PROPOSED REMEDIAL ACTION PLAN

George A. Robinson & Co., Inc.
State Superfund Project
Town of Perinton, Monroe County
Site No. 828065
March 2025

NEW YORK STATE | Department of Environmental Conservation

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

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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 has resulted in threats to public health and the environment that would be addressed by the remedy proposed by this Proposed Remedial Action Plan (PRAP). The disposal of hazardous wastes at this site, as more fully described in Section 6 of this document, has contaminated various environmental media. The proposed remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This PRAP identifies the preferred remedy, summarizes the other alternatives considered, and discusses the reasons for the preferred remedy.

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.

DECInfo Locator- Web Application
https://gisservices.dec.ny.gov/gis/dil/index.html?rs=828065

Fairport Public Library
1 Fairport Village Landing,
Fairport, NY 14450
(585) 223-9091
Hours: Mon- Thur 9 AM-9 PM
Fri 9 AM-6 PM
Sat 9 AM- 5 PM
Sun 12 PM- 3 PM

Penfield Public Library
1985 Baird Rd,
Penfield, NY 14526
(585) 340-8720
Hours: Mon-Thur 9 AM-8:30 PM
Fri 9:30 AM-6 PM
Sat 10 AM- 5 PM
Sun 1 PM- 5PM

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:

A public comment period has been set from:

03/20/2025 to 04/20/2025

A public meeting is scheduled for the following date:

04/03/2025 at 6:00 PM

Public meeting location:

Virtual Meeting:
https://meetny-gov.webex.com/weblink/register/r1e99145bab44d620addba48161cfc721

At the meeting, the findings of the Remedial Investigation (RI) and the Feasibility Study (FS) 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:

Nakya Stewart
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
nakya.stewart@dec.ny.gov

The Department may modify the proposed remedy or select another of the alternatives 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 477 Whitney Road in the Town of Perinton, Monroe County. The 13.67-acre site is situated in a light industrial/residential area on the southeast of the City of Rochester. To the north and across Whitney Road from the site are five mixed commercial/industrial properties comprised of three light industrial facilities and two commercial structures. Residential properties, a wooded ravine, and an unnamed tributary to Irondequoit Creek are located west of the site. CSX railroad tracks aligned generally east-west are located immediately south of the site. Further south are residential properties on Midvale Drive and a public use trail between Midvale Drive and the Irondequoit Creek. The nearest residential area to the site is approximately 0.1 miles south, on the northern side of Midvale Drive. The site is fenced, and access is controlled by a locking entrance gate via Whitney Road.

Site Features: The site contains 10 wood-frame buildings, two of which are occupied and used for the active, on-site manufacturing business (Buildings 102 and 201). The site is located within the Irondogenesee Primary Water Supply Aquifer and is considered a major recharge area for the aquifer. The ground surface of the site is composed of unmaintained grassy fields, maintained lawn areas, wooded and brush covered areas, recessed lagoons, and some asphalt pavement. The eastern two-thirds of the site is relatively flat. The western third of the site slopes gently to the west/southwest toward a ravine beyond the site fence where surface water drains to an unnamed tributary of the Irondequoit Creek. The residential area, beginning at Wilson Ave, Westward (including Legion Eyer Park), along with the residential areas northwest of the site from Bluff Drive and Lincoln Road Westward are serviced by municipal water supply. The Midvale Drive area is also serviced by public (County) sewer.

Current Zoning/Use(s): The site is currently active and is zoned for commercial use. Active site operations include metal parts manufacturing by Robinson Tools, LLC. Three buildings in the western portion of the site are vacant and not suitable for personal or business-related uses.

Past Use of the Site: The site was originally part of the 48-acre John Case Farm. In 1930, 12 acres of the farm were sold to the Rochester Fireworks Company owned by Mr. George Robinson. The Rochester Fireworks Company manufactured fireworks in the 1930s and flares for the United States Navy during World War II. The Robinson Company started metal fabrication and manufacturing operations at the site in the mid-1950s. Processes included electroplating, anodizing, chemical conversion of aluminum, and mechanical finishing. Investigations at the site in 2005 revealed that substantial amounts of waste trichloroethene (TCE) had been disposed of on the property at two locations: directly west of Building 101 and at the western corner of the property. Also, process wastewater that contained heavy metals, hexavalent chromium, and cyanide was discharged to multiple lagoons at the western side of the site. Two lagoons and one settling pond are still present at the western portion of the site, adjacent to Buildings 52 and 64. Process water was presumably discharged to ground surface in these areas during historical site processes.

Site Geology and Hydrogeology: The site is in the Eastern Lake Section of the Central Lowlands physiographic province. A majority of the Central Lowlands province was glaciated during Pleistocene times. The Eastern Lakes Section is covered by relatively young glacial till. Soils in the vicinity of the site are comprised of lacustrine silt and clay and till formations. Regional studies of the underlying aquifer indicate that overburden in the area is estimated to be approximately 50 to 60 feet thick, with upper layers composed of alternating silt, clay, and fine sand underlain by coarser sand and gravel deposits. Bedrock beneath the overburden is reported to be relatively flat bedded limestone and dolostone of the Upper Silurian Lockport Group. The depth to groundwater below ground surface ranges from 5 feet on the eastern side of the site to 37 feet on the western side of the site. Groundwater flow at the site is generally to the west toward the Irondequoit Creek and its tributaries.

A site location map is attached as Figure 1.

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, an alternative that restricts the site to commercial use (which allows for industrial use) as described in Part 375-1.8(g) is being evaluated in addition to an alternative that 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.

Disadvantaged Communities (DACs) are defined by the Climate Leadership and Community Protection Act (CLCPA) as communities that are 1) Burdened by environmental pollution or other environmental hazards which bear negative health effects, 2) Containing high concentrations of people with low socioeconomic status including but not limited to low income, high unemployment, low levels of educational attainment, and/or members of groups, ethnicities, and populations that have experienced historical discrimination based on race or ethnicity, and 3) Vulnerable to impacts of climate change including floods, storm surges, and/or urban heat island effects. The Disadvantaged Communities Criteria, created by the Climate Justice Working Group, identifies communities of focus for remediation and environmental cleanup efforts.

According to the CLCPA,DACs are identified based on a combination of environmental, economic, and health criteria. An evaluation was conducted to determine the proximity of the site to a DAC and whether the proposed remediation places a disproportionate burden on a DAC. Based upon this evaluation, the site is located approximately 1.2 miles from a DAC; therefore, further DAC analysis is not required.

CLCPA defines Potential Environmental Justice Area (PEJA) communities as U.S. Census block groups of 250 to 500 households that met or exceeded at least one of the following statistical thresholds in the Census:

•At least 52.42% of the population in an urban area reported themselves to be members of minority groups
•At least 26.28% of the population in a rural area reported themselves to be members of minority groups
•At least 22.82% of the population in an urban or rural area had household incomes below the federal poverty level

An evaluation was conducted to determine the proximity of the site to PEJA communities. There are two census block groups within a 0.5 mile of the site that are identified as PEJA communities, one in the Town of Perinton and one in the Village of Fairport. Property residents located within both tracts are within proximity to the site and have the potential to be impacted by an increase in exposure of potential pollutants that may be produced during remediation operations. The census block groups identified as PEJA communities, shown on Figure 11, are as follows:

<u>Census Block Group 360550119014</u>
Census Block Group 360550119014 consists of a portion of the Town of Perinton located east of the site. The factors that contribute PEJA identification in this block group include:
- Percentage of Population in an Urban Area Below Poverty Level: 35.13%

<u>Census Block Group 360550118006</u>
Census Block Group 360550118006 consists of a portion of the Village of Fairport located southeast of the site. The factors that contribute PEJA identification in this block group include:
- Percentage of Population in an Urban Area Below Poverty Level: 23.45%

SECTION 5: <u>ENFORCEMENT STATUS</u>

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:

DLA Piper, LLP

GEO. A. ROBINSON & CO., Inc

SECTION 6: <u>SITE CONTAMINATION</u>

6.1: <u>Summary of the Remedial Investigation</u>

A 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 (SBs), 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
- surface water
- soil
- sediment
- sub-slab vapor
- indoor air

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
In accordance with the CLCPA, DACs are identified based on a combination of environmental, economic, and health criteria. A site-specific evaluation will determine the proximity of the site to a DAC and whether the proposed remediation places a disproportionate burden on a DAC.

