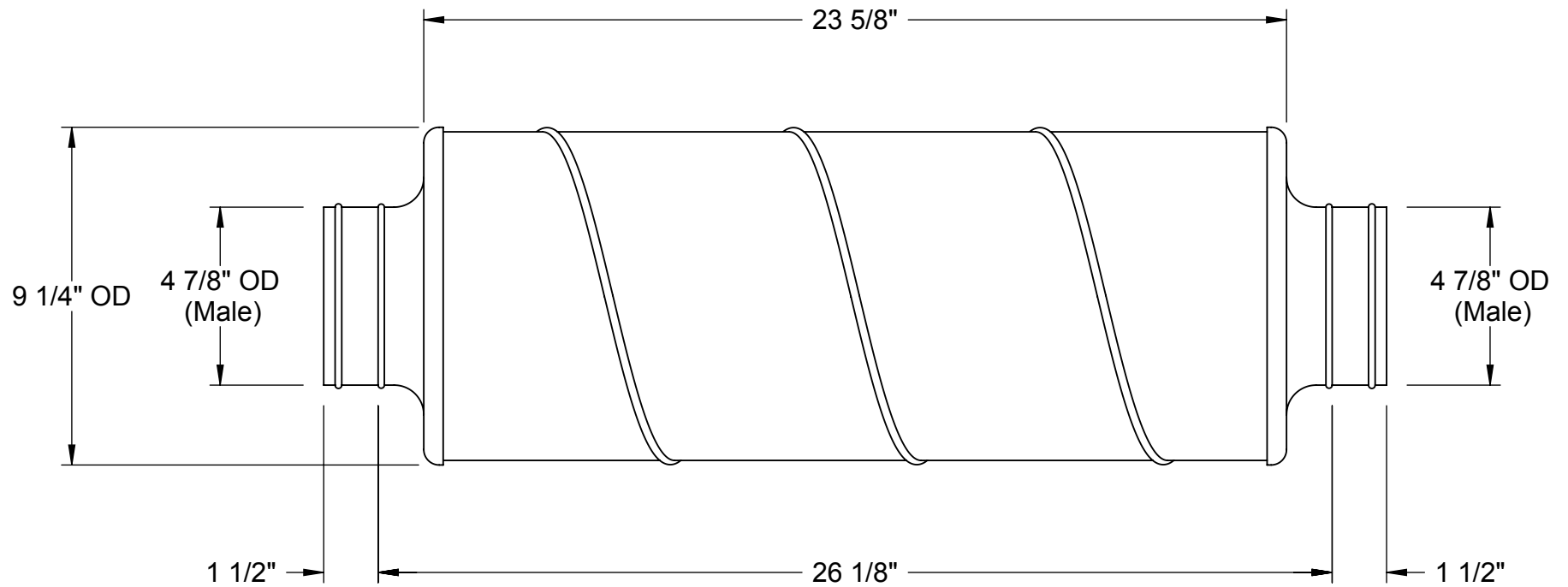
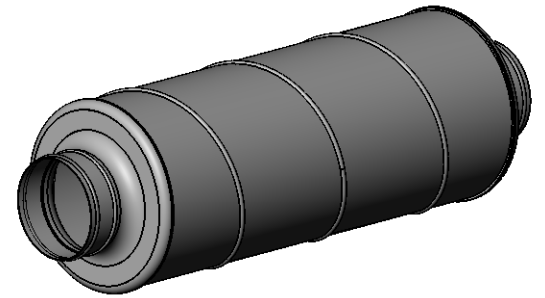
Model	Description
<b>A-434</b>	Portable kit for Series 2-5000 Minihelic® II gage
<b>A-609</b>	Air filter kit for Series 2-5000 Minihelic® II gage
<b>A-497</b>	Mounting bracket for the Series 2-5000 Minihelic® II differential pressure gage
<b>A-489</b>	4" 303 SS straight static pressure tip with flange
<b>A-362</b>	Stand-hang bracket, aluminum, for Minihelic® II gage

**ORDER ONLINE TODAY!**

[dwyer-inst.com/Product/Series2-5000](http://dwyer-inst.com/Product/Series2-5000)



**DWYER INSTRUMENTS, INC.**



24 Ga. Thickness  
For use with 5" Dia. Round Duct

**McMASTER-CARR** CAD

<http://www.mcmaster.com>

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Information in this drawing is provided for reference only.

PART  
NUMBER

**2775K2**

Duct Noise Reducer  
for Round Duct

# **APPENDIX H: QUALITY ASSURANCE PROJECT PLAN**

# QUALITY ASSURANCE PROJECT PLAN

**Rockfarmer 37<sup>th</sup> Avenue**  
82-13 37<sup>th</sup> Avenue  
Jackson Heights, Queens County, New York 11372  
Block 1456, Lots 35 & 41  
NYSDEC Site No. C241212

**MAY 2022**

**PREPARED FOR:**

37<sup>th</sup> Avenue Owner LLC; Horizon 37<sup>th</sup> Ave, LLC; and RFC Ketcham 37<sup>th</sup> Ave, LLC  
42-01 235<sup>th</sup> Street  
Douglaston, New York 11363

**PREPARED BY:**

Vertex Engineering, PC  
147 West 35<sup>th</sup> Street, 19<sup>th</sup> Floor  
New York, New York 10001  
**PHONE** 646.553.3500

**VERTEX PROJECT NO:** 48122



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**Quality Assurance Project Plan (QAPP)**  
**Rockfarmer 37<sup>th</sup> Avenue**  
**82-13 37<sup>th</sup> Avenue**  
**Jackson Heights, Queens County, New York**  
**NYSDEC Site No. C241212**

## **1.0 INTRODUCTION**

This Quality Assurance Project Plan (QAPP) was prepared to guide implementation of remedial activities at 82-13 37<sup>th</sup> Avenue in Jackson Heights, Queens County, New York (Site). The QAPP was prepared in accordance with the New York State Department of Environmental Conservation (NYSDEC) Technical Guidance for Site Investigation and Remediation (DER-10).

Quality assurance/quality control (QA/QC) procedures will be used to provide performance information with regard to accuracy, precision, sensitivity, representation, completeness, and comparability associated with the sampling and analysis for remedial activities at the Site.

