PROPOSED REMEDIAL ACTION PLAN

222 South Ferry Street
State Superfund Project
Schenectady, Schenectady County
Site No. 447047
July 2022

Prepared by
Division of Environmental Remediation
New York State Department of Environmental Conservation

PROPOSED REMEDIAL ACTION PLAN

222 South Ferry Street
Schenectady, Schenectady County
Site No. 447047
July 2022

SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), is proposing a remedy for the above referenced site. The disposal of hazardous wastes at the site resulted in threats to public health and the environment that were addressed by actions known as interim remedial measures (IRMs), which were undertaken at the site. An IRM is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before completion of the remedial investigation (RI) or feasibility study (FS). The IRMs undertaken at this site are discussed in Section 6.2.

Based on the implementation of the IRMs, the findings of the RI indicate that the site no longer poses a threat to human health or the environment. The IRMs conducted at the site attained the remediation objectives identified for this site, which are presented in Section 6.5, for the protection of public health and the environment. No Further Action is the remedy proposed by this Proposed Remedial Action Plan (PRAP). A No Further Action remedy may include site management, which will involve continued operation of any remedial system installed during the IRM and the implementation of any prescribed institutional controls/engineering controls (ICs/ECs) that have been identified as being part of the proposed remedy for the site. This PRAP identifies the IRMs conducted and discusses the basis for No Further Action.

The New York State Inactive Hazardous Waste Disposal Site Remedial Program (also known as the State Superfund Program) is an enforcement program, the mission of which is to identify and characterize suspected inactive hazardous waste disposal sites and to investigate and remediate those sites found to pose a significant threat to public health and environment.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375. This document is a summary of the information that can be found in the site-related reports and documents in the document repository identified below.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all PRAPs. This is an opportunity for public participation in the remedy selection process. The public is encouraged to review the reports and documents, which are available at the following repository:

Schenectady Library
99 Clinton Street
Schenectady, NY 12301
Phone: 518 388-4500

Site specific documents may be found online through the DECinfo Locator https://www.dec.ny.gov/data/DecDocs/447047/

A public comment period has been set from July 6, 2022 through August 5, 2022 to provide an opportunity for you to comment on the proposed remedy.

A virtual public meeting is scheduled for July 19, 2022 7:00 PM

If you are interested, please attend the virtual meeting at:

https://meetny.webex.com/meetny/j.php?MTID=m80c32de466b621c9f6b41a94a84b963d

and use event password: NYSDEC2022

Or at: https://www.webex.com and select "Join a Meeting".

Meeting Event Number: **161 726 9786**

Password: **NYSDEC2022**

To Participate by Phone Only: Dial 518-549-0500

Enter Meeting Access Code: 161 726 9786

At the meeting, the findings of the remedial investigation (RI) will be presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period will be held, during which verbal or written comments may be submitted on the PRAP.

Written comments may also be sent to:

Ruth Curley
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233-7016
ruth.curley@dec.ny.gov

The Department may modify the proposed remedy presented in this PRAP based on new information or public comments. Therefore, the public is encouraged to review and comment on the proposed remedy identified herein. Comments will be summarized and addressed in the responsiveness summary section of the Record of Decision (ROD). The ROD is the Department's final selection of the remedy for this site.

Receive Site Citizen Participation Information By Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at http://www.dec.ny.gov/chemical/61092.html

SECTION 3: SITE DESCRIPTION AND HISTORY

Location:
The site is located at 222 South Ferry Street in the City of Schenectady, Schenectady County, New York. The site is identified on the City of Schenectady tax maps as section 39.71, block 1 lot 14.11.

Site Features:
The site parcel is approximately 0.98 acres of land area. The property is vacant and consists of an asphalt-paved parking lot. The northwest and southeast corners of the property have a crushed stone cover system rather than asphalt.

Current Zoning/Use(s):
The site property is classified as vacant land. The property is zoned C4 – Downtown Mixed Use by the City of Schenectady, which allows for residential and commercial uses. The parcel is bounded on the west by Church St. and on the east by So. Ferry St. To both the north and south there is a mixture of vacant land, commercial and residential property uses.

Historic Use(s):
The following historic uses at the subject site and its north and south adjacent properties may have contributed to the site contaminants, as follows.

1) The site's historic use as a trucking facility. A paint shop, repair shop and portions of a truck garage were located in the general vicinity of the site contaminants. Solvents may have been used to prepare vehicles for painting and to clean the facility floors. Petroleum-type constituents were not detected in soils and groundwater sampled as part of past investigations of the site.
2) Land usage to the north (209 and 211 South Church Street) consisted of a paint and varnish removal factory (1914), and dry cleaning operations (1953). Although these areas are upgradient, these operations utilize solvents and may have contributed to site contaminants.
3) Land usage to the south which consisted of a color copier, photo lab and glove manufacturer. Solvents may have been used in conjunction with these types of operations and may have contributed to site contaminants.

Site Geology and Hydrogeology:
Soils are mapped by the Schenectady Soil Survey as cut and fill land. Surficial geology is mapped

as lacustrine silt and clay. These soils consist of laminated silts and clays which are generally calcareous, with low permeability.

Based upon previous work, subsurface conditions consist of fill material (sand, gravel, silt, brick, cinders and ash) extending from beneath the asphalt pavement and its sub base to depths ranging from 9 feet to 15 feet bgs. The fill is generally underlain by native material consisting of fine sand and silt with lesser amounts of clay and organic matter. Groundwater was encountered at depths ranging from 6 feet to 12 feet bgs. Groundwater flow is from south to north.

Site location maps are attached as Figure 1 and 2.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives (or an alternative) that restrict(s) the use of the site to commercial use (which allows for industrial use) as described in Part 375-1.8(g) is/are being evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the investigation to the appropriate standards, criteria and guidance values (SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is included in the Tables for the media being evaluated in Exhibit A.

SECTION 5: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The PRPs for the site, documented to date, include:

111 Liberty Plaza, LLC

Maxim Engineering, P.C.

The PRPs for the site declined to implement a remedial program when requested by the Department. The Department investigated the site and listed the site on the Registry of Inactive Hazardous Waste Disposal Site as a Class 2 site. The Department then implemented an interim remedial measure which will serve as the remedy for the site. A new owner, Schenectady County, has purchased the Site and has executed a Consent Order to assume site management activities and agreed to pay a significant portion of the state's past remedial costs. Schenectady County currently plans to use the site for parking.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A Remedial Investigation (RI) has been conducted. The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The field activities and findings of the investigation are described in the RI Report.

The following general activities are conducted during an RI:

- Research of historical information,
- Geophysical survey to determine the lateral extent of wastes,
- Test pits, soil borings, and monitoring well installations,
- Sampling of waste, surface and subsurface soils, groundwater, and soil vapor,
- Sampling of surface water and sediment,
- Ecological and Human Health Exposure Assessments.