6.1.2: **RI Results**

The data have identified contaminants of concern (COCs) at this site. 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 site 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 COCs identified at this site are:

tetrachloroethene (PCE)	lead
trichloroethene (TCE)	manganese
cis-1,2-dichloroethene (cis-1,2-DCE)	nickel
cadmium	zinc
chromium	perfluorooctane sulfonic acid (PFOS)
copper	perfluorooctanoic acid (PFOA)

As illustrated in Exhibit A, the COCs exceed the applicable SCGs for:

- groundwater
- soil
- soil vapor intrusion (SVI)

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.

There were no IRMs performed at this site during the RI.

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.

The Fish and Wildlife Resources Impact Analysis (FWRIA) for the site, which is included in the RI Report, presents a detailed discussion of the existing and potential impacts from the site to fish and wildlife receptors. The FWRIA includes a general site description, attempts to identify fish and wildlife resources on the Site within a 0.5-mile radius, contaminant migration pathways, fish and wildlife exposure pathways, and constituents of potential ecological concern (COPECs) through comparison of environmental data to screening benchmarks.

Nature and Extent of Contamination: Soil, sediment, and groundwater samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, including hexavalent chromium and mercury, polychlorinated biphenyls (PCBs), and pesticides. Soil and groundwater samples were also analyzed for per- and polyfluoroalkyl substances (PFAS). Surface water samples were analyzed for VOCs, metals, and hexavalent chromium. SVI sampling for VOCs was also performed in both on-site and off-site structures. Based on the results, the primary COCs at the site are TCE, cis 1,2-DCE, cadmium, copper, nickel, zinc, and PFOS.

Soil

PCE was detected in one soil sample from boring SB-134 (7.5-8 feet below ground surface ([bgs]) at a concentration of 290 milligrams per kilogram (mg/kg) (a mg/kg is equivalent to a part per million [ppm]), which exceeded the Commercial Use Soil Cleanup Objective (SCO) of 150 ppm. No other VOCs were detected at concentrations exceeding their respective Commercial Use SCOs in soil samples. In addition to PCE, concentrations of the following VOCs exceeded Protection of Groundwater SCOs in site soil samples: 2-butanone, acetone, chloroform, TCE, cis-1,2-DCE, methylene chloride, and total xylenes.

Concentrations of cadmium, copper, and, to a lesser extent, nickel, lead, and zinc exceeded their respective Commercial Use SCOs in site surface and subsurface soil samples. All exceedances were in samples collected within 5 feet of ground surface. A majority of the soil samples with metals exceedances were collected in the vicinity of presumed former settling ponds or lagoons where process water was discharged. The remainder were located at the perimeter of Building 101. The greatest concentrations of metals were detected in surface soil sample SS-17, located in the presumed former settling pond adjacent to Buildings 52 and 64 (respective Commercial Use SCO shown in parentheses):

- cadmium – 1,560 ppm (9.3 ppm)
- copper – 5,690 ppm (270 ppm)
- nickel – 23,500 ppm (310 ppm)
- lead – 1,660 ppm (1,000 ppm)
- zinc – 37,700 ppm (10,000 ppm)

In addition to the above metals, silver was reported in one soil sample at a concentration greater than its Protection of Groundwater SCO of 8 ppm; the silver concentration in this sample, collected between 3.5 and 4 feet bgs at SB-126 (within the historical settling pond just west of Building 101), was 14.4 ppm.

SVOCs, primarily polycyclic aromatic carbons (PAHs), were detected at concentrations greater than their respective Commercial Use SCO in select soil samples; however, these compounds are indicative of contaminants found in urban sourced fill or associated with asphalt materials and are not considered to be associated with a spill or release at the site. The greatest PAH concentrations were detected in surface soil sample SS-19, located in the presumed former settling pond at the westernmost corner of the site (respective Commercial Use SCO shown in parentheses):

- benzo(a)anthracene – 13,000 ppm (5,600 ppm)
- benzo(a)pyrene – 9,800 ppm (1,000 ppm)
- benzo(b)fluoranthene – 12,000 ppm (5,600 ppm)
- dibenz(a,h)anthracene – 1,700 ppm (1,700 ppm)

Concentrations of the following 15 PAHs exceeded Protection of Groundwater SCOs in site soil samples: 2-methylnapthalene, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, fluorene, indeno(1,3,4-cd)pyrene, phenanthrene, and pyrene. As noted previously, PAHs are ubiquitous in urban shallow soils and these detections are not considered to be associated with a spill or release at the site.
No polychlorinated biphenyls (PCBs) or pesticides were detected in soil samples at concentrations exceeding their respective Commercial Use SCOs.

The PFAS compounds PFOA and/or PFOS were detected in at least one soil sample from each of the 18 soil borings advanced in July 2023. PFOA and PFOS were not detected at concentrations greater than their respective Commercial Use guidance values. PFOA concentrations did not exceed the NYSDEC Protection of Groundwater guidance value of 800 parts per trillion (ppt) in soil samples collected during this event. PFOS concentrations did exceed the NYSDEC Protection of Groundwater guidance value of 1000 ppt in soil samples collected from 14 borings: SB-202, SB-203, SB-205, SB-207, SB-208, SB-209, SB-210, SB-211, SB-212, SB-213, SB-214, SB-215,

SB-216, and SB-218. The maximum PFOS concentration was 21,200 ppt in a sample collected between ground surface and 0.5 feet depth at SB-216.
Data does not indicate any off-site impacts in soil related to this site.

On-Site Groundwater

Groundwater samples from on-site locations were analyzed for VOCs, metals (including hexavalent chromium and mercury), SVOCs, pesticides, PCBs, PFAS, and 1,4 dioxane. There were no SVOC or pesticide detections that exceeded standards or guidance values. The following VOCs, metals, PCBs, and PFAS were detected at concentrations exceeding their respective NYSDEC groundwater standards (sample location with greatest concentration listed; NYSDEC standard or guidance value shown in parentheses):

VOCs
- 1,1dichloroethane at MW-2 – 7.2 micrograms per liter (µg/L) (a µg/L is equivalent to a part per billion [ppb]) (5 ppb)
- 1,1-dichloroethene at SB-101 – 61 ppb (5 ppb
- acetone at MW-4 – 67 ppb (50 ppb)
- cis-1,2-DCE at SB-25 – 2,200 ppb (5 ppb)
- trans-1,3-dichloropropene at MW-2 – 14 ppb (5 ppb)
- methylene chloride at SB-101 – 150 ppb (5 ppb)
- naphthalene at SB-38 – 23 ppb (10 ppb)
- PCE at SB-08 – 32 ppb (5 ppb)
- TCE at SB-25 – 210,000 ppb (5 ppb)
- vinyl chloride at MW-2 – 360 ppb (2 ppb)