## 2.0 PROJECT TECHNICAL PERSONNEL

The table below summarizes the principal personnel to participate in the remedial activities.

PROJECT TECHNICAL PERSONNEL			
Name	Company	Responsibility	Contact Information
Timothy Biercz	The Vertex Companies, Inc.	Project Manager	(908) 333-4317
Joseph Dultz	Vertex Engineering, PC	Project Manager / Technical Support	(908) 333-4312
Richard J. Tobia, P.E.	Vertex Engineering, PC	New York-licensed Professional Engineer	(908) 458-9604
Ethan Leighton	Alpha Analytical Inc.	Laboratory Contact	(508) 439-5146
Sadique Ahmed, P.E.	New York State Department of Environmental Conservation	Project Manager	(518) 402-9656

### **3.0 SAMPLING METHODOLOGY**

All sampling will be conducted in accordance with NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, dated May 3, 2010, and Sampling Guidelines and Protocols, dated March 1991 and the NYSDOH document Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006.

Equipment will be operated in accordance with the manufacturer's specifications, including calibration of all field instruments, which will be performed prior to the initiation of field work and on a schedule indicated by the manufacturer.

#### **3.1 Groundwater Sampling**

Prior to sample collection, static water levels will be measured from all monitoring wells. If appropriate, each monitoring well will be gauged for the presence of either Light Non-Aqueous Phase Liquid (LNAPL) and/or Dense Non-Aqueous Phase Liquid (DNAPL).

For the collection of groundwater samples from permanent monitoring wells, the wells will be purged with disposable polyethylene tubing and a stainless-steel submersible pump. Three well volumes will be purged using the volume averaged sampling method. Field measurements for pH, temperature, dissolved oxygen, turbidity, specific conductance, and oxidation-reduction potential will be collected during purging and prior to sample collection. Following purging, a grab groundwater sample will be collected using a polyethylene disposable bailer.

Following the groundwater sample collection, the sample containers will be secured, labeled, and placed in a storage/transportation cooler and cooled to acceptable temperatures (e.g., four degrees Celsius) with ice. Samples will then be transported by a field courier to the laboratory following proper chain of custody procedures. The courier will relinquish custody to the log-in sample custodian upon arrival at the laboratory.

### **3.2 Sub-Slab Soil Vapor, Indoor Air, and Ambient Air**

Prior to indoor air sampling, an evaluation of building operations, storage of chemicals, and the building envelope that could influence indoor air results will be conducted. In addition, ambient weather conditions, including temperature and atmospheric pressure, will be recorded.

For the collection of post-remedial indoor air and ambient air samples, stainless-steel 6-Liter Summa canister sampling will be performed over an 8-hour sample duration. The canisters will be placed in a location to collect breathing height air (three to five feet above ground surface) and will not be placed immediately adjacent to recently completed interior finish materials.

For the collection of post-remedial sub-slab soil vapor samples, stainless-steel 2.7-Liter Summa canister sampling will be performed over a 15-minute sample duration. The soil vapor samples will be collected from the soil vapor monitoring points installed during the installation of the sub-slab depressurization system (SSDS). A leak check will be performed on the entire sample train using a tracer compound (i.e., helium) to confirm sampling methodology. The leak check will be performed to ensure that there is less than 10% helium in the purged air. Prior to sample collection from the vapor monitoring point, three purge volumes will be evacuated from the sample train at a flow rate not to exceed 200 milliliters per minute.

Collection data will be recorded that includes but is not limited to pre- and post-canister vacuum, sample ID, and canister ID number. Indoor air and soil vapor samples will be secured in a shipping box. Samples will then be transported by a field courier to the laboratory following proper chain of custody procedures. The courier will relinquish custody to the log-in sample custodian upon arrival at the laboratory.

### **3.3 Decontamination**

After each sample is collected, all non-disposable sampling equipment will be decontaminated. Decontamination of non-dedicated sampling equipment will consist of the following: gently tap or scrape to remove adhered soil; rinse with tap water; wash with Alconox<sup>®</sup> detergent solution and scrub; rinse with tap water; and rinse with distilled or deionized water. Decontamination water will be collected and disposed as investigation-derived waste (IDW). Dedicated sampling equipment (polyethylene tubing) will be properly discarded after completion of obtaining the sample. Disposable gloves will be worn during sampling collection and be discarded following collection of each sample.

### **3.4 Report Logs**

Field logs and borings logs will be completed during the course of remedial activities. A field log will be completed on a daily basis, which will describe all field activities including project number and site address; date and time; weather conditions; on-site personnel and associated affiliations; description of field activities; pertinent sample collection information (sample identification, description of sample, sample location, sample collection time, sampling methodology, name of collector, field screening results, and analysis to be conducted). A boring log will be completed for each soil boring/monitoring well, which will include the following: project number and site address; date and time; drilling company name and drilling method; boring/monitoring well identification, total boring depth and water table depth; and pertinent sample collection information (sample identification, sample depth, interval, recovery amount, color, composition, percent moisture, PID readings, and visual/olfactory observations).

#### 4.0 LABORATORY SUMMARY

All samples collected during the remedial activities will be submitted under proper chain-of-custody protocols to a New York Environmental Laboratory Approval Program (ELAP) certified laboratory.

The laboratory will follow all calibration procedures and schedules as specified in United States Environmental Protection Agency (USEPA) SW-846 and subsequent updates that apply to instruments used for the analytical methods.

#### 4.1 Analytical Method/Quality Assurance

As part of the remedial activities, groundwater, indoor air, ambient air, and soil vapor samples will be collected. The sampling, including matrix, frequency of collection, analytical parameter, analytical method, sample preservation, sample container volume and type, and holding time are provided in the summary tables below. Sample holding times will be in accordance with USEPA SW-846 and NYSDEC ASP requirements.

All groundwater samples will be submitted to the certified laboratory for analysis of volatile organic compounds (VOCs) via USEPA Method 8260.

GROUNDWATER SAMPLING SUMMARY					
Matrix Type	Analytical Parameter	Analytical Method	Sample Preservation	Sample Container	Sample Holding Time
Aqueous	VOC	8260	HCl, Cool, 4°C	40 ml Vials	14 days

All soil vapor, indoor air, and ambient air samples will be submitted to the certified laboratory for analysis of VOCs via USEPA Method TO-15.