The analytical data collected on this site includes data for:

- groundwater
- soil
- soil vapor

6.1.1: Standards, Criteria, and Guidance (SCGs)

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. The tables found in Exhibit A list the applicable SCGs in the footnotes. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

6.1.2: RI Results

The data have identified contaminants of concern. A "contaminant of concern" is a hazardous waste that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are contaminants of concern. The nature and extent of contamination and environmental media requiring action are summarized in Exhibit A. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified at this site are:

trichloroethene (TCE) vinyl chloride

dichloroethene (cis-1,2-)	benzo(a)anthracene
dichloroethene (trans 1,2-)	benzo(a)pyrene
arsenic	benzo(b)fluoranthene
barium	dibenzo[a,h]anthracene
lead	indeno(1,2,3-cd)pyrene
mercury	

Based on the investigation results, comparison to the SCGs, and the potential public health and environmental exposure routes, certain media and areas of the site required remediation. These media were addressed by the IRM(s) described in Section 6.2. More complete information can be found in the RI Report and the IRM Construction Completion Report.

6.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Record of Decision.

The following IRM has been completed at this site based on conditions observed during the RI. (see Figure 6)

In-Situ Enhanced Bioremediation

In-situ enhanced bioremediation or biodegradation was employed to treat chlorinated volatile organic compounds in groundwater, primarily in the center of the site. The biological breakdown of contaminants through anaerobic reductive dechlorination was enhanced by including zero valent iron and a proprietary nutrient source for the biological agent. The compounds were directly injected into the subsurface through well screens from 5-16 feet below grade, at intervals of approximately 10 feet on center in the source areas on-site.

At this site, injections were performed in December 2020 in the center of the site. Based on the results, a second round of injections were performed in November 2021. Results of the IRM are discussed in Section 6.3

6.3: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water.

Based upon the resources and pathways identified and the toxicity of the contaminants of ecological concern at this site, a Fish and Wildlife Resources Impact Analysis (FWRIA) was deemed not necessary for the Site.

Remediation at the site has resulted in the site being protective of public health and the environment. Prior to remediation, the primary contaminants of concern were cis-1,2-dichloroethene (DCE) and vinyl chloride in the groundwater and soil vapor. Remedial actions have

successfully reduced the groundwater contamination by over 99% for cis-1,2 DCE and vinyl chloride. The materials injected into the groundwater to achieve this reduction will continue to reduce groundwater contamination. Residual contamination in the soil, groundwater and soil vapor is being managed under a Site Management Plan. The investigation results, prior to implementation of the IRM described in Section 6.2, are discussed below.

During the site characterization and remedial investigation for the site, prior to the IRM, soil and groundwater were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs) and pesticides. Groundwater was also analyzed for emerging contaminants per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane. Soil vapor was analyzed for VOCs. Groundwater and soil vapor were also analyzed for VOCs off-site, on the adjacent downgradient site to determine if contaminants were migrating.

Based on these investigations, the primary contaminants of concern were cis-1,2 dichloroethene (DCE) and vinyl chloride in the groundwater. Cis-1,2 DCE was detected up to 42,000 parts per billion (ppb) and vinyl chloride was detected at 19,000 ppb. TCE was detected at a much lower level of 280 ppb. The Class GA groundwater standard is 5 ppb for TCE and cis-1,2 DCE and is 2 ppb for vinyl chloride. For the emerging contaminants, perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) were reported at concentrations of up to 4.3 parts per trillion (ppt) and non-detected, respectively, compared to the Maximum Contaminant Level (drinking water standard) of 10 ppt in groundwater. 1,4-dioxane was detected in one sample at 0.14 ug/l, which is below the guidance value of 0.35 ug/l. Off-site, three wells were installed, and chlorinated compounds were not detected in any of them.

In soils, VOCs, SVOCs and metals were detected. In soils, the highest values were TCE 12 parts per million (ppm) (protection of groundwater SCO 0.47 ppm), benzo(b)fluoranthene 46 ppm (commercial SCO 5.6 ppm) and lead 5640 (commercial SCO 1000 ppm). These soils were found in isolated areas at the site and are not representative of site-wide conditions. In soil vapor, the highest values were in the center of the site near the most contaminated groundwater and ranged up to 160,000 ug/m3 TCE, 13,000 ug/m3 cis 1,2-DCE, and non-detected for vinyl chloride. Soil vapor samples taken off-site and on-site closest to the nearest residential structure were significantly lower, with the TCE of 120 ug/m3, 0.14 ug/m3 of cis 1,2-DCE and non-detectable for vinyl chloride. During sampling off-site on the downgradient site, two soil vapor samples were performed and perchloroethylene (PCE) was detected at a maximum of 3.6 ug/m3. No site-related compounds were detected.

Groundwater sampling performed after the IRM indicates a significant decrease in VOC concentrations across the site, and concentrations continue to decline. VOCs remain detectable in 11 on-site wells, although the concentrations have decreased significantly. Based on a comparison of March 2020 sampling data, just prior to the IRM, and preliminary April 2022 sampling data, the highest concentrations, at the center of the site, groundwater decreased from 25,000 ug/l to 102 ug/l for cis-1,2 DCE, and vinyl chloride has decreased from 14,000 ug/l to 54 ug/l. The remaining on-site wells exhibit trichloroethane (maximum concentration 45 ppb), cis-1,2 DCE (42 ppb maximum) and vinyl chloride (78 ppb maximum). The data are shown on Figure 6. The contaminants in soil, identified during the investigation, remain on-site and are located below the site cover system. The TCE is below the water table and may degrade based on the groundwater

treatment. All soil on-site is subject to the controls in the Site Management Plan. Post IRM soil vapor samples have not been collected, although it is likely that the significant decline in groundwater concentrations would contribute to reductions in soil vapor concentrations.

6.4: Summary of Human Exposure Pathways

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure.*

Direct contact with contaminants in the soil is unlikely because the majority of the site is covered with pavement. People are not drinking the contaminated groundwater because the area is served by a public water supply that is not affected by this contamination. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. The site is currently unoccupied. However, the potential exists for the inhalation of site contaminants due to soil vapor intrusion if buildings are constructed during any future on-site redevelopment and occupancy. Furthermore, environmental sampling indicates soil vapor intrusion is not a concern for off-site buildings.

6.5: Summary of the Remediation Objectives

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial action objectives for this site are:

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.

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Remove the source of ground or surface water contamination.

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

RAOs for Environmental Protection

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

Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

SECTION 7: SUMMARY OF PROPOSED REMEDY

No Further Action

Based on the results of the investigations at the site, the IRM that has been performed, which has significantly reduced contaminants in groundwater, and the evaluation presented here, the Department is proposing No Further Action as the remedy for the site. The Department believes that this remedy is protective of human health and the environment and satisfies the remediation objectives described in Section 6.5.

The elements of the IRM already completed and the institutional and engineering controls are listed below:

1.Green Remediation

Green remediation principals and techniques will be implemented to the extent feasible in the site management of the remedy as per DER-31. The major green remediation components are as follows:

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gas and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste; and
- Additionally, to incorporate green remediation principles and techniques to the extent feasible in the future development at this site, any future on-site buildings will include, at a minimum, a 20-mil vapor barrier/waterproofing membrane on the foundation to improve energy efficiency as an element of construction.