Metals
- arsenic at PZ-2 – 47 pbb (25 ppb)
- beryllium at PZ-3 – 3.3 ppb (3 ppb)
- cadmium at MW-2 – 370 ppb (5 ppb)
- chromium at PZ-3 – 150 ppb (50 ppb)
- copper at MW-2 – 1,300 pbb (200 ppb)
- hexavalent chromium at MW-3S – 88 ppb (50 ppb)
- iron at PZ-3 – 134,000 ppb (300 ppb)
- magnesium at PZ-1/PZ-3 – 190,000 ppb (35,000 ppb)
- manganese at PZ-1 – 7,400 ppb (300 ppb)
- nickel at MW-2 – 9,400 ppb (100 ppb)
- thallium at PZ-1 – 46 ppb (0.5 ppb)

PCBs
- Aroclor 1232 at SB-116 – 27 ppb (0.09 ppb)

PFAS
- PFOS at MW-3S – 3,000 ppt (2.7 ppt)
- PFOA at MW-3S – 8.2 ppt (6.7 ppt)

During the Site Characterization Investigation (SCI), the greatest TCE concentration (210,000 ppb) was detected in a shallow grab groundwater sample collected from soil boring SB-25, located adjacent to the southwest corner of Building 101. During the RI, the greatest TCE concentration was detected in a groundwater sample collected from shallow monitoring well MW-3S (73,000 ppb), located east of Building 64. Elevated concentrations of VOCs appear to originate at the two source areas mentioned above and migrate downgradient to the southwest.

The solubility limit of TCE in water is approximately 1,472,000 ppb; therefore, concentrations of TCE in groundwater greater than 14,720 ppb, or 1 percent (%) of its single-component solubility limit in groundwater, indicate that there is a potential for dense nonaqueous phase liquid (DNAPL) to be present at the site. TCE was present at a concentration greater than 1% solubility in shallow groundwater samples collected during both the RI and SCI from three areas: the historical lagoon and settling ponds west of Building 64, east of Building 64 in monitoring well MW-3S, and west of Building 101.

The majority of metals exceedances were in samples from locations in the vicinity of Building 101, downgradient of Building 101, and east and west of Building 64. Hexavalent chromium, identified as a constituent of potential concern prior to the RI, was only detected in one groundwater sample (MW-3S) during the first sampling event in 2018 (at a concentration of 88 ppb, which exceeded the NYSDEC groundwater standard of 50 ppb). Hexavalent chromium concentrations did not exceed the NYSDEC groundwater standard in samples collected during sampling events in 2019 or 2022.

One PCB, Aroclor 1232, was detected at a concentration exceeding the NYSDEC groundwater standard in one groundwater sample collected during the RI. PCBs are not associated with historical site activities and are not considered to be COCs at this site. Neither SVOCs nor pesticides were not detected at concentrations exceeding NYSDEC groundwater standards in groundwater samples collected during the RI.

Off-Site Groundwater

Groundwater samples from off-site locations were analyzed for VOCs, metals (including hexavalent chromium and mercury), SVOCs, pesticides, PCBs, PFAS, and 1,4 dioxane. The following VOCs, metals, and PFAS were detected at concentrations exceeding their respective NYSDEC groundwater standards (sample location with greatest concentration listed; NYSDEC standard or guidance value shown in parentheses):

VOCs

- cis-1,2-DCE at MW-11 – 100 ppb (5 ppb)
- TCE at MW-11 – 230 ppb (5 ppb)
- vinyl chloride at SW-8-SEEP – 14 ppb (2 ppb)

Metals (greatest concentrations all at drive point location DP-1):

- antimony – 10 ppb (3 ppb)
- arsenic – 90 ppb (25 ppb)
- beryllium – 5.3 ppb (3 ppb)

- chromium – 200 ppb (50 ppb)
- copper – 260 ppb (200 ppb)
- iron – 231,000 ppb (300 ppb)
- lead – 110 ppb (25 ppb)
- magnesium – 247,000 ppb (35,000 ppb)
- manganese – 7,600 ppb (300 ppb)
- mercury – 1.1 ppb (0.7 ppb)
- nickel – 290 ppb (100 ppb)

PFAS

- PFOS at MW-11 – 3.6 ppt (2.7 ppt)
- PFOA at MW-11 – 31 ppt (6.7 ppt)

TCE appears to be migrating south and west off-site, as shown in groundwater results from downgradient off-site wells MW-7, MW-9, MW-10, and MW-11 and sample locations DP-1 and SW-8-SEEP. The greatest off-site TCE concentrations were detected in the following samples (listed in order of increasing distance from the site): DP-1 (120 ppb), MW-11 (230 ppb), and SW-8-SEEP (110 ppb). The sample from SW-8-SEEP was intended to be collected as a surface water sample; however, at the time of collection, no surface water was present. Instead, the water was collected from approximately four inches below the ground surface and results were compared to NYSDEC groundwater standards. This location is approximately 860 feet south and west of the site. There were no detections of VOCs in samples collected at monitoring well MW-14, which is downgradient and west of SW-8-SEEP. As such, the dissolved-phase TCE plume is delineated to the southwest of the site. There were no detections of VOCs in groundwater samples collected from on-site upgradient monitoring wells MW-1 and MW-13.

PFOA and/or PFOS were detected in groundwater samples from 15 of the 20 monitoring wells sampled during August 2022. PFOS concentrations exceeded the NYSDEC ambient water guidance value of 2.7 ppt in the samples collected from on-site wells MW-2 (110 ppt), MW-3S (3,000 ppt), MW-3D (3.6 ppt), MW-12 (17 ppt), PZ-2 (190 ppt), and PZ-3 (18 ppt), and from off-site downgradient wells MW-6S (4.8 ppt), MW-11 (3.6 ppt) and MW-14 (3.3 ppt). PFOS concentrations did not exceed the NYSDEC guidance value in samples collected from on-site upgradient locations PZ-1, MW-1, or MW-13. PFOA concentrations exceeded the NYSDEC guidance value of 6.7 ppt in the samples from on-site well MW-3S (8.2 ppt) and off-site downgradient well MW-11 (31 ppt).

PFOS and PFOA are considered site COCs based on the PFOS concentrations in site soil, PFOS and PFOA concentrations in groundwater, and in accordance with the Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC Part 375 Remedial Programs document. A 2009 study conducted by the USEPA documented the use of PFAS-containing mist suppressants by chrome electroplating facilities. It is possible that PFAS are present at the site as a result of potential past use of PFAS-containing mist suppressants related to manufacturing processes employed at the site.

Soil Vapor and Indoor Air

SVI sampling was conducted in on-site Buildings 101, 102, 202, 203, and 302.Based on the sampling results, no further action was recommended for Buildings 101, 202, 203, or 302. The NYSDOH recommended actions to address exposures in Building 102 based on the indoor air TCE concentration (3.2 micrograms per cubic meter [$\mu g/m^3$]) and sub-slab vapor TCE concentration (5.6 $\mu g/m^3$) in samples collected in 2018. A letter was prepared by the NYSDOH and sent to the site owner on December 21, 2018 recommending further action to address the potential for exposure at Building 102. During supplemental SVI investigations conducted in March 2021 and March 2023, TCE concentrations again exceeded the NYSDOH mitigation guidance values in indoor air samples collected from Building 102 (2.8 $\mu g/m^3$ in the 2021 sample and 2.7 $\mu g/m^3$ in the 2023 sample).

SVI sampling was also conducted in 12 off-site buildings. Based on the sampling results, no further action was recommended for any of the off-site buildings.

Sub-Slab and Sump Water

During the SVI investigation, sub-slab water samples were collected from a Midvale Drive property, located south of the site, and from on-site Building 102 where soil vapor was not recoverable because groundwater was present at the bottom of the slab. Sump water samples were also collected from basement sumps at Midvale Drive properties to provide additional data. No VOCs were detected at concentrations exceeding their respective NYSDEC groundwater standards in water samples collected from sub-slab or sump locations.