<b>INDOOR AIR, AMBIENT AIR, AND SOIL VAPOR SAMPLING SUMMARY</b>					
<b>Matrix Type</b>	<b>Analytical Parameter</b>	<b>Analytical Method</b>	<b>Sample Preservation</b>	<b>Sample Container</b>	<b>Sample Holding Time</b>
Air	VOC	TO-15	None	6-L Summa Canister	30 days
Soil Vapor	VOC	TO-15	None	2.7-L Summa Canister	30 days

If either LNAPL and/or DNAPL are detected, appropriate samples will be collected for characterization and “fingerprint analysis” and required regulatory reporting (i.e., spills hotline) will be performed.

#### **4.2 Quality Assurance Samples**

Field blanks and trip blanks will be submitted to the laboratory to evaluate the quality and performance of the analytical laboratory’s analysis and reporting of the sample results. Field (equipment) blanks will be analyzed to assess any contamination contributed from sampling location conditions, and the transport, handling, and storage of the samples. The trip blank will be analyzed to determine if sample containers may have been contaminated during transportation and storage. In accordance with DER-10, field duplicates, aqueous trip blanks, and field blanks will be collected at a frequency of 1 per 20 samples and will be analyzed for VOCs via USEPA Method 8260 and TO-15.



## 5.0 DATA REVIEW AND REPORTING

Analytical reports will include Analytical Services Protocol (ASP) Category B laboratory data deliverables. All results will be provided in accordance with the NYSDEC Environmental Information Management System (EIMS) electronic data deliverable (EDD) format.

A thorough evaluation of the laboratory data will be completed, and a Data Usability Summary Report (DUSR) will be prepared. The primary objective for the evaluation of analytical data will be to determine whether or not the data, as presented, meets the site-specific criteria for data quality and use. The preparation of the DUSR will be prepared by a qualified, independent data validation expert. The DUSR will be prepared in accordance with *Appendix 2B, Guidance for Data Deliverables and the Development of Data Usability Summary Reports* included in NYSDEC *DER-10: Technical Guidance for Site Investigation and Remediation*.

# **APPENDIX I: SITE MANAGEMENT FORMS**

### SITE INSPECTION FORM

Rockfarmer 37<sup>th</sup> Avenue – Site No. C241212  
82-13 37<sup>th</sup> Avenue  
Jackson Heights, Queens County, New York 11372

GENERAL INFORMATION	
Date:	
Weather/Temperature:	
Inspector Name:	
Inspector Company:	
Reason for Inspection (Routine/Non-Routine):	

SITE CONDITIONS		
Cover System Disturbance(s):	Yes / No	Description:
Slab Cracks/Widening Joints:	Yes / No	Description:
Slab Penetrations:	Yes / No	Description:
HVAC System Changes:	Yes / No	Description:
Building Renovation(s):	Yes / No	Description:
Site Use Change:	Yes / No	Description:
Tenant Operation Change:	Yes / No	Description:
Additional Comments:		

Note: If "Yes" to any of the above, include map showing locations and photo-documentation.

**SITE INSPECTION FORM**

Rockfarmer 37<sup>th</sup> Avenue – Site No. C241212  
 82-13 37<sup>th</sup> Avenue  
 Jackson Heights, Queens County, New York 11372

SUB-SLAB DEPRESSURIZATION SYSTEM		
Is the system operating?	Yes / No	Comments:
Is the alarm warning light on?	Yes / No	Comments:
Performed alarm system test?	Yes / No	Comments:
<u>Blower Evaluation:</u> Visible damage? Excessive fan vibration or noise?	Yes / No Yes / No	Comments:
<u>Piping Evaluation:</u> Visible damage to piping? Audible leaks (whistling) identified? Unauthorized piping connections? Visible damage to exhaust silencer? Visible damage to pressure gauges?	Yes / No Yes / No Yes / No Yes / No Yes / No	Comments:
<u>Repairs or Component Replacement:</u>		
System Operation Data		
Vacuum (in. WC)		
Sub-Slab Monitoring Point 1:		
Sub-Slab Monitoring Point 2:		
Sub-Slab Monitoring Point 3:		
Sub-Slab Monitoring Point 4:		
Sub-Slab Monitoring Point 5:		
Sub-Slab Monitoring Point 6:		
Sub-Slab Monitoring Point 7:		
Sub-Slab Monitoring Point 8:		
Sub-Slab Monitoring Point 9:		
Sub-Slab Monitoring Point 10:		
Dwyer Minihelic® Gauge 1:		
Dwyer Minihelic® Gauge 2:		

**SITE INSPECTION FORM**

Rockfarmer 37<sup>th</sup> Avenue – Site No. C241212  
82-13 37<sup>th</sup> Avenue  
Jackson Heights, Queens County, New York 11372

<b>SUB-SLAB DEPRESSURIZATION SYSTEM</b>	
Dwyer Minihelic® Gauge 3:	
Dwyer Minihelic® Gauge 4:	
Air Flow (CFM)	
Riser (Basement Storage Room):	
Photoionization Detector Screening (ppm)	
Sub-Slab Monitoring Point 1:	
Sub-Slab Monitoring Point 2:	
Sub-Slab Monitoring Point 3:	
Sub-Slab Monitoring Point 4:	
Sub-Slab Monitoring Point 5:	
Sub-Slab Monitoring Point 6:	
Sub-Slab Monitoring Point 7:	
Sub-Slab Monitoring Point 8:	
Sub-Slab Monitoring Point 9:	
Sub-Slab Monitoring Point 10:	
Other (i.e., Slab Penetration)	

**MONITORING WELL INSPECTION FORM**

Rockfarmer 37<sup>th</sup> Avenue – Site No. C241212  
82-13 37<sup>th</sup> Avenue  
Jackson Heights, Queens County, New York 11372

Inspection Date:			
Inspected By:			
Well ID	Well Cover Condition	Locking Well Cap Condition	Comments (Maintenance Items)
MW-1			
MW-2			
MW-3			
MW-4			
MW-5			
MW-6			
MW-7			
MW-8			
MW-9			
MW-10			