2. Cover System

A site cover currently exists in areas not occupied by buildings and will be maintained to allow for commercial use of the site. Any site redevelopment will maintain the existing site cover. The site cover may include paved surface parking areas, sidewalks or soil where the upper one foot of exposed surface soil meets the applicable soil cleanup objectives (SCOs) for commercial use.

Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR part 375-6.7(d).

3. Engineering and Institutional Controls

Imposition of an institutional control in the form of an environmental easement and a Site Management Plan, as described below, will be required. The remedy has achieved a commercial cleanup.

4. Institutional Control

Imposition of an institutional control in the form of an environmental easement for the controlled property which will:

- require the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allow the use and development of the controlled property for commercial use or industrial use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or Schenectady County DOH; and
- require compliance with the Department approved Site Management Plan.

5. Site Management Plan

A Site Management Plan is required, which includes the following:

1. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in Paragraph 4 above.

Engineering Controls: The cover discussed in Paragraph 2 above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;

- descriptions of the provisions of the environmental easement including any land use and groundwater use restrictions;

- a provision for evaluation of the potential for soil vapor intrusion for any occupied buildings on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;

- provisions for the management and inspection of the identified engineering controls;

- maintaining site access controls and Department notification; and

- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

2. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

- monitoring of groundwater to assess the performance and effectiveness of the remedy;

- a schedule of monitoring and frequency of submittals to the Department; and

- monitoring for vapor intrusion for any buildings on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the Remedial Investigation for all environmental media that were evaluated. As described in Section 6.1, samples were collected from various environmental media to characterize the nature and extent of contamination.

For each medium for which contamination was identified, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the media and compares the data with the applicable SCGs for the site. The contaminants are arranged into five categories: volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), inorganics (metals), PCBs and Pesticides, and per and polyfluoroalkyl substances (PFAS). PFAS were sampled in groundwater only. For comparison purposes, the SCGs are provided for each medium that allows for unrestricted use. For soil, if applicable, the Restricted Use SCGs identified in Section 4 and Section 6.1.1 are also presented.

Groundwater

Groundwater samples were collected at this site, beginning with the site characterization investigation in 2013. Twenty (20) wells associated with the site were sampled during the investigation and IRM. The samples were collected to assess groundwater conditions on and off-site. The results indicated that contamination in shallow groundwater at the site exceeded the SCGs for volatile organic compounds and inorganics. The contaminants of concern are cis-1,2 dichloroethene (DCE) and vinyl chloride, which are break-down products of trichloroethene (TCE). The contaminants were located primarily in the center of the site. Trichloroethene is also a contaminant of concern at this site, though the levels in groundwater were significantly lower (maximum concentration of 280 ppb). As indicated in the table below, cis-1,2 dichloroethene (DCE) ranged up to 42,000 ppb (2013) and vinyl chloride ranged to a maximum of 19,000 (2017).

The inorganics detected in the groundwater (iron, manganese, arsenic, selenium) are indicative of naturally occurring substances and were not addressed by the IRM. The per and polyfluoroalkyl substances were sampled as part of a state-wide screening program and are below the SCGs. The results are reported for information only. The other VOC compounds detected in groundwater are very low levels, and some are believed to be by-products of the IRM treatment process.

Table 1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
1,1-Dichloroethene	0.34-14	5	3/82
Acetone	3.30-32	50	0/82
Chloromethane	0.37-0.54	5	0/82
Cis-1,2-Dichloroethene	0.69-42,000	5	52/82
Methyl Ethyl Ketone (2-Butanone)	4.40-100	50	2/82

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
Methylene Chloride	2.2-250	5	1/82
Tert-Butyl Methyl Ether	0.25	10	1/82
Tetrachloroethene (PCE)	0.14-1.2	5	0/82
Toluene	5.1	5	1/82
Trans-1,2-Dichloroethene	0.770-83	5	10/82
Trichloroethene (TCE)	0.89-280	5	19/82
Vinyl Chloride	1.00-19,000	2	59/82
Inorganics			
Arsenic	5.20-45.6	25	2/14
Barium	200-404	1000	0/14
Chromium, Total	0.870-20.0	50	0/14
Iron	63.0-66,200	300	6/7
Lead	8.80	25	0/14
Manganese	88.0-5,700	300	6/7
Mercury	0.0370-0.200	0.7	0/14
Selenium	12.6-14.0	10	2/14

Per and Polyfluoroalkyl Substances			
	Concentration Range Detected (ppt)[c]	**SCG (ppt)**	**Frequency Exceeding SCG**
Perfluoropentanoic Acid (PFPeA)	0.63-1.8	N/A	0/5
Perfluorooctanoic acid (PFOA)	1.1-4.3	10	0/5
Perfluorodecanoic acid (PFDA)	0.36	N/A	0/5
Perfluorohexanesulfonic acid (PFHxS)	4.4	N/A	0/5
Perfluorobutanoic Acid	2.8-12	N/A	0/5
Perfluoroheptanoic acid (PFHpA)	0.39-1.6	N/A	0/5
Perfluorononanoic acid (PFNA)	0.31-18	N/A	0/5

a - ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.
b- SCG: Standard Criteria or Guidance - Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).
c- ppt: parts per trillion, which is equivalent to one one-thousandth of a microgram per liter or nanogram (ng/l), in water.
N/A- Not Available

Groundwater contamination identified during the RI was addressed by the IRM described in Section 6.2.

The groundwater sampling data from December 2021 has been validated and indicates that the highest levels in the center of the site have been reduced from concentrations of 25,000 ppb cis-1,2 DCE and 14,000 ppb vinyl chloride (measured in March 2020) to concentrations of 649 ppb and 6170 ppb respectively. The remaining wells

on-site range from non-detectable to 242 ppb (cis 1,2-DCE) and non-detectable to 377 ppb vinyl chloride. TCE remained in two wells on-site, one at 50 ppb and one at 6 ppb.

Preliminary results from the April 2022 sampling event show further reductions, with the wells on-site ranging from non-detectable to 102 ppb (cis 1,2-DCE) and non-detectable to 78 ppb vinyl chloride. TCE remains in four wells on-site, at 45 ppb, 11 ppb, 3 ppb and 2 ppb.

The levels of these chlorinated compounds are expected to continue to decrease because groundwater treatment performed in November 2021 will be active for several years. The residual groundwater contamination will be monitored in accordance with the site management plan.

Soil

Surface and subsurface soil samples were collected at the site during the site characterization, remedial investigation and pre-design sampling for the IRM. Subsurface soil samples were collected from a depth of 0 - 24 feet to assess soil contamination impacts to groundwater. The results indicate that soils at the site exceed the unrestricted SCG for volatile organics, semi-volatile organics and metals.

The site is currently used as a parking lot. At the northwest and southeast corners of the site, the asphalt does not extend all the way to the property boundary. Soil samples were taken during monitoring well construction, and surface samples were collected in the southeast corner of the site, near former residential properties. Subsequent to the sampling, a cover system has been installed to prevent any exposure to the limited exceedances in the surface soil.