Sediment

Neither VOCs nor SVOCs were detected in sediment samples at concentrations exceeding their respective sediment guidance values (SGVs). Mercury was detected in one sediment sample (SED-3, collected west of the site at the unnamed tributary) at a concentration of 0.41 ppm, which exceeded the Class A SGV of 0.2 ppm. Nickel was detected in a sediment sample (SED-North, collected southwest of the site at the northern extent of the Day Camp pond) at an estimated concentration of 24.9 ppm, which exceeded the Class A SGV of 23 ppm. Lead and zinc were detected in a sediment sample (SED-South, collected southwest of the site at the southern extent of the Day Camp pond) at concentrations of 36.6 ppm and 130 ppm respectively, both of which exceeded the respective Class A SGVs for lead and zinc of 36 ppm and 120 ppm. No other metals were detected in sediment samples at concentrations exceeding their respective SGVs.

Surface Water

Surface water samples collected from the unnamed tributary to Irondequoit Creek and Irondequoit Creek west of the site, as well as from Thomas Creek south of the site and the Day Camp pond southwest of the site were analyzed for VOCs and metals (including hexavalent chromium). There were no analyte detections that exceeded the respective surface water standards in samples collected from the Irondequoit Creek, Thomas Creek, or Day Camp pond. Concentrations of cis-1,2-DCE, TCE, and vinyl chloride exceeded their respective surface water standards in the one sample collected from the marsh downgradient of the site. The cis-1,2-DCE concentration in a sample collected from a drainage ditch south of the site (5.1 ppb) slightly exceeded the 5 ppb surface water standard.

Special Resources Impacted/Threatened: The results of the criteria-specific analysis indicate that exposure to COPECs in soil, sediment, and surface water is not a significant ecological exposure pathway. Therefore, conditions at the site do not represent significant risk to ecological receptors.

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.*

Access to the site is restricted by a fence. However, people who enter the site may come into contact with contaminants in soil by walking on the site, digging, or otherwise disturbing the soil. People are not drinking the contaminated groundwater because the area is served by a public water supply that is not affected by this contamination. VOCs in the groundwater and/or soil may move into the soil vapor (air spaces within the soil), which in turn may move into 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. Site contaminants are present in the indoor air of Building 102 at levels above air guidelines. Environmental sampling indicates soil vapor intrusion as a result of this site 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 (RAOs) 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 groundwater aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Prevent the discharge of contaminants to surface water.
- 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.
- Prevent ingestion/direct contact with contaminated soil.

Soil Vapor

RAO 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 THE PROPOSED REMEDY

To be selected, the remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. The remedy must also attain the RAOs identified for the site, which are presented in Section 6.5. Potential remedial alternatives for the Site were identified, screened, and evaluated in the FS Report.

A summary of the remedial alternatives that were considered for this site is presented in Exhibit B. Cost information is presented in the form of present worth, which represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved. A summary of the Remedial Alternatives Costs is included as Exhibit C.

The basis for the Department's proposed remedy is set forth in Exhibit D.

The proposed remedy is referred to as the Source Soil Excavation, Soil Treatment through In-Situ Stabilization, and Groundwater Treatment with Site Management remedy.

The estimated present worth cost to implement the remedy is $7,655,000. The cost to construct the remedy is estimated to be $5,960,000 and the estimated average annual cost is estimated to be $88,000 with one-time costs of $220,000 in Year 2 and $270,000 in Year 4.

The elements of the proposed remedy are as follows:

1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. A pre-design investigation will be conducted to collect additional data necessary to complete the design.

The remedial design will involve the design of:
- The demolition of Buildings 52, 64, 73, and 101;
- A vapor intrusion mitigation system in Building 102;
- Excavation or in-situ stabilization of unsaturated soil source areas;
- ISCO injection using direct push technology (DPT); and
- Colloidal carbon injection using DPT.

Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and 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 gases 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;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development including the CLCPA within DACs and/or PEJAs, where applicable.

As part of the remedial design program, to evaluate the remedy with respect to green and sustainable remediation principles, an environmental footprint analysis will be completed. The environmental footprint analysis will be completed using an accepted environmental footprint analysis calculator such as the USEPA Spreadsheets for Environmental Footprint Analysis (SEFA), SiteWise(TM) (available in the Sustainable Remediation Forum library), or similar Department-accepted tool. Water consumption, greenhouse gas emissions, renewable and non-renewable energy use, waste reduction and material use will be estimated, and goals for the project related to these green and sustainable remediation metrics, as well as for minimizing community impacts, protecting habitats and natural and cultural resources, and promoting environmental justice, will be incorporated into the remedial design program, as appropriate. The project design specifications will include detailed requirements to achieve the green and sustainable remediation goals. Further, progress with respect to green and sustainable remediation metrics will be tracked during implementation of the remedial action and reported in the Final Engineering Report, including a comparison to the goals established during the remedial design program.

In addition to the GSR BMPs identified the following additional exposure mitigation measures should be implemented as part of the remedy to reduce the potential exposures of the PEJAs located within 0.5-miles of the Site:

- Implementation of more extensive Community Air Monitoring Program (CAMP), including if total organic vapor levels exceed 5 ppm above background, work activities shall be halted and monitoring continued under the provisions of a Vapor Emission Response Plan, collection of background data prior to work commencing and frequent review and reporting of data collected, in order to assess whether mitigation is needed. If any organic levels greater than 5 ppm over background are identified 200 feet downwind from the work area or half the distance to the nearest residential or commercial property, whichever is less, all work activities shall be halted, additional monitoring and abatement shall be required and, if unsuccessful, a Major Vapor Emission Response Plan shall be put into effect if organic vapor levels are greater than 10 ppm above background levels.
- Optimization of identification of injectants by conducting bench tests and ensuring proper injectant mixing.
- Minimization of excess soil generation by completing micro-sampling to identify areas for excavation;
- Reduce to the extent practicable VOC emissions, covering exposed soils and tarping haul vehicles and implementing dust suppression and a no visible fugitive dust policy.
- Minimizing electrical consumption through selection of most energy-efficient equipment and installation or purchase of green or renewable energy providers when possible.
- Minimization of dust emissions and production during excavation and intrusive operations.
- Selection of fuel-efficient and/or Ultra-Low Sulfur Diesel fuel vehicles for transportation.
- Sourcing of materials from shortest possible distance.

Additionally, the remedial design program will include a climate change vulnerability assessment, to evaluate the impact of climate change on the project site and the proposed remedy. Potential vulnerabilities associated with extreme weather events (e.g., hurricanes, lightning, heat stress and drought), flooding, and sea level rise will be identified, and the remedial design program will incorporate measures to minimize the impact of climate change on potential identified vulnerabilities.

2. Building Demolition and Source Soil Excavation

Buildings 52, 64, 73, and 101 will be demolished and materials that cannot be beneficially reused on-site will be taken off-site for proper disposal in order to implement the remedy. Dust and storm water run-off control measures will be employed to minimize any short-term impacts. Buildings 52, 64, and 73 are in severe disrepair and have been deemed unsafe for occupation and entry for the purposes of completing an investigation to assess soil quality beneath these buildings. Contaminated soils that may be contributing to observed groundwater contamination and a persistent impact to human health and the environment are suspected to be present beneath Buildings 52, 64, and 73 as well as beneath Building 101, which appears to currently be used exclusively for storage. This potential source of contamination will require further investigation, delineation, and potentially remediation during the remedial design or construction phase. There is no safe, effective, and efficient way to carry out the requisite investigation with Buildings 52, 64, 73 and 101 in their current condition so they will need to be demolished. Further investigation will include advancement of soil borings beneath and surrounding building footprints to delineate and characterize soil source impacts and identify additional excavation areas and maximum depths, if any.