# Groundwater Sampling Form

Project No. \_\_\_\_\_

Well ID \_\_\_\_\_

Date \_\_\_\_\_

Project Name/Location \_\_\_\_\_

Weather \_\_\_\_\_

Casing Diameter (in.) \_\_\_\_\_  
 Gallon/Foot Conversions: 0.75" = 0.02, 2" = 0.16, 6" = 1.47  
 1" = 0.04, 4" = 0.65  
 Depth to Product (top) \_\_\_\_\_  
 Dept to Product (bottom) \_\_\_\_\_

Total Depth (ft below TOC) \_\_\_\_\_ - Static Water Level (ft) \_\_\_\_\_ = Water Column in Well (ft) \_\_\_\_\_ X \_\_\_\_\_ Gallons/Foot

Calc 1 Volume \_\_\_\_\_ X 3 \_\_\_\_\_ = Calc 3 Volume (gals) \_\_\_\_\_

Purge Method: Centrifugal \_\_\_\_\_ Pump Intake (ft-below TOC) \_\_\_\_\_  
 Submersible \_\_\_\_\_  
 Disp. Bailer \_\_\_\_\_  
 Other \_\_\_\_\_

Well Casing Material \_\_\_\_\_

Start Time: \_\_\_\_\_ End Time: \_\_\_\_\_

Time (24-hr)	Depth to Water (ft)	Gallons Purged	Temp. (°C)	pH	Redox (mV)	Cond mS/cm	Turb. (NTU)	DO (mg/L)	Appearance	
									Color	Odor

Actual Gallons Purged: \_\_\_\_\_

Sample Time: \_\_\_\_\_ Sampled by: \_\_\_\_\_ Sampling Method: \_\_\_\_\_

Constituents Sampled \_\_\_\_\_ Container \_\_\_\_\_ Number of Bottles \_\_\_\_\_ Preservative \_\_\_\_\_

**Well Information**

Well Location: \_\_\_\_\_ Condition of Well Pad and Lid: \_\_\_\_\_  
 Condition of Well: \_\_\_\_\_ Plug: Yes / No  
 Well Completion: Flush Mount / Stick Up Bolts: Yes / No

**NOTES:**

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Indoor Air Monitoring Record					
Site:			Date:		
Weather-Start:			Barometric Pressure		
Weather throughout day:			Barometric Pressure		
Weather Overnight:			Barometric Pressure		
Weather-End:			Barometric Pressure		
Technician:			Page of		
Sample ID	Location	-	-	-	-
		-	-	-	-
Lab Can Pressure (Hg) (outgoing)	Flow ID	Can ID	Can Size (L)	Flow Readout	Batch Cert#
Start Time	Start Pressure (Hg)	Start Temp (F)	Start Baro. Press. (Hg)	Overnight Temp (F)	Overnight Press (Hg)
End Time	End Pressure (Hg)	End Temp (F)	End Baro. Press. (Hg)	Precipitation during event?	
Sample ID	Location	-	-	-	-
		-	-	-	-
Lab Can Pressure (Hg) (outgoing)	Flow ID	Can ID	Can Size (L)	Flow Readout	Batch Cert#
Start Time	Start Pressure (Hg)	Start Temp (F)	Start Baro. Press. (Hg)	Overnight Temp (F)	Overnight Press (Hg)
End Time	End Pressure (Hg)	End Temp (F)	End Baro. Press. (Hg)	Precipitation during event?	
Sample ID	Location	-	-	-	-
		-	-	-	-
Lab Can Pressure (Hg) (outgoing)	Flow ID	Can ID	Can Size (L)	Flow Readout	Batch Cert#
Start Time	Start Pressure (Hg)	Start Temp (F)	Start Baro. Press. (Hg)	Overnight Temp (F)	Overnight Press (Hg)
End Time	End Pressure (Hg)	End Temp (F)	End Baro. Press. (Hg)	Precipitation during event?	



Rockfarmer 37<sup>th</sup> Avenue – Site No. C241212  
82-13 37<sup>th</sup> Avenue  
Jackson Heights, Queens County, New York 11372

### Summary of Green Remediation Metrics for Site Management

Site Name: \_\_\_\_\_ Site Code: \_\_\_\_\_  
Address: \_\_\_\_\_ City: \_\_\_\_\_  
State: \_\_\_\_\_ Zip Code: \_\_\_\_\_ County: \_\_\_\_\_

#### Initial Report Period (Start Date of period covered by the Initial Report submittal)

Start Date: \_\_\_\_\_

#### Current Reporting Period

Reporting Period From: \_\_\_\_\_ To: \_\_\_\_\_

#### Contact Information

Preparer's Name: \_\_\_\_\_ Phone No.: \_\_\_\_\_

Preparer's Affiliation: \_\_\_\_\_

**I. Energy Usage:** Quantify the amount of energy used directly on-site and the portion of that derived from renewable energy sources.

	Current Reporting Period	Total to Date
Fuel Type 1 (e.g. natural gas (cf))		
Fuel Type 2 (e.g. fuel oil, propane (gals))		
Electricity (kWh)		
<b>Of that Electric usage, provide quantity:</b>		
Derived from renewable sources (e.g. solar, wind)		
<b>Other energy sources</b> (e.g. geothermal, solar thermal (Btu))		

*Provide a description of all energy usage reduction programs for the site in the space provided on Page 3.*

**II. Solid Waste Generation:** Quantify the management of solid waste generated on-site.

	<b>Current Reporting Period (tons)</b>	<b>Total to Date (tons)</b>
<b>Total waste generated on-site</b>		
O&M generated waste		
<b>Of that total amount, provide quantity:</b>		
Transported off-site to landfills		
Transported off-site to other disposal facilities		
Transported off-site for recycling/reuse		
Reused on-site		

*Provide a description of any implemented waste reduction programs for the site in the space provided on Page 3.*

**III. Transportation/Shipping:** Quantify the distances travelled for delivery of supplies, shipping of laboratory samples, and the removal of waste.

	<b>Current Reporting Period (miles)</b>	<b>Total to Date (miles)</b>
Standby Engineer/Contractor		
Laboratory Courier/Delivery Service		
Waste Removal/Hauling		

*Provide a description of all mileage reduction programs for the site in the space provided on Page 3. Include specifically any local vendor/services utilized that are within 50 miles of the site.*

**IV. Water Usage:** Quantify the volume of water used on-site from various sources.

	<b>Current Reporting Period (gallons)</b>	<b>Total to Date (gallons)</b>
Total quantity of water used on-site		
<b>Of that total amount, provide quantity:</b>		
Public potable water supply usage		
Surface water usage		
On-site groundwater usage		
Collected or diverted storm water usage		

*Provide a description of any implemented water consumption reduction programs for the site in the space provided on Page 3.*

**V. Land Use and Ecosystems:** Quantify the amount of land and/or ecosystems disturbed and the area of land and/or ecosystems restored to a pre-development condition (i.e. Green Infrastructure).