Table 2 – Soil

Detected Constituents	Concentration Range Detected (ppm)a	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use Commercial SCG[c] (ppm)	Frequency Exceeding Commercial SCG	Restricted Use Protection of Groundwater SCG (ppm)	Frequency Exceeding PG SCG
VOCs							
Acetone	0.00490-1.40	0.05	11/36	500	0/36		
Cis-1,2-Dichloroethene	0.00490-8.80	0.25	12/29	500	0/29	0.25	12/29
Methyl Ethyl Ketone (2-Butanone)	0.00420-0.340	0.12	1/36	500	0/36	0.12	1/36
Trans-1,2-Dichloroethene	0.00310-2.00	0.19	3/34	500	0/34	0.19	3/34
Trichloroethene (TCE)	0.00170-12.0	0.47	5/32	200	0/32	0.47	5/32
Vinyl Chloride	0.00490-0.300	0.02	11/32	13	0/32	0.02	11/32
SVOCs							
2-Methylphenol (O-Cresol)	0.360-4.10	0.33	15/15	500	0/15		
4-Methylphenol (P-Cresol)	0.130-8.00	0.33	14/15	500	0/15		
Benzo(a)Anthracene	0.0990-35.0	1	8/15	5.6	2/15		
Benzo(a)Pyrene	0.0840-36.0	1	8/15	1	8/15		

Detected Constituents	Concentration Range Detected (ppm)a	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use Commercial SCG[c] (ppm)	Frequency Exceeding Commercial SCG	Restricted Use Protection of Groundwater SCG (ppm)	Frequency Exceeding PG SCG
Benzo(b)Fluoranthene	0.110-46.0	1	8/15	5.6	2/15		
Benzo(g,h.i)Perylene	0.0940-22.0	100	0/15	500	0/15		
Benzo(k)Fluoranthene	0.130-5.20	0.8	6/15	56	0/15		
Chrysene	0.100-35.0	1	8/15	56	0/15		
Dibenzo(a,h)Anthracene	0.0820-5.50	0.33	14/15	0.56	8/15		
Indeno(1,2,3-c,d)Pyrene	0.320-27.0	0.5	8/15	5.6	1/15		
Pentachlorophenol	0.720-8.00	0.8	11/15	6.7	4/15		
Phenanthrene	0.0970-44.0	100	0/15	500	0/15		
Phenol	0.0990-4.10	0.33	14/15	500	0/15		
Pyrene	0.0950-65.0	100	0/15	500	0/15		
Inorganics							
Arsenic	3.70-130	13	1/15	16	1/15		
Barium	30.2-588	350	1/15	400	1/15		
Cadmium	0.130-5.50	2.5	1/15	9.3	0/15		
Chromium, Total	7.40-57.6	30	2/15	400	0/15		
Lead	18.4-5,680	63	13/15	1000	1/15		
Mercury	0.00980-3.30	0.18	13/15	2.8	1/15		
Selenium	1.00-5.30	3.9	7/15	1500	0/15		
Zinc	129-242	109	7/7	10000	0/7		
Pesticides/PCBs							
P,P'-DDT	0.0370-0.0490	0.0033	7/7	47	0/7		

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.
c -SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for Commercial Use, unless otherwise noted.
d - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Groundwater

The Protection of Groundwater SCG is only applicable to substances found in both the soil and the groundwater. As a result, these SCGs and their comparisons are only listed for chlorinated volatile organic compounds of concern.

SVOCs, metals and one pesticide and metals were identified in soil at the site above the unrestricted SCG. These materials were not located site-wide and are not considered to be source materials. The soils remain in place under the cover system, and will be managed under the Site Management Plan if excavation occurs at the site.

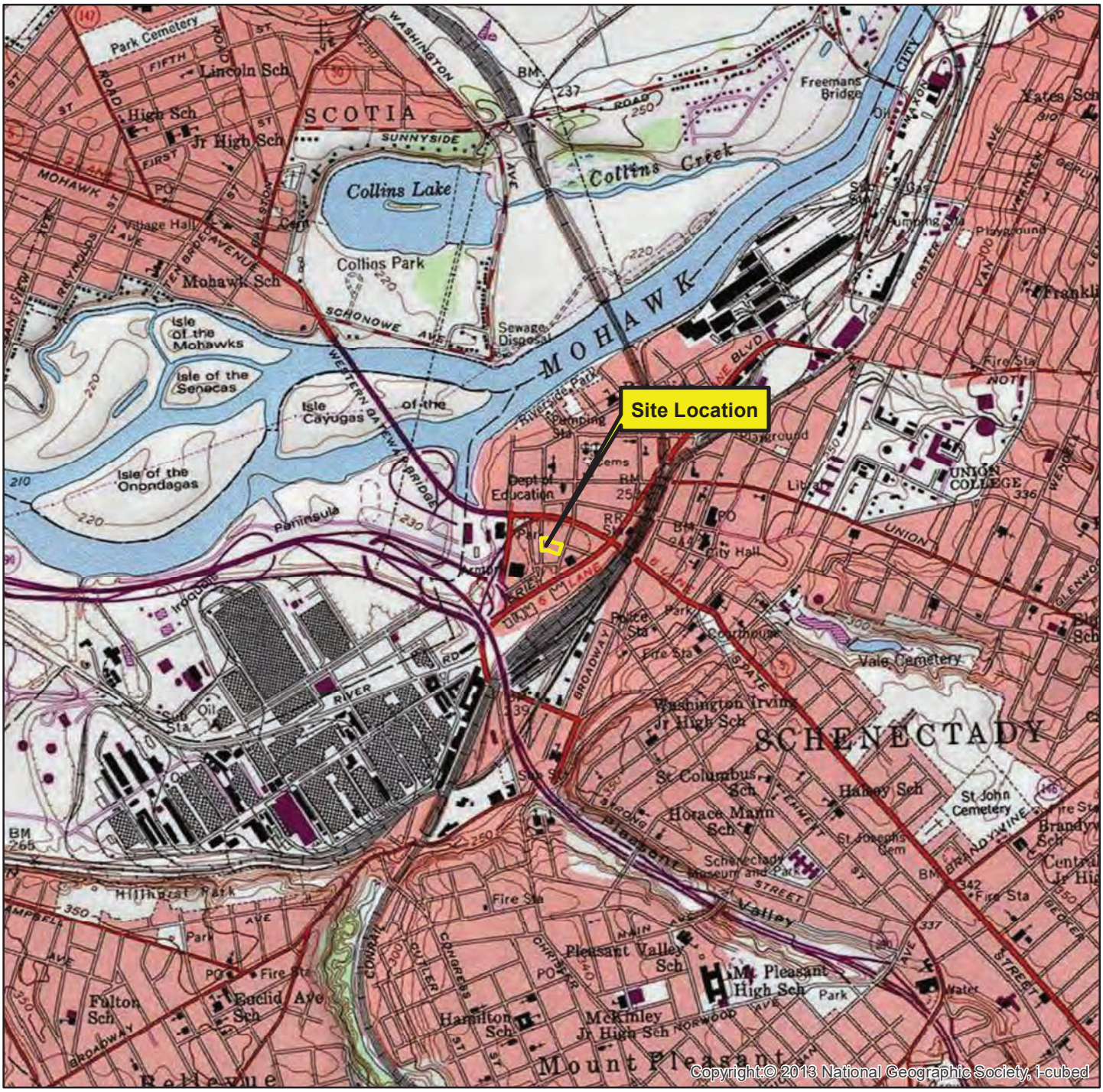
Soil Vapor

The evaluation of the potential for soil vapor intrusion resulting from the presence of site related soil or groundwater contamination was evaluated by sampling of soil vapor. No buildings were present at the site, so sub-slab and indoor air samples could not be collected on site.