Collection and analysis of confirmation samples at planned maximum remedial excavation depths will be used to verify that SCOs for the site have been achieved. If confirmation sampling indicates that SCOs were not achieved at these remedial depths, the Remedial Party must notify the NYSDEC, submit the sample results and, and in consultation with the NYSDEC, determine if further remedial excavation is necessary. Further excavation for development will proceed after confirmation samples demonstrate that SCOs for the site have been achieved.

Based on the currently-available design information, approximately 3,000 cubic yards of contaminated unsaturated soil will be removed from the site for proper disposal at a disposal facility approved to accept F-listed waste. To ensure proper handling and disposal of excavated material, waste characterization sampling will be completed for all identified contaminated site material. Waste characterization sampling will be performed exclusively for the purposes of off-site disposal in a manner suitable to receiving facilities and in conformance with applicable federal, state and local laws, rules, and regulations and facility-specific permits.

On-site soil that does not exceed Protection of Groundwater SCOs for VOCs or Commercial Use SCOs for PFAS, or ecological SCOs within the woody site area may be used as part of the cover system described in Remedy Element 5 to backfill excavations and establish the designed grades on the developed portion of the site.

Clean fill meeting ecological criteria will be used in areas excavated in the wooded areas. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) for commercial use of the site will be brought in to replace the excavated soil and establish the designed grades at the site. The site will be re-graded to accommodate installation of a cover system as described in Remedy Element 5.

3. Vapor Mitigation

Building 102 will be required to have a sub-slab depressurization system, or other acceptable measures, installed to mitigate the migration of vapors into the building from soil and groundwater.

4. In-Situ Stabilization

In-situ stabilization (ISS) will be implemented in unsaturated zone soil source areas containing metals at concentrations exceeding applicable Protection of Groundwater SCOs. ISS is a process that uses a stabilizing reagent that chemically changes contamination to make it less soluble. The contaminated soil will be mixed with a stabilizing reagent (TerraBond® or similar) using an excavator or augers. This treatment changes the contamination from a soluble form to a stable, insoluble compound to reduce or eliminate the matrix as a source of groundwater contamination. The stabilized soil will then be covered with a cover system as described in Remedy Element 6 to prevent direct exposure. Based on the currently-available design information, the volume of soil to be stabilized is estimated to be 500 cubic yards.

5. Cover System

A site cover will be required in areas where the upper one foot of exposed surface soil will exceed applicable SCOs, to allow for future commercial use of the site. Where a soil cover is to be used, it will be a minimum of one foot of soil placed over a demarcation layer, with the upper six inches of soil of sufficient quality to maintain a vegetative layer. Soil cover material, including any fill material brought to the site, will meet the SCOs for cover material set forth in 6 NYCRR Part 375-6.7(d). Substitution of other materials and components may be allowed where such components already exist or are a component of the tangible property to be placed as part of site redevelopment. Such components may include, but are not necessarily limited to: pavement, concrete, paved surface parking areas, sidewalks, building foundations and building slabs.

6. Groundwater Treatment
In-situ chemical oxidation (ISCO) will be implemented to treat VOC contaminants (TCE, PCE, cis-1,2-DCE) in saturated soils and groundwater during one or more injection events. A chemical oxidant will be injected into the subsurface to destroy the groundwater contaminants located near Buildings 52, 64, 73, and 101. Depth to groundwater is estimated to be 3 to 6 feet bgs in these areas. The method and depth of injection will be determined during the remedial design but will likely be performed at approximately 30 to 40 locations with DPT technology. Sequestration of PFAS in groundwater will be completed via colloidal carbon injection in three potential source areas. Colloidal carbon injections would be performed at approximately 80 to 90 locations using DPT technology.

Prior to the full implementation of these technologies, additional sampling will be conducted to better delineate the treatment areas and to locate the injection points. Any soil which is identified as a source of this groundwater contamination will be removed and disposed off-site if feasible. Laboratory and on-site pilot-scale studies are also typically required to inform the full-scale design and will include field injectability testing for ISCO amendment (e.g., sodium permanganate) and colloidal carbon.

7. Institutional Control
An institutional control in the form of an environmental easement for the controlled property will be imposed that will:

- Require the remedial party or site owner to complete and submit to the NYSDEC 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 and 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 County DOH; and
- Require compliance with the Department-approved Site Management Plan.

8. Site Management Plan
A Site Management Plan is required for the remedy and will include, but may not be limited to:

- An Excavation Plan that details the provisions for management of future excavations in areas of remaining contamination.
- A provision 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. The nature and extent of contamination in areas where access was previously limited or unavailable will be immediately and thoroughly investigated

pursuant to a plan approved by the NYSDEC. Based on the investigation results and the Department determination of the need for a remedy, a Remedial Action Work Plan (RAWP) will be developed for the final remedy for the site, including removal and/or treatment of any source areas to the extent feasible. Citizen Participation Plan (CPP) activities will continue through this process. Any necessary remediation will be completed prior to, or in association with, redevelopment. This includes all buildings and locations of former buildings.

- A provision should redevelopment occur to ensure no soil exceeding Protection of Groundwater concentrations will remain below storm water retention basin or infiltration structures.
- 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 in any future buildings on the site, including provisions for implementing actions recommended to address exposures related to soil vapor intrusion.
- A provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Remedy Element 5 above will be placed in any areas where the upper one foot of exposed surface soil exceeds the applicable SCOs.
- Provisions for the management and inspection of the identified engineering controls;
- Maintaining site access controls and Department notification.
- The steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

The Site Management Plan will include:

a. 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 listed in Remedy Element 7.

Engineering Controls: The vapor intrusion mitigation in Remedy Element 3.

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

- Long-term monitoring of groundwater and surface water 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.

c. An Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, inspection, and reporting of any mechanical or physical components of the active vapor mitigation system(s). The plan includes, but is not limited to:

- Procedures for operating and maintaining the remedy,
- Compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting,
- Maintaining site access controls and Department notification; and
- Providing the Department access to the site and O&M records.

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the RI 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. 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.

Waste/Source Areas

As described in the RI Report, concentrations of TCE in groundwater indicate the likely presence of waste/source materials at the site near Buildings 64 and 101. These likely present waste/source materials are impacting groundwater, soil and soil vapor.

Wastes are defined in 6 NYCRR Part 375-1.2(aw) and include solid, industrial and/or hazardous wastes. Source areas are defined in 6 NYCRR Part 375(au). Source areas are areas of concern at a site where substantial quantities of contaminants are found which can migrate and release significant levels of contaminants to another environmental medium.

As a result of the historic use of the site, chemicals were either spilled to the ground surface or placed in lagoons or settling ponds, where they flowed/leaked into the soil at the site. Two additional areas of contamination are located near Buildings 64 and 101. COCs include metals and PFAS in soil and chlorinated VOCs and PFAS in shallow groundwater.

The waste/source areas identified will be addressed in the remedy selection process.

Groundwater

Groundwater samples were collected from overburden monitoring wells and piezometers. The samples were collected to assess groundwater conditions on and off-site. The results indicate that contamination in the overburden groundwater on and off-site exceeds the SCGs for VOCs, metals, and PFAS.

Based on the findings of the RI, the past disposal of hazardous waste has resulted in the contamination of groundwater. The site contaminants identified in groundwater which are considered to be the primary contaminants of concern, to be addressed by the remedy selection process are, TCE and its associated degradation products, PFOS, arsenic, and cadmium.