	<b>Current Reporting Period (acres)</b>	<b>Total to Date (acres)</b>
Land disturbed		
Land restored		

*Provide a description of any implemented land restoration/green infrastructure programs for the site in the space provided on Page 3.*

<b>Description of green remediation programs reported above</b> (Attach additional sheets if needed)
Energy Usage:
Waste Generation:
Transportation/Shipping:
Water usage:
Land Use and Ecosystems:
Other:

Rockfarmer 37<sup>th</sup> Avenue – Site No. C241212  
82-13 37<sup>th</sup> Avenue  
Jackson Heights, Queens County, New York 11372

**CERTIFICATION BY CONTRACTOR**

I, \_\_\_\_\_ (**Name**) do hereby certify that I am \_\_\_\_\_ (**Title**) of the Company/Corporation herein referenced and contractor for the work described in the foregoing application for payment. According to my knowledge and belief, all items and amounts shown on the face of this application for payment are correct, all work has been performed and/or materials supplied, the foregoing is a true and correct statement of the contract account up to and including that last day of the period covered by this application.

\_\_\_\_\_

**Date** **Contractor**

# **APPENDIX J: FIELD ACTIVITIES PLAN**

# FIELD ACTIVITIES PLAN

**Rockfarmer 37<sup>th</sup> Avenue**  
82-13 37<sup>th</sup> Avenue  
Jackson Heights, Queens County, New York 11372  
Block 1456, Lots 35 & 41  
NYSDEC Site No. C241212

**MAY 2022**

**PREPARED FOR:**

37<sup>th</sup> Avenue Owner LLC; Horizon 37<sup>th</sup> Ave, LLC; and RFC Ketcham 37<sup>th</sup> Ave, LLC  
42-01 235<sup>th</sup> Street  
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**PREPARED BY:**

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**VERTEX PROJECT NO:** 48122

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**Field Activities Plan  
Rockfarmer 37<sup>th</sup> Avenue  
82-13 37<sup>th</sup> Avenue  
Jackson Heights, Queens County, New York  
NYSDEC Site No. C241212**

## **1.0 INTRODUCTION**

This Field Activities Plan (FAP) was prepared to guide implementation of field activities performed during post-remediation groundwater, soil vapor, indoor air, and ambient air sampling at 82-13 37<sup>th</sup> Avenue in Jackson Heights, Queens County, New York (Site). The purpose of the FAP is to provide methods, procedures, and protocols for the collection of data during field activities. The FAP is consistent with the protocols developed during the investigation phase of the project.

All sampling will be conducted in accordance with NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, dated May 3, 2010, and Sampling Guidelines and Protocols, dated March 1991 and the NYSDOH document Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006.



## **2.0 FIELD QUALITY CONTROL SAMPLES**

Quality control procedures will be implemented to ensure that sampling, transportation, and laboratory activities do not bias sample analytical quality.

### **2.1 Trip Blanks**

Trip blanks will be prepared by the laboratory by filling 40 milliliter (ml) vials with a Teflon-lined septum with deionized, analyte-free water. The trip blank will remain in the sample cooler at all times and will be analyzed to determine if sample containers may have been contaminated during transportation and storage. The trip blank will be analyzed for volatile organic compounds (VOCs) at a frequency of one trip blank per sample cooler containing aqueous samples.

### **2.2 Field Blanks**

A field blank consists of an empty set of laboratory-cleaned sample containers. During the field sampling, deionized, analyte-free water is passed through decontaminated sampling equipment and placed into the empty set of sample containers. Analysis is conducted for the same parameters as the samples collected with the sampling equipment. The field blank collection frequency is one field blank per every 20 samples submitted to the laboratory.

### **2.3 Field Duplicates**

For each sample matrix, a field duplicate sample will be collected at a frequency of one duplicate per 20 samples collected (per media). The duplicate sample is collected at the same location as the environmental sample. The identity of the duplicate sample is not provided to the laboratory.

### **3.0 FIELD MEASUREMENTS**

Tasks that require the collection of field measurements include field screening samples; gauging, development, and sampling of monitoring wells; collection of operational data (i.e., vacuum, flow rate, etc.) from the sub-slab depressurization system; and the collection of soil vapor and air samples.

Equipment will be operated in accordance with the manufacturer's specifications, including calibration of all field instruments, which will be performed prior to the initiation of field work and on a schedule indicated by the manufacturer.

#### **3.1 Water Level Measurements**

Prior to sample collection, static water levels will be measured from all monitoring wells. Water levels are used to calculate required purge volumes and in conjunction with well survey information to evaluate groundwater flow direction. In addition, each monitoring well may be gauged for the presence of either Light Non-Aqueous Phase Liquid (LNAPL) and/or Dense Non-Aqueous Phase Liquid (DNAPL).

The water level measurements will be collected with an electronic interface probe. Prior to and between each well gauging, the probe should be decontaminated (soap wash and deionized water rinse) and tested to ensure that the battery is charged. The probe is lowered into the monitoring well until the audible alarm indicates water. The interface probe contains two different audible alarms (i.e., constant alarm for LNAPL and intermittent alarm for water).

Record the depth to water via the measuring tape cable to the nearest hundredth of a foot, from the top of the measuring mark on the monitoring well riser. The monitoring well ID and depth to water should be recorded in a field book.

### **3.2 Water Quality Parameters**

Field measurements for pH, temperature, dissolved oxygen, turbidity, specific conductance, and oxidation-reduction potential will be collected intermittently during purging and prior to sample collection. The parameters are typically measured with a multi-parameter instrument equipped with a flow cell (i.e., Horiba U-22). Purge water from the monitoring well is directed through the flow cell with the equipment sensors. The monitoring well ID and parameter readings should be recorded in a field book or field sampling form.