Soil vapor samples were collected during the site characterization and off-site RI. Chlorinated compounds were identified, and were highest in the areas of groundwater contamination in the center of the site. Soil vapor samples collected near the closest residence on the southeast corner of the site were detectable for TCE but with low values. After discussion with NYSDOH, and consideration of the shallow groundwater depth, sub-slab sampling in the residence was not required.

Since the IRM was implemented, the groundwater concentrations of TCE and cis-1,2 DCE in groundwater on-site have decreased significantly. The concentrations are expected to continue to decline over time, based on the IRM treatment. The IRM has mitigated the chlorinated compounds in groundwater, thereby removing the source of the soil vapor contamination.

Based on the concentrations detected, no remedial alternatives were evaluated for soil vapor. The site management plan requires that the potential for soil vapor intrusion will be evaluated prior to construction of any buildings at the site.



0 1,000 2,000 4,000 6,000 8,000

Feet

1 inch = 2,000 feet

N

USGS Quadrangle Information
Quad ID: 42073-G8
Name: Schenectady, New York
Date Rev: 1978
Date Pub: 1981

Figure 1
Site Location
222 South Ferry Street
Schenectady, New York
HRP # DEC1012.RA
Scale 1" = 2,000'

HRP
MOVE YOUR ENVIRONMENT FORWARD
ONE FAIRCHILD SQUARE
SUITE 110
CLIFTON PARK, NY 12065
(518) 877-7101
HRPASSOCIATES.COM

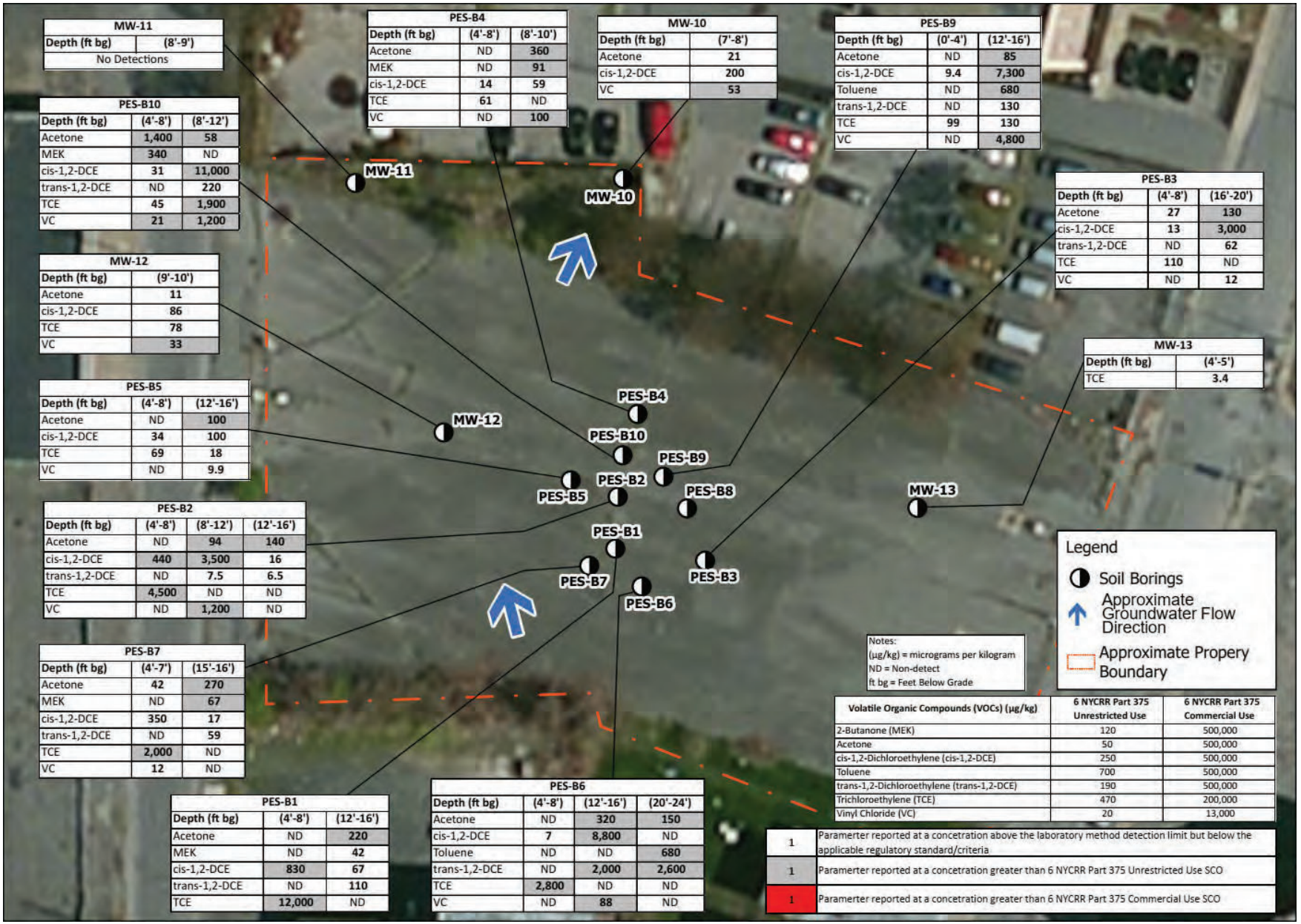
Path: S:\Data\NNYDEC - NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION\SCHENECTADY\222 SOUTH FERRY STREET\DEC1012RA\GIS\Figure 1 - Site Location.mxd

N
W E
S

0 55 110
Feet

Site Map

222 S Ferry St
Schenectady, NY
Site No. 447047



MW-11	
Depth (ft bg)	(8'-9')
No Detections	

PES-B4		
Depth (ft bg)	(4'-8')	(8'-10')
Acetone	ND	360
MEK	ND	91
cis-1,2-DCE	14	59
TCE	61	ND
VC	ND	100

MW-10	
Depth (ft bg)	(7'-8')
Acetone	21
cis-1,2-DCE	200
VC	53

PES-B9		
Depth (ft bg)	(0'-4')	(12'-16')
Acetone	ND	85
cis-1,2-DCE	9.4	7,300
Toluene	ND	680
trans-1,2-DCE	ND	130
TCE	99	130
VC	ND	4,800

PES-B10		
Depth (ft bg)	(4'-8')	(8'-12')
Acetone	1,400	58
MEK	340	ND
cis-1,2-DCE	31	11,000
trans-1,2-DCE	ND	220
TCE	45	1,900
VC	21	1,200

PES-B3		
Depth (ft bg)	(4'-8')	(16'-20')
Acetone	27	130
cis-1,2-DCE	13	3,000
trans-1,2-DCE	ND	62
TCE	110	ND
VC	ND	12