Table 1 - Remedial Investigation Groundwater Analytical Data

Detected Constituents with SCG[a] Exceedances	Concentration Range Detected (ppb)[b]	SCG (ppb)	Frequency Exceeding SCG
VOCs			
1,1-Dichloroethane	0.71-7.1	5	2 of 79
1,1-Dichloroethene	0.43-61	5	3 of 79
Acetone	43-67	50	2 of 79
cis-1,2-Dichloroethene (cis-1,2-DCE)	0.66-1,100	5	19 of 79
Methylene Chloride	0.65-150	5	3 of 79
Tetrachloroethene (PCE)	15-15	5	1 of 79
trans-1,2-Dichloroethene	1.2-13	5	1 of 79
Trichloroethene (TCE)	0.54-73,000	5	34 of 79
Vinyl Chloride	1.3-300	2	9 of 79
Metals			
Arsenic	4.8-53	25	7 of 78
Cadmium	0.59-140	5	4 of 78
Chromium	1.2-92	50	2 of 78
Iron	25-65,000	300	22 of 78
Lead	3.9-28	25	1 of 78
Magnesium	1,900-100,000	35,000	25 of 78
Manganese	1.2-5,000	300	30 of 78
PFAS			
Perfluorooctanoic acid (PFOA)	0.00067-0.031	0.0067	3 of 27
Perfluorooctanesulfonic acid (PFOS)	0.00063-3	0.0027	12 of 27

a - 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, Part 5 of the New York State Sanitary Code (10 NYCRR Part 5) , and Sampling, Analysis, and Assessment of Per-and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs (April 2023 guidance).
b - ppb: parts per billion, which is equivalent to a microgram per liter, µg/L, in water.

The greatest concentrations of TCE were in groundwater sampled from locations adjacent to the southwest corner of Building 101 and just east of Building 64and appear to migrate downgradient and off-site to the southwest. The PFAS compound PFOS was detected in multiple locations across the site, with the greatest concentration detected just east of Building 64. Lesser concentrations of PFOS were detected in groundwater samples collected off-site to the southwest. Metals exceedances were primarily in samples from locations in the vicinity of Building 101, downgradient of Building 101, and east and west of Building 64. Cadmium was not detected in off-site samples at concentrations exceeding the Commercial Use SCO. Arsenic exceeded the Commercial Use SCO in one off-site sample, collected just southwest of the site.

Soil

Soil samples were collected during the RI to further delineate the nature and extent of soil contamination at the site. Soil samples were collected in the vicinity of potential source areas at the site for analysis of primarily VOCs, metals, and PFAS.

The RI soil sampling results were compared to the applicable SCOs for Unrestricted Use and Restricted Use/Protection of Groundwater, and Restricted Use/Commercial Use, as discussed in Section 3, and indicate that the primary COCs in on-site soil are metals and VOCs. VOCs present in site soil also contribute to the potential for soil vapor intrusion into buildings at the site. Based on the comparison of the soil sampling results to the Restricted Use SCOs, the Protection of Groundwater SCOs were selected for the evaluation of the metals and VOC data and the Commercial Use SCOs were selected for the evaluation of the PFAS data.

The soil VOC and metals results indicate that a contaminant source still exists on the site because VOC and metal concentrations exceed the Unrestricted and Protection of Groundwater SCOs near Buildings 64 and 101.

Table 2 - Remedial Investigation Surface Soil Analytical Data

Detected Constituents with SCG[a] Exceedances	Concentration Range Detected (ppm)[b]	Protection of Groundwater SCO[c] (ppm)	Frequency Exceeding Protection of Groundwater SCO	Commercial Use SCO (ppm)	Frequency Exceeding Commercial SCO
Metals					
Cadmium	0.053-1560	7.5	6 of 25	9.3	4 of 25
Copper	7.2-5690	1,720	1 of 25	270	2 of 25
Lead	7.4-1660	450	1 of 25	1,000	1 of 25
Nickel	6.2-23500	130	2 of 25	310	2 of 25
Selenium	0.51-13	4.0	1 of 25	1,500	0 of 25
Silver	2.3-3	8	2 of 25	1,500	0 of 25
Zinc	30.1-37000	2,480	1 of 25	10,000	1 of 25

a - 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, Part 5 of the New York State Sanitary Code (10 NYCRR Part 5) , and Sampling, Analysis, and Assessment of Per-and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs (April 2023 guidance).
b - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
c - SCO: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Groundwater.

Table 3 - Remedial Investigation Subsurface Soil Analytical Data

Detected Constituents with SCG[a] Exceedances	Concentration Range Detected (ppm)[b]	Protection of Groundwater SCO[c] (ppm)	Frequency Exceeding Protection of Groundwater SCO	Commercial Use SCO (ppm)	Frequency Exceeding Commercial SCO
VOCs					
2-Butanone	0.0059-0.120	0.12	1 of 37	500	0 of 37
Acetone	0.006-0.590	0.05	3 of 37	500	0 of 37
Chloroform	0.0004-2.3	0.37	2 of 37	350	0 of 37
cis-1,2-Dichloroethene (cis-1,2-DCE)	0.0012-0.760	0.25	1 of 37	500	0 of 37
Tetrachloroethene (PCE)	0.0038-290	1.3	2 of 37	150	1 of 37
Trichloroethene (TCE)	0.0049-150	0.47	3 of 37	200	0 of 37
Metals					
Cadmium	0.12-892	7.5	5 of 38	9.3	6 of 38
Copper	4.5-2,140	1,720	1 of 38	270	4 of 38
Lead	2.9-1,120	450	1 of 38	1,000	1 of 38
Nickel	5.1-4,070	130	5 of 38	310	3 of 38
Silver	0.28-14	8	1 of 38	1,500	0 of 38
Zinc	14.8-5,520	2,480	2 of 38	10,000	0 of 38

a - 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, Part 5 of the New York State Sanitary Code (10 NYCRR Part 5) , and Sampling, Analysis, and Assessment of Per-and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs (April 2023 guidance).
b - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
c - SCO: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Groundwater.

Based on the findings of the RI, the past disposal of hazardous waste has resulted in the contamination of on-site soil. The site contaminants identified in soil which are considered to be the primary COCs, to be addressed by the remedy selection process are, TCE and its associated degradation products and cadmium, copper, nickel, and zinc.

Surface Water

Surface water samples were collected during the RI to assess the surface water conditions off-site. As shown in Table 4, the results indicate that the concentration of a few site-related chlorinated VOC contaminants in surface water exceed the Department's SCGs.

Table 4 - Remedial Investigation Surface Water Analytical Data

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
cis-1,2-Dichloroethene (cis-1,2-DCE)	5.1-19	5	2 of 21
Trichloroethene (TCE)	0.48-120	5	1 of 21
Vinyl Chloride	9.1-9.1	0.3	1 of 21

a - ppb: parts per billion, which is equivalent to micrograms per liter, µg/l, in surface water;
b - SCG: Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1) and 6 NYCRR Part 703: Surface Water and Groundwater Quality Standards.

Based on the findings of the RI, groundwater impacted by site-related contaminants discharges to surface water and has resulted in the contamination of surface water at a marsh downgradient of, and to the south of, the site. The site contaminants considered to be the primary contaminants of concern in surface water are TCE, cis-1,2-DCE, and vinyl chloride. Surface water impacts, which do not extend to the Thomas Creek that is downgradient of the marsh, will be addressed by the remedy selection process for groundwater.

Soil Vapor

The potential for soil vapor intrusion resulting from the presence of site related soil or groundwater contamination was evaluated by the sampling of sub-slab soil vapor under structures, and indoor air inside structures. Due to the presence of buildings in the impacted area, a full suite of samples were collected to evaluate whether soil vapor intrusion was occurring.