## **4.0 SAMPLING EQUIPMENT DECONTAMINATION**

All non-disposable sampling equipment will be decontaminated initially and prior to being re-used. All sampling equipment must be free of residue from any previous samples.

### **4.1 Decontamination Procedure**

Decontamination of non-dedicated sampling equipment used for the collection of groundwater samples will consist of the following:

1. Gently tap or scrape to remove adhered material.
2. Rinse with tap water.
3. Wash with Alconox<sup>®</sup> detergent solution and scrub item with a brush.
4. Rinse with tap water until all visible evidence of soap is removed.
5. Rinse several times with deionized water.
6. Air dry before using.

Decontamination water is to be collected and disposed as investigation-derived waste (IDW).

Dedicated sampling equipment (polyethylene tubing) will be properly discarded after completion of obtaining the sample. Disposable gloves will be worn during sampling collection and be discarded following collection of each sample.

## **5.0 GROUNDWATER SAMPLING**

Groundwater samples will be collected to evaluate groundwater quality conditions in relation to the NYSDEC Class GA Ambient Water Quality Standards (AWQS). The following describes general and specific procedures, methods, and considerations for the development of groundwater monitoring wells and the collection of groundwater samples for field screening and laboratory analysis.

### **5.1 Sampling Equipment**

The following equipment may be required for groundwater sampling:

- Electric water level indicator or interface probe
- Submersible pump
- Polyethylene tubing
- Water quality meter
- Photoionization detector
- Field logbook and field data sheets
- Laboratory prepared sample containers
- Decontamination equipment
- Disposable latex or nitrile gloves

### **5.2 Well Volume Calculation**

Prior to initiating the purge, the amount of water standing in the water column (water inside the well riser and screen) should be calculated. The well volume may be calculated based upon the diameter of the well, the well depth, and the depth to water. The volume of standing water in the well and the volume of three water columns may be calculated using a volume per foot factor for the appropriate diameter well.

**[Depth of Well (feet) – Depth to Water (feet)] \* Well Volume Factor**

WELL VOLUME CALCULATIONS	
Well Diameter (inches)	Well Volume Factor
1	0.04
2	0.16
4	0.65
6	1.46

**5.3 Well Purging**

The following describes the procedures to conduct well purging using a submersible pump:

1. Cut a length of tubing at least five feet longer than the full depth of the monitoring well.
2. Attach the appropriate diameter polyethylene tubing to the end of the pump and submerge the pump half the distance into the water column (do not push the pump to the bottom of the well).
3. Place the discharge end of the tubing securely in a clean flow cell associated with the water quality meter. Additional tubing should be connected to the flow cell discharge and connected securely to a clean receptacle (i.e., bucket or drum) to collect the purge water.
4. Turn the pump on.
5. Record field parameters during purge.
6. Monitor and record drawdown of the well.
7. Once at least three well volumes are purged or the well becomes dry, turn the pump off and let the well recharge (if necessary). Please be aware that some pumps become damaged or inoperable if operated dry. Pumps may also be damaged if high sediment loads are pumped through the pump.
8. Once the well has recharged (if necessary), the groundwater sample may be collected.

#### **5.4 Sample Collection**

Following purging, a grab groundwater sample will be collected using a polyethylene disposable bailer. The bailer is tied to a string which is held by the field personnel, who manually lowers the bailer into the well. The bailer should be lowered until the top of the bailer is submerged below the well water. The bailer should be slowly removed from the well and should not be allowed to contact impacted surfaces or the ground surface.

Direct water flow from the bailer to the inside wall of the laboratory-prepared sample container to minimize volatilization. Fill VOC sample containers so that there is no headspace (air bubbles). The laboratory bottles for VOC analysis are pre-preserved; therefore, it is important to not overfill the sample containers.

## 6.0 AIR AND SOIL VAPOR SAMPLING

Sampling of indoor air, ambient air, and sub-slab soil vapor at the Site should be conducted during the heating season. In New York State, the heating season is generally November 15 through March 31; however, these dates are not absolute, and the timing for sampling may vary depending on the weather conditions for a particular year.

### 6.1 Sampling Equipment

The following equipment may be required for air and soil vapor sampling:

- Summa canister
- Flow controller
- FLX-VP™ Barn with O-Ring (required for connection to permanent monitoring point)
- Teflon®-lined polyethylene tubing
- Silicon tubing
- Teflon® tape
- Push-to-connect diverting valve
- Adjustable wrench
- Syringe
- Shroud
- Helium canister and regulator
- Photoionization detector
- Field logbook and field data sheets
- Laboratory prepared sample containers
- Disposable latex or nitrile gloves



## 6.2 Sampling Procedure – Indoor and Ambient Air

The following describes the procedures to conduct indoor and ambient air sampling:

1. Place the Summa canister at the sampling location. The canisters are to be placed in a location to collect breathing height air (three to five feet above ground surface). Either place the canister on a stable platform or attach a length of tubing to the flow controller inlet and support it such that the sample inlet will be at the proper height.
2. Prior to sampling, evaluate building operations, storage of chemicals, and building envelope that could influence air results. Record any findings in the field book and/or field data sheets.
3. Remove the brass plug fitting cover the Summa canister sampling port with a wrench.
4. Record the identification numbers for the canister and flow controller and initial canister pressure on the vacuum gauge.
5. Connect the pre-calibrated flow controller with integral vacuum gauge to the Summa canister sampling port. Open the valve on the canister and evaluate the vacuum within the canister. If the vacuum is greater than negative 25 inches of mercury, then the canister is acceptable for sampling. Record the sample start time.
6. Stop the sample collection after the scheduled duration of sample collection (8 hours), and make sure that the canister still has a minimum amount of vacuum remaining. Typically, the minimum vacuum is between two and five inches of mercury, but not zero.
7. Record the final vacuum pressure and close the canister valve. Record the sample stop time.
8. Remove the flow controller and replace the protective brass plug.