MW-12	
Depth (ft bg)	(9'-10')
Acetone	11
cis-1,2-DCE	86
TCE	78
VC	33

MW-13	
Depth (ft bg)	(4'-5')
TCE	3.4

PES-B5		
Depth (ft bg)	(4'-8')	(12'-16')
Acetone	ND	100
cis-1,2-DCE	34	100
TCE	69	18
VC	ND	9.9

PES-B2			
Depth (ft bg)	(4'-8')	(8'-12')	(12'-16')
Acetone	ND	94	140
cis-1,2-DCE	440	3,500	16
trans-1,2-DCE	ND	7.5	6.5
TCE	4,500	ND	ND
VC	ND	1,200	ND

PES-B7		
Depth (ft bg)	(4'-7')	(15'-16')
Acetone	42	270
MEK	ND	67
cis-1,2-DCE	350	17
trans-1,2-DCE	ND	59
TCE	2,000	ND
VC	12	ND

PES-B1		
Depth (ft bg)	(4'-8')	(12'-16')
Acetone	ND	220
MEK	ND	42
cis-1,2-DCE	830	67
trans-1,2-DCE	ND	110
TCE	12,000	ND

PES-B6			
Depth (ft bg)	(4'-8')	(12'-16')	(20'-24')
Acetone	ND	320	150
cis-1,2-DCE	7	8,800	ND
Toluene	ND	ND	680
trans-1,2-DCE	ND	2,000	2,600
TCE	2,800	ND	ND
VC	ND	88	ND

Legend
- Soil Borings
- Approximate Groundwater Flow Direction
- Approximate Propery Boundary

Notes:
(µg/kg) = micrograms per kilogram
ND = Non-detect
ft bg = Feet Below Grade

Volatile Organic Compounds (VOCs) (µg/kg)	6 NYCRR Part 375 Unrestricted Use	6 NYCRR Part 375 Commercial Use
2-Butanone (MEK)	120	500,000
Acetone	50	500,000
cis-1,2-Dichloroethylene (cis-1,2-DCE)	250	500,000
Toluene	700	500,000
trans-1,2-Dichloroethylene (trans-1,2-DCE)	190	500,000
Trichloroethylene (TCE)	470	200,000
Vinyl Chloride (VC)	20	13,000

1	Paramerter reported at a concetration above the laboratory method detection limit but below the applicable regulatory standard/criteria
1	Paramerter reported at a concetration greater than 6 NYCRR Part 375 Unrestricted Use SCO
1	Paramerter reported at a concetration greater than 6 NYCRR Part 375 Commercial Use SCO

HRP
MOVE YOUR ENVIRONMENT FORWARD
ONE FAIRCHILD SQUARE
SUITE 110
CLIFTON PARK, NY 12065
(518) 877-7101
HRPASSOCIATES.COM

North

0 15 30
Feet

Revisions
No. | Date

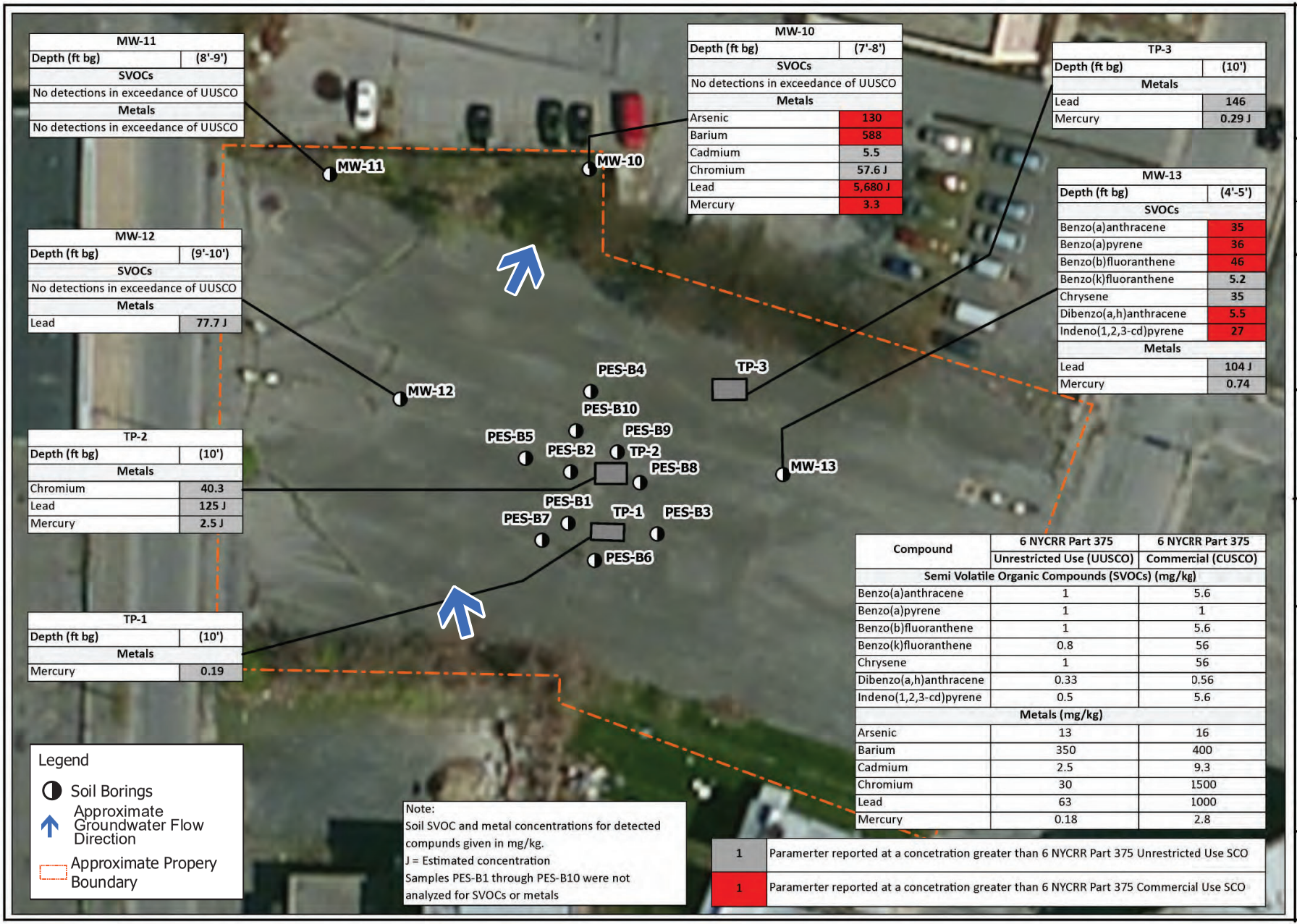
Designed By: CMS
Drawn By: CMS
Reviewed By: PM

Issue Date: 1/11/2021
Project No: DEC1012.RA
Sheet Size: 11x17

Remaining VOC Soil Contamination

222 South Ferry Street
Schenectady, New York

FIGURE NO.
3



MW-11	
Depth (ft bg)	(8'-9')
SVOCs	
No detections in exceedance of UUSCO	
Metals	
No detections in exceedance of UUSCO	