To determine whether actions are needed to address exposure related to soil vapor intrusion, sub-slab vapor, indoor air, and outdoor air samples were collected in 2018, 2020, and 2022 at five on-site buildings and 12 off-site properties. With the exception of on-site Building 102, no actions were needed to address soil vapor intrusion in on-site and off-site buildings. The maximum concentrations of TCE in sub-slab vapor and indoor air samples collected at Building 102 were 5.6 $\mu g/m^3$ and 3.2 $\mu g/m^3$, respectively. The level of TCE is above the NYSDOH air guidelines for indoor air samples (2 $\mu g/m^3$). The concentrations of TCE in outdoor air samples were found to be consistent with background ranges. Based on the results of this sampling and of environmental sampling in the area, the following actions were identified as being warranted to address exposures related to soil vapor intrusion: mitigation at Building 102 and no further action at the remaining buildings.

NYSDEC has requested that the property owner install a soil vapor intrusion mitigation system at Building 102 but has not received a response and no mitigation system has been installed.

Notices were sent to eight nearby properties (six residential and two commercial) requesting permission to collect soil vapor intrusion samples at their buildings. The properties were selected based on their location relative to the site's groundwater plume. Sampling was successfully completed at seven of the eight properties. In general, one collocated sub-slab sample and one indoor air sample were collected from each structure. An ambient air sample was also collected during each event. No contaminants were detected above the action levels outlined in the NYSDOH Soil Vapor Intrusion Decision Matrices.

Based on the findings of the RI, the disposal of hazardous waste has resulted in the contamination of soil vapor. The site contaminant identified in sub-slab vapor that is the primary contaminants of concern, to be addressed by the remedy selection process, is TCE.

Exhibit B

Description of Remedial Alternatives

The following alternatives were considered based on the RAOs (see Section 6.5) to address the contaminated media identified at the site as described in Exhibit A.

Alternative #1: No Action

The No Action Alternative leaves the site in its present condition and does not provide any additional protection of the environment. There would be no institutional controls, environmental monitoring, or remedial action, and therefore this alternative has no technological barriers. This alternative would include abandoning the 20 monitoring wells and piezometers installed during the remedial investigations.

Present Worth:..........$110,000*

Capital Cost: *$110,000*

Annual Costs: *$0*

Alternative #2: Return to Pre-Disposal Condition

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A. After implementation of this alternative, soil would meet the Unrestricted SCOs listed in Part 375-6.8 (a). This alternative would include the demolition of four on-site buildings and off-site disposal of associated waste, soil vapor intrusion mitigation at Building 102, excavation and off-site disposal of vadose zone soil with contamination above the Unrestricted SCOs, and treatment via groundwater extraction and treatment of on-site and of-site groundwater that contains COCs at concentrations greater than NYSDEC groundwater standards. Approximately 4,400 cubic yards of contaminated soil would be removed from the site under this alternative. Once the groundwater concentrations are below the respective standards, the Site Management Plan will no longer need to be implemented and there will be no property restrictions or periodic review.

Present Worth:..........*$16,708,000*

Capital Cost: *$7,180,000*

Annual Costs: *$528,000*

Alternative #3: Source Soil Excavation, Soil Treatment Through In-Situ Stabilization, and Groundwater Treatment with Site Management

In this alternative, Buildings 52, 64, 73, and 101 would be demolished and associated waste would be transported off-site for disposal. Soil vapor intrusion would be mitigated at Building 102 by installation of a sub-slab depressurization system, or other acceptable measure to mitigate the migration of vapors into the building from soil and/or groundwater.

This alternative would include excavation and off-site disposal of vadose zone soil containing VOCs at concentrations greater than their respective Unrestricted SCOs, Protection of Groundwater SCOs, ecological SCOs in the wooded areas, or PFAS at concentrations greater than the associated Commercial Use SCOs. Approximately 3,000 cubic yards of contaminated vadose zone soil (water table is typically 4 to 5 feet bgs) would be removed from the site under this alternative. Confirmation sampling for VOCs would be conducted during excavation activities until analytical results verify attainment of remediation goals. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) would be brought in to replace the excavated soil and establish post-remediation design grades at the site. If, following the excavation activities, there remains soil in the upper one foot of exposed surface soil with COC concentrations exceeding the applicable cleanup criteria (i.e., Protection of Groundwater and/or Commercial Use SCOs), one foot of cover material would be placed over this soil to allow for commercial use of the site. In the onsite wooded areas, COC concentrations in the upper two feet of the exposed surface soil that exceed applicable SCOs would be removed and replaced with clean fill that meets the requirements for the commercial site use and Protection of Groundwater as set forth in 6NYCRR part 375-6.7(d).

This alternative would include in-situ stabilization of vadose zone soil source areas containing metals at concentrations exceeding applicable Protection of Groundwater SCOs. In-situ stabilization involves mixing a remedial amendment into the soil to prevent leaching of the targeted metals from soil to groundwater. The stabilization volume is estimated to be 500 cubic yards.

This alternative would include in-situ chemical treatment of chlorinated VOCs in saturated soil and groundwater within on-site source areas. Treatment would be implemented using in-situ chemical oxidation. With appropriate contact time, chemical treatment amendments are capable of converting VOCs to non-toxic compounds; multiple amendment injection events would be required. Prior to full implementation of this technology, laboratory bench and/or on-site pilot scale studies may be conducted to more clearly define design parameters. The specific amendment, injection method, and depth of injection would be determined during the remedial design.

PFAS in groundwater would be addressed via colloidal carbon injection in PFAS source areas to bind PFAS to the injected activated carbon. PFAS (and chlorinated VOCs) dissolved in groundwater would sorb to the activated carbon as groundwater migrates through the area where colloidal carbon has been injected. While the use of activated carbon technology in ex-situ applications is well understood, field testing of in-situ applications remains at the small-scale or pilot testing stage, with long term-effectiveness therefore unknown.

Present Worth: *$7,655,000*

Capital Cost: *$5,960,000*

Annual Costs: *$88,000*

One-time Future Cost (Year 2): *$220,000*

One-time Future Cost (Year 4): *$270,000*

Alternative #4: Source Soil Excavation and Groundwater Treatment

In this alternative, Buildings 52, 64, 73, and 101 would be demolished and associated waste would be transported off-site for disposal. Soil vapor intrusion would be mitigated at Building 102 by installation of a sub-slab depressurization system, or other acceptable measure to mitigate the migration of vapors into the building from soil and/or groundwater.

This alternative would include excavation and off-site disposal of vadose zone soil containing VOCs or metals at concentrations greater than their respective Unrestricted SCOs, Protection of Groundwater SCOs, ecological SCOs in the wooded areas, or PFAS at concentrations greater than the associated Commercial Use SCOs. Approximately 3,500 cubic yards of contaminated vadose zone soil (water table is typically 4 to 5 feet bgs) would be removed from the site under this alternative. Confirmation sampling for VOCs and metals would be conducted during excavation activities until analytical results verified attainment of remediation goals. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) would be brought in to replace the excavated soil and establish post-remediation design grades at the site. If, following the excavation activities, there remains soil in the upper one foot of exposed surface soil with COC concentrations exceeding the applicable cleanup criteria (i.e., Protection of Groundwater and/or Commercial Use SCOs), one foot of cover material would be placed over this soil to allow for commercial use of the site. In the onsite wooded areas, COC concentrations in the upper two feet of the exposed surface soil that exceed applicable SCOs would be removed and replaced with clean fill that meets the requirements for the commercial site use and Protection of Groundwater as set forth in 6NYCRR part 375-6.7(d).

This alternative would include in-situ chemical treatment of chlorinated VOCs in saturated soil and groundwater within on-site source areas. Treatment would be implemented using in-situ chemical oxidation. With appropriate contact time, chemical treatment amendments are capable of converting VOCs to non-toxic compounds; multiple amendment injection events would be required. Prior to the full implementation of this technology, laboratory bench and/or on-site pilot scale studies may be conducted to more clearly define design parameters. The specific amendment, injection method, and depth of injection would be determined during the remedial design.