### 6.3 Sampling Procedure – Soil Vapor

The following describes the procedures to conduct sub-slab soil vapor samples from the permanent monitoring points installed at the Site:

1. Locate previously installed sub-slab monitoring point (i.e., vapor pin). Clear the immediate area of furniture/obstructions, if necessary.
2. Prepare the Summa canister: remove the brass plug fitting from the Summa canister sampling port, connect the pre-calibrated flow controller with integral vacuum gauge (hand tight), record the identification numbers for the canister and flow controller and the outgoing laboratory canister pressure, and attach Teflon-lined low-density polyethylene (LDPE) tubing to flow controller inlet.
3. Remove the cover from the vapor pin and attach manufacturer provided sampling barb.
4. Attach silicone tubing to the sampling barb. Collect photoionization detector (PID) reading from the silicone tubing (sub-slab) and the ambient air using a calibrated PID. Then attach the Teflon-lined LDPE tubing to silicone.
5. Attach the bottom of the 3-way valve with compression fittings to the LDPE tubing from vapor pin.
6. Attach tubing from the canister to one side of the 3-way valve and attach another length of tubing to the opposite side of the 3-way valve (purge tubing). Ensure that the 3-way valve is open to purge side.
7. Place polyethylene sheeting over the sample train, Summa canister, and vapor pin to create a shroud. Place chains around the shroud perimeter to weigh down the shroud. Ensure that the end of the purge tubing is located outside of the shroud.
8. Place the helium detector probe under the shroud.
9. Inject helium into shroud until helium detector reads 20% atmosphere.
10. Shut down the flow of helium and remove the helium detector probe from the shroud. Allow the helium detector to return to zero.

11. Place the helium detector probe in the purge tubing extending from under the shroud and collect a helium reading. As per New York State Department of Health (NYSDOH) guidance, any helium concentration detected must be less than 10% of the total concentration within the shroud (in this case with 20% atmosphere in the shroud, the purge line reading must be less than 20,000 parts per million [ppm]).
12. Following a successful helium leak test, remove the shroud.
13. Purge the sample train of three volumes using a syringe at a rate of less than 200 milliliters per minute (ml/min).
14. Switch the 3-way valve to the sampling train and Summa canister side.
15. Open the valve on the Summa canister and evaluate the vacuum within the Summa canister. If the vacuum is greater than negative 25 inches of mercury, then the Summa canister is acceptable for sampling. Record the sample start time and vacuum.
16. Stop the sample collection after the scheduled duration of sample collection (2 hours) and ensure that the Summa canister still has a minimum amount of vacuum remaining. Typically, the minimum vacuum is between two and five inches of mercury, but not zero.
17. Record the final vacuum pressure and close the Summa canister valve. Record the sample stop time.
18. Remove the flow controller and replace the protective brass plug on the Summa canister.
19. Remove the vapor pin sampling barb and replace the vapor pin cover.

## **7.0 INVESTIGATION-DERIVED WASTE MANAGEMENT**

All decontamination water and monitoring well purge water should be containerized in sealed and labeled U.S. Department of Transportation (DOT)-approved 55-gallon drums pending off-site disposal at a permitted facility. The drums should be staged within the secured loading dock area of the Site building.

Aqueous IDW was properly characterized during the remedial investigation and remedial action activities at the Site; therefore, additional waste characterization of the IDW is not required during the post-remedial groundwater sampling activities.

A subcontractor will be responsible for proper transportation and disposal of IDW at a permitted facility. Waste disposal should include appropriate manifesting.

Disposable sampling equipment (tubing, gloves, etc.) that came in contact with environmental media will be double-bagged and disposed as municipal trash in a facility trash dumpster as general refuse.

## 8.0 FIELD DOCUMENTATION

The purposes of these guidelines are to provide instruction, guidance, and reference for the documentation of field activities. Field notes are legal documents that are a record of the activities and observations made during a field event.

### 8.1 Field Books or Field Data Sheets

The primary location to record field notes is in a bound field logbook. Field notes may also be recorded on a site-specific field sheet. All notes must be legible and shall be made using indelible ink. Do not cross out or scribble over incorrect information or illegible writing. All changes must be made with a single strike-out line through the deletion, which must be initialed and dated. Under no circumstances shall any page of the field book be removed, even if it is blank.

Field Books – are bound books with continuously numbered water-resistant pages (except where prohibited such as sites with PFAS/PFOS testing requirements). Field books may be used for several different purposes such as the following: Personal Field Book – a field book assigned to a specific individual for recording data collected at multiple sites or Site-specific Field Book – a field book assigned to a site, used by multiple people to record data specific to that site.

Field Sheets – Field sheets are sheets specifically designed to record a set of information. Field sheets are generally reserved for repetitive processes (i.e., remedial system operation and maintenance) or for collecting standardized data (i.e., Quality Assurance Project Plans). Field sheets may become lost or damaged more easily than a bound field notebook. Therefore, it is important to maintain your field sheets in an organized fashion, in an area free of potential damage, and copy and scan your field sheets immediately upon returning to the office.

The field book shall be kept in a safe and accessible location. The field book should be updated periodically throughout the day based upon the activities being conducted, not at the beginning and the end of the day or sporadically.

## 8.2 Field Note Contents

This section presents the information that should be included in a field logbook if the user is performing the applicable activity. Information that should always be included in every activity has been denoted with an asterisk (\*).

The following should be recorded at the top of each field note page:

- Date - MM/DD/YYYY format (\*)
- Location – Country, City, State, Street Address (\*)
- Project Name (\*)
- Project Number (\*)

The following should be recorded when initiating a field event:

- Purpose for the field activities (\*)
- On-site arrival time (\*)
- Personnel on-site (at arrival), including VERTEX employees, subcontractors (company, first and last name, and other personnel (company, first and last name) (\*)
- Weather conditions (\*)
- Health and safety meeting information (\*)

Additional information that should be recorded during field events (as applicable):

- Arrival and departure times of VERTEX personnel, subcontractors, or other personnel (\*)
- Equipment information, including make and model of equipment used (serial number if identified); calibration information (including calibration values); date and time of the most recent calibration of equipment; and equipment used by subcontractors (make, model, quantity).
- Overall site sketch with pertinent site features (roads, water bodies, buildings, monitoring well locations/boring locations (including refusals), utility locations (above and below ground), and general site slope (topography).
- Work area sketch (plan and vertical as needed) including well locations (i.e., to compare sampled wells versus well designation), excavation areas, sample locations with identification, and release areas.
- Field data: groundwater quality data, groundwater recharge data, groundwater depth data, soil boring and monitoring well constitution logs, photoionization data, and survey data
- Sample collection information: date and time; sample matrix (air, groundwater, soil); location of sample collection; type of analysis requested; number of samples collected and type of container (glass/plastic); visual or olfactory abnormalities of the sample; sample preservation; and conditions that may impact the quality of samples
- Interview information: name and relationship to project/property; affiliation/title; responses to questions; and contact information (phone/email).
- References to other information gathered or documents required during fieldwork: photos; conversations with knowledgeable persons; laboratory chain of custody; bill of lading/waste manifests; boring logs/field sheets; calibration sheets; electronic data (i.e., stored on laptops, PIDs, cameras, or other equipment).
- Downtime and the associated cause.
- Changes in the required PPE to complete the task.
- Data calculations.
- Process diagrams.