MW-10	
Depth (ft bg)	(7'-8')
SVOCs	
No detections in exceedance of UUSCO	
Metals	
Arsenic	130
Barium	588
Cadmium	5.5
Chromium	57.6 J
Lead	5,680 J
Mercury	3.3

TP-3	
Depth (ft bg)	(10')
Metals	
Lead	146
Mercury	0.29 J

MW-12	
Depth (ft bg)	(9'-10')
SVOCs	
No detections in exceedance of UUSCO	
Metals	
Lead	77.7 J

MW-13	
Depth (ft bg)	(4'-5')
SVOCs	
Benzo(a)anthracene	35
Benzo(a)pyrene	36
Benzo(b)fluoranthene	46
Benzo(k)fluoranthene	5.2
Chrysene	35
Dibenzo(a,h)anthracene	5.5
Indeno(1,2,3-cd)pyrene	27
Metals	
Lead	104 J
Mercury	0.74

TP-2	
Depth (ft bg)	(10')
Metals	
Chromium	40.3
Lead	125 J
Mercury	2.5 J

TP-1	
Depth (ft bg)	(10')
Metals	
Mercury	0.19

Compound	6 NYCRR Part 375 Unrestricted Use (UUSCO)	6 NYCRR Part 375 Commercial (CUSCO)
Semi Volatile Organic Compounds (SVOCs) (mg/kg)		
Benzo(a)anthracene	1	5.6
Benzo(a)pyrene	1	1
Benzo(b)fluoranthene	1	5.6
Benzo(k)fluoranthene	0.8	56
Chrysene	1	56
Dibenzo(a,h)anthracene	0.33	0.56
Indeno(1,2,3-cd)pyrene	0.5	5.6
Metals (mg/kg)		
Arsenic	13	16
Barium	350	400
Cadmium	2.5	9.3
Chromium	30	1500
Lead	63	1000
Mercury	0.18	2.8

Note:
Soil SVOC and metal concentrations for detected compunds given in mg/kg.
J = Estimated concentration
Samples PES-B1 through PES-B10 were not analyzed for SVOCs or metals

1	Paramerter reported at a concetration greater than 6 NYCRR Part 375 Unrestricted Use SCO
1	Paramerter reported at a concetration greater than 6 NYCRR Part 375 Commercial Use SCO

HRP
MOVE YOUR ENVIRONMENT FORWARD
ONE FAIRCHILD SQUARE
SUITE 110
CLIFTON PARK, NY 12065
(518) 877-7101
HRPASSOCIATES.COM

North

0 15 30
Feet

Revisions
No. Date

Designed By: CMS
Drawn By: CMS
Reviewed By: PWM

Issue Date: 05/19/2021
Project No: DEC1012.RA
Sheet Size: 11x17

Remaining SVOC and Metals Soil Contamination

222 South Ferry Street, Schenectady, New York

FIGURE NO.
4

HRP
MOVE YOUR ENVIRONMENT FORWARD
ONE FAIRCHILD SQUARE
SUITE 110
CLIFTON PARK, NY 12065
(518) 877-7101
HRPASSOCIATES.COM

NORTH

0 15 30
Feet

Revisions		
No.	Date	

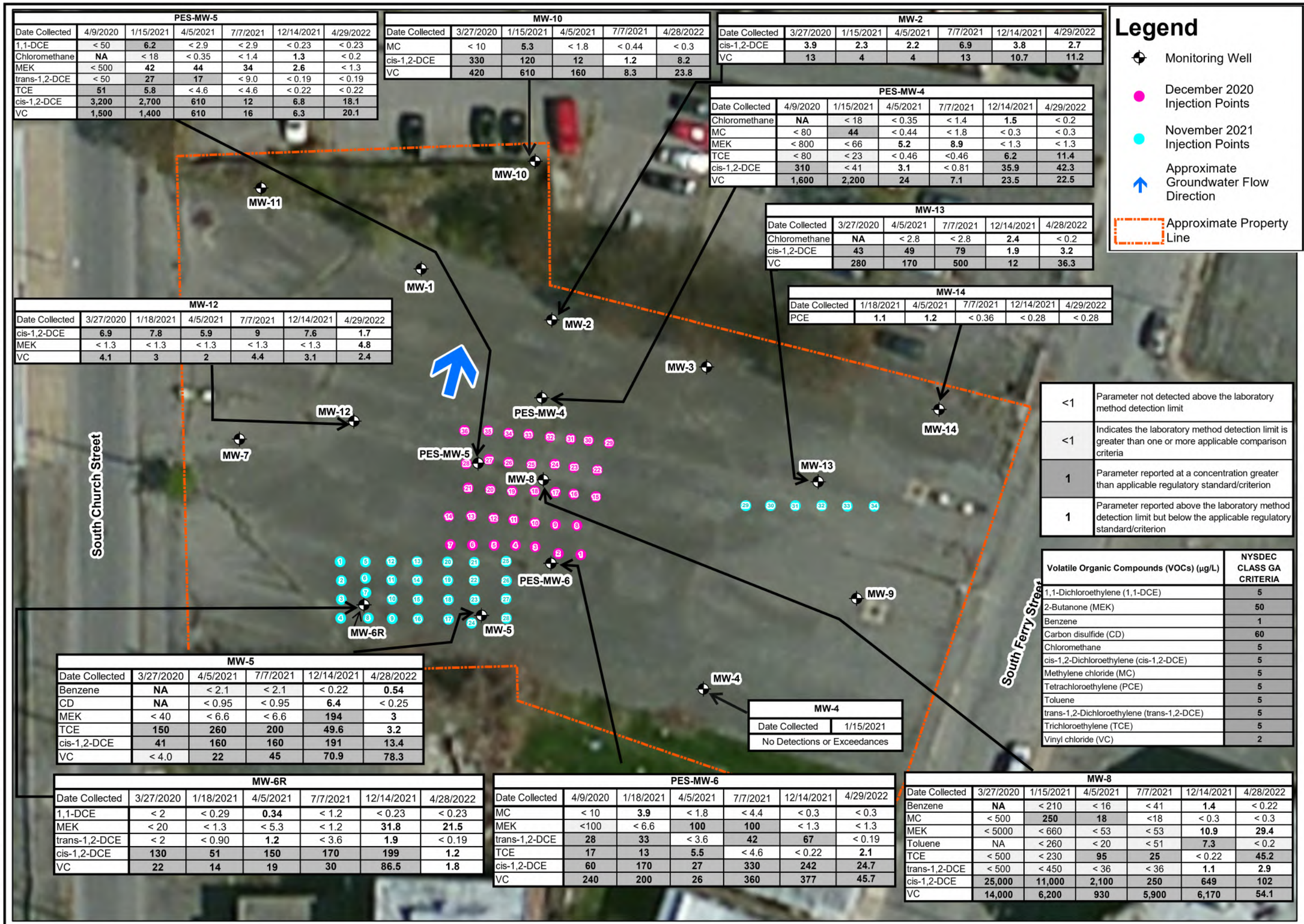
Designed By:	Drawn By:	Reviewed By:
PWM	CMS	PWM

Issue Date:	Project No:	Sheet Size:
10/11/2021	DEC1012.RA	11x17

Engineer Controls Location

222 South Ferry Street
Schenectady, New York

FIGURE NO.
5



PES-MW-5						
Date Collected	4/9/2020	1/15/2021	4/5/2021	7/7/2021	12/14/2021	4/29/2022
1,1-DCE	< 50	6.2	< 2.9	< 2.9	< 0.23	< 0.23
Chloromethane	NA	< 18	< 0.35	< 1.4	1.3	< 0.2
MEK	< 500	42	44	34	2.6	< 1.3
trans-1,2-DCE	< 50	27	17	< 9.0	< 0.19	< 0.19
TCE	51	5.8	< 4.6	< 4.6	< 0.22	< 0.22
cis-1,2-DCE	3,200	2,700	610	12	6.8	18.1
VC	1,500	1,400	610	16	6.3	20.1

MW-10					
Date Collected	3/27/2020	1/15/2021	4/5/2021	7/7/2021	4/28/2022
MC	< 10	5.3	< 1.8	< 0.44	< 0.3
cis-1,2-DCE	330	120	12	1.2	8.2
VC	420	610	160	8.3	23.8

MW-2						
Date Collected	3/27/2020	1/15/2021	4/5/2021	7/7/2021	12/14/2021	4/29/2022
cis-1,2-DCE	3.9	2.3	2.2	6.9	3.8	2.7
VC	13	4	4	13	10.7	11.2

PES-MW-4						
Date Collected	4/9/2020	1/15/2021	4/5/2021	7/7/2021	12/14/2021	4/29/2022
Chloromethane	NA	< 18	< 0.35	< 1.4	1.5	< 0.2
MC	< 80	44	< 0.44	< 1.8	< 0.3	< 0.3
MEK	< 800	< 66	5.2	8.9	< 1.3	< 1.3
TCE	< 80	< 23	< 0.46	<0.46	6.2	11.4
cis-1,2-DCE	310	< 41	3.1	< 0.81	35.9	42.3
VC	1,600	2,200	24	7.1	23.5	22.5

MW-13					
Date Collected	3/27/2020	4/5/2021	7/7/2021	12/14/2021	4/28/2022
Chloromethane	NA	< 2.8	< 2.8	2.4	< 0.2
cis-1,2-DCE	43	49	79	1.9	3.2
VC	280	170	500	12	36.3

MW-14					
Date Collected	1/18/2021	4/5/2021	7/7/2021	12/14/2021	4/29/2022
PCE	1.1	1.2	< 0.36	< 0.28	< 0.28

MW-12						
Date Collected	3/27/2020	1/18/2021	4/5/2021	7/7/2021	12/14/2021	4/29/2022
cis-1,2-DCE	6.9	7.8	5.9	9	7.6	1.7
MEK	< 1.3	< 1.3	< 1.3	< 1.3	< 1.3	4.8
VC	4.1	3	2	4.4	3.1	2.4

MW-5					
Date Collected	3/27/2020	4/5/2021	7/7/2021	12/14/2021	4/28/2022
Benzene	NA	< 2.1	< 2.1	< 0.22	0.54
CD	NA	< 0.95	< 0.95	6.4	< 0.25
MEK	< 40	< 6.6	< 6.6	194	3
TCE	150	260	200	49.6	3.2
cis-1,2-DCE	41	160	160	191	13.4
VC	< 4.0	22	45	70.9	78.3

MW-4	
Date Collected	1/15/2021
No Detections or Exceedances	

MW-6R						
Date Collected	3/27/2020	1/18/2021	4/5/2021	7/7/2021	12/14/2021	4/28/2022
1,1-DCE	< 2	< 0.29	0.34	< 1.2	< 0.23	< 0.23
MEK	< 20	< 1.3	< 5.3	< 1.2	31.8	21.5
trans-1,2-DCE	< 2	< 0.90	1.2	< 3.6	1.9	< 0.19
cis-1,2-DCE	130	51	150	170	199	1.2
VC	22	14	19	30	86.5	1.8

PES-MW-6						
Date Collected	4/9/2020	1/18/2021	4/5/2021	7/7/2021	12/14/2021	4/29/2022
MC	< 10	3.9	< 1.8	< 4.4	< 0.3	< 0.3
MEK	<100	< 6.6	100	100	< 1.3	< 1.3
trans-1,2-DCE	28	33	< 3.6	42	67	< 0.19
TCE	17	13	5.5	< 4.6	< 0.22	2.1
cis-1,2-DCE	60	170	27	330	242	24.7
VC	240	200	26	360	377	45.7

MW-8						
Date Collected	3/27/2020	1/15/2021	4/5/2021	7/7/2021	12/14/2021	4/28/2022
Benzene	NA	< 210	< 16	< 41	1.4	< 0.22
MC	< 500	250	18	<18	< 0.3	< 0.3
MEK	< 5000	< 660	< 53	< 53	10.9	29.4
Toluene	NA	< 260	< 20	< 51	7.3	< 0.2
TCE	< 500	< 230	95	25	< 0.22	45.2
trans-1,2-DCE	< 500	< 450	< 36	< 36	1.1	2.9
cis-1,2-DCE	25,000	11,000	2,100	250	649	102
VC	14,000	6,200	930	5,900	6,170	54.1

Legend

- Monitoring Well
- December 2020 Injection Points
- November 2021 Injection Points
- Approximate Groundwater Flow Direction
- Approximate Property Line

<1	Parameter not detected above the laboratory method detection limit
<1	Indicates the laboratory method detection limit is greater than one or more applicable comparison criteria
1	Parameter reported at a concentration greater than applicable regulatory standard/criterion
1	Parameter reported above the laboratory method detection limit but below the applicable regulatory standard/criterion

Volatile Organic Compounds (VOCs) (µg/L)	NYSDEC CLASS GA CRITERIA
1,1-Dichloroethylene (1,1-DCE)	5
2-Butanone (MEK)	50
Benzene	1
Carbon disulfide (CD)	60
Chloromethane	5
cis-1,2-Dichloroethylene (cis-1,2-DCE)	5
Methylene chloride (MC)	5
Tetrachloroethylene (PCE)	5
Toluene	5
trans-1,2-Dichloroethylene (trans-1,2-DCE)	5
Trichloroethylene (TCE)	5
Vinyl chloride (VC)	2

HRP
MOVE YOUR ENVIRONMENT FORWARD
ONE FAIRCHILD SQUARE
SUITE 110
CLIFTON PARK, NY 12065
(518) 877-7101
HRPASSOCIATES.COM

North

0 15 30 Feet

Revisions

No.	Date

Designed By: PRL
Drawn By: CMS
Reviewed By: PWM

Issue Date: 06/17/2022
Project No: DEC1012.RA
Sheet Size: 11x17

Groundwater VOC Detections - March 2020 to April 2022

222 South Ferry Street
Schenectady, New York

FIGURE

6

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Path: S:\Data\NNYDEC - NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION\SCHENECTADY\222 SOUTH FERRY STREET\DEC1012RA\GIS\Q1 - Figure 2 - Monitoring Well and Injection Point Locations