Upon completion of the field event, the field personnel will indicate the off-site time. The field personnel will draw a diagonal line through the remainder of the unused portion of the field book last page. The field personnel will sign the diagonal line in the field book.

### 8.3 Sample Naming

The following provides guidance for the naming of samples using a combination of Location ID and Sample ID. Location IDs are defined as unique points at a project site from which samples will be collected. Locations are designations that identify a specific point that will be mapped for the site or for which data will be collected. Sample IDs are the name of the collected sample, vapor monitoring point, or monitoring well.

NAMING CONVENTION	
Media	Sample Name
Groundwater <sup>(1)</sup>	MW-1, MW-2
Sub-Slab Soil Vapor <sup>(2)</sup>	SS-1, SS-2
Indoor Air <sup>(2)</sup>	IA-1, IA-2
Ambient Air	AA-1, AA-2

(1) Groundwater samples collected from permanent monitoring wells.

(2) Sub-slab soil vapor samples collected from permanent vapor monitoring points. Co-located indoor air samples should have the same sample ID as the sub-slab soil vapor sample (i.e., indoor air sample IA-2 should be collected from the co-located sub-slab soil vapor sample SS-2 location).

### 8.4 Sample Labeling

Sample labeling is the procedure used to indicate the contents of laboratory samples and is required to identify the sample designation, date of sample collection to both the sample collector and the laboratory. Care must be taken to write each label legibly. Samples must be labeled in the field using indelible ink and with laboratory supplied labels or other approved label system. Labels must be filled out completely for each sample bottle must be individually labeled.



At a minimum, proper labeling for groundwater samples should include:

- Site name and/or project number
- Sample identification (sample designation)
- Date of sample collection
- Time of sample collection
- Requested laboratory analysis
- Initials of the sampler

If multiple sample bottles are required for an individual sample, each of the characteristics listed above should be identical across the labels for that individual sample. Each sample collected by an individual should have a unique sample collection date and time.

Groundwater samples must be labeled in the field immediately prior to the collection of the sample. Prior to affixing the label, the sample bottle should be clean and dry to reduce loss of label during transport to the laboratory. If available, following sample collection, sample jars should be placed in watertight plastic bags and sealed to avoid labels being dislodged during shipment.

Summa cans are a steel air sample canister which use vacuum to draw in air for laboratory analysis. Laboratory supplied labels should be fixed to the summa cans prior to starting sampling activities. These should be attached to a tag tied to the canister. Do not stick labels directly to the surface of the sample can.

At a minimum, proper labeling for soil vapor and air samples should include:

- Site name and/or project number
- Sample identification (sample designation)
- Summa identification number
- Regulator identification number

- Initial start time and date of sample collection
- Final end time and date of sample collection
- Vacuum at start of sample collection (when canister was opened)
- Vacuum at end of sample collection (just prior to closing the canister)
- Requested laboratory analysis

## 9.0 SAMPLE MANAGEMENT

The laboratory will provide the appropriate sample container for the media being sampled. The containers will be cleaned and prepared by the laboratory prior to shipment to the Site.

### 9.1 Chain-of-Custody

All samples collected during the post-remedial activities will be submitted under proper chain-of-custody (COC) protocols to a New York Environmental Laboratory Approval Program (ELAP) certified laboratory. The chain of custody (COC) is a legally binding record that must be kept with the samples during each step of the shipment process.

The following must be filled out on every chain of custody:

- **Client Information:** Include the local office, office address, and contact information: telephone and e-mail address.
- **Project Information:** Include the name of the project, location of the project (town and state), and the project manager (the person who should be contacted regarding any questions regarding the sample analyses).
- **Turnaround Time (TAT):** This field indicates whether the analyses are to be delivered within the standard laboratory turnaround time or if the results are needed sooner.
- **Reporting:** Identify to whom the laboratory report should be send once complete.
- **Billing:** Identify to where the invoice from the laboratory should be routed.
- **Regulatory Requirements:** In this section make sure to provide the preferred method of delivery, and whether specific state regulatory or reporting limits are required for the project.
- **Sample ID/Analysis:** Be sure to fill out the Sample ID and the Collection Date/Time EXACTLY as it appears on the sample bottles. If there are any discrepancies, it may cause delays, wrong analyses, or unusable data.

- Sample Matrix, Container Code, and Preservation Code: Each laboratory has specific codes for each of these fields. Only use those provided (either on the chain of custody itself, or on an instruction page attached or on the reverse side of the chain of custody).
- Number of bottles, this is used by the laboratory courier and laboratory to confirm that the sample set is complete.
- **Relinquished Signatures:** Once the samples leave your possession, sign this section of the chain of custody, included the date and time. Instruct the person you are handing the samples off to to-do the same (under the received by column). There should be no gaps in date/time between the relinquished by and received by sections.

Once you have completed the chain of custody, take a picture to be provided to the project manager for record or keep the duplicate copy.

## 9.2 Sample Handling

As part of the post-remedial activities, groundwater, indoor air, ambient air, and soil vapor samples will be collected. Sample holding times will be in accordance with USEPA SW-846 and NYSDEC ASP requirements.

All groundwater samples should be placed in a cooler with ice immediately after sample collection. Samples should be packed appropriately to avoid breakage and delivered to the laboratory for analysis as soon as possible following sample collection – if possible, samples should be delivered to the laboratory on the same day as collection.

# **APPENDIX K: REMEDIAL SITE OPTIMIZATION REPORT OUTLINE**

# REMEDIAL SYSTEM OPTIMIZATION REPORT OUTLINE

Rockfarmer 37<sup>th</sup> Avenue – Site No. C241212

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