PFAS in groundwater would be addressed via colloidal carbon injection in PFAS source areas to bind PFAS to the injected activated carbon. PFAS (and chlorinated VOCs) dissolved in groundwater would sorb to the activated carbon as groundwater migrates through the area where colloidal carbon has been injected. While the use of activated carbon technology in ex-situ applications is well understood, field testing of in-situ applications remains at the small-scale or pilot testing stage, with long term-effectiveness therefore unknown.

Present Worth: *$8,103,000*

Capital Cost: *$6,320,000*

Annual Costs: *$88,000*

One-time Future Cost (Year 2): *$220,000*

One-time Future Cost (Year 4): *$270,000*

Alternative #5: Partial Source Soil Excavation and Prevention of Off-Site Migration

In this alternative, Buildings 52, 64, and 73 would be demolished and associated waste would be transported off-site for disposal. Soil vapor intrusion would be mitigated at Building 102 by installation of a sub-slab depressurization system, or other acceptable measure to mitigate the migration of vapors into the building from soil and/or groundwater.

This alternative would include excavation and off-site disposal of vadose zone soil containing VOCs or metals at concentrations greater than their respective Unrestricted SCOs, Protection of Groundwater SCOs, ecological SCOs in the wooded areas, or PFAS at concentrations greater than the associated Commercial Use SCOs. Approximately 3,300 cubic yards of contaminated vadose zone soil (water table is typically 4 to 5 feet bgs) would be removed from the site under this alternative. Confirmation sampling for VOCs and metals would be conducted during excavation activities until analytical results verified attainment of remediation goals. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish post-remediation design grades at the site. If following the excavation activities, there remains soil in the upper one foot of exposed surface soil with COC concentrations exceeding the applicable cleanup criteria (i.e., Protection of Groundwater and/or Commercial Use SCOs), one foot of cover material would be placed over this soil to allow for commercial use of the site. In the onsite wooded areas, COC concentrations in the upper two feet of the exposed surface soil that exceed applicable SCOs would be removed and replaced with clean fill that meets the requirements for the commercial site use and Protection of Groundwater as set forth in 6NYCRR part 375-6.7(d).

Off-site migration of chlorinated VOC-impacted groundwater would be prevented via installation of a property boundary permeable reactive barrier (PRB) to the south of Buildings 101 and 201. The PRB would be installed using a biopolymer slurry to emplace a mixture of zero valent iron (ZVI) and sand or pea gravel. The anticipated percentage of ZVI in the ZVI-sand mixture is 20%. Additional site characterization activities to assess groundwater quality and lithology along the planned PRB alignment would be performed during remedial design. Site groundwater samples would also be collected for a laboratory treatability study to assess rate of degradation of chlorinated VOCs specific to the ZVI-site groundwater combination. The PRB would be approximately 220 feet long and be installed from ground surface to approximately 20 feet bgs, where it would be tied into a low permeability till present at depth.

This alternative would also include in-situ chemical treatment of chlorinated VOCs in saturated soil and groundwater downgradient of Building 64. Treatment would be implemented using in-situ chemical oxidation . With appropriate contact time, chemical treatment amendments are capable of converting VOCs to non-toxic compounds; multiple amendment injection events would be required. Prior to full implementation of this technology, laboratory bench and/or on-site pilot scale studies may be conducted to more clearly define design parameters. The specific amendment, injection method, and depth of injection would be determined during the remedial design.

PFAS in groundwater would be addressed via colloidal carbon injection in PFAS source areas to bind PFAS to the injected activated carbon. PFAS (and chlorinated VOCs) dissolved in groundwater would sorb to the activated carbon as groundwater migrates through the area where colloidal carbon has been injected. While the use of activated carbon technology in ex-situ applications is well understood, field testing of in-situ applications remains at the small-scale or pilot testing stage, with long term-effectiveness therefore unknown.

Present Worth: $9,397,000

Capital Cost: $7,720,000

Annual Costs: $88,000

One-time Future Cost (Year 2): $190,000

One-time Future Cost (Year 4): $190,000

Alternative #6: Partial Source Soil Excavation, Cover, and Prevention of Off-Site Migration

In this alterative, Buildings 52, 64, and 73 would be demolished and associated waste would be transported off-site for disposal. Soil vapor intrusion will be mitigated at Building 102 by installation of a sub-slab depressurization system, or other acceptable measure to mitigate the migration of vapors into the building from soil and/or groundwater.

This alternative would include excavation and off-site disposal of vadose zone soil containing VOCs at concentrations greater than their respective Protection of Groundwater SCOs or PFAS at concentrations greater than the associated Commercial Use SCOs. Approximately 2,800 cubic yards of contaminated vadose zone soil (water table is typically 4 to 5 feet bgs) would be removed from the site. Confirmation sampling for VOCs would be conducted during excavation activities until analytical results verified attainment of remediation goals. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) would be brought in to replace the excavated soil and establish the post-remediation design grades at the site. If, following the excavation activities, there remains soil in the upper one foot of exposed surface soil with COC concentrations exceeding the applicable cleanup criteria (i.e., Protection of Groundwater and/or Commercial Use SCOs), one foot of cover material would be placed over this soil to allow for commercial use of the site that meets the requirements for the commercial site use and Protection of Groundwater as set forth in 6NYCRR part 375-6.7(d).

In this alterative, an engineered barrier system (i.e., a cover) would be installed over areas of metals-impacted soil. The estimated area of metals-impacted soil is 5,000 square feet. Where a soil cover is required, it would be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for commercial use. The soil cover would be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer if required based on the final design surface.

Off-site migration of chlorinated VOC-impacted groundwater would be prevented via installation of four property boundary PRBs, installed to the south of Buildings 101 and 201 and to the south and west of Buildings 52, 64, and 73. The PRBs would be installed using a biopolymer slurry to emplace a mixture of ZVI and sand or pea gravel. The anticipated percentage of ZVI in the ZVI-sand mixture is 20%. Additional site characterization activities to assess groundwater quality and lithology along the planned PRB alignments would be performed during remedial design. Site groundwater samples would also be collected for a laboratory treatability study to assess rate of degradation of chlorinated VOCs specific to the ZVI-site groundwater combination. The PRBs would range from approximately 100 to 400 feet long and be installed from ground surface to between 20 and 40 feet bgs, where they would be tied into a low permeability till present at depth.

This alternative would also include in-situ chemical treatment of chlorinated VOCs in saturated soil and groundwater downgradient of Building 64. Treatment would be implemented using in-situ chemical oxidation. With appropriate contact time, chemical treatment amendments are capable of converting VOCs mass to non-toxic compounds; multiple amendment injection events would be required. Prior to full implementation of this technology, laboratory bench and/or on-site pilot scale studies may be conducted to more clearly define design parameters. The specific amendment, injection method, and depth of injection would be determined during the remedial design.

PFAS in groundwater would be addressed via colloidal carbon injection in PFAS source areas to bind PFAS to the injected activated carbon. PFAS (and chlorinated VOCs) dissolved in groundwater would sorb to the activated carbon as groundwater migrates through the area where colloidal carbon has been injected. While the use of activated carbon technology in ex-situ applications is well understood, field testing of in-situ applications remains at the small-scale or pilot testing stage, with long term-effectiveness therefore unknown.

Present Worth: *$10,858,000*

Capital Cost: *$9,270,000*

Annual Costs: *$88,000*

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost	One-Time Future Cost	One-Time Future Cost	Annual Cost	Total Present Worth
1 - No Action	$110,000			$0	$110,000
2 - Return to Predisposal Condition	$7,180,000			$528,000	$16,708,000
3 -Source Soil Excavation, Soil Treatment, and Groundwater Treatment	$5,960,000	$220,000 Year 2	$270,000 Year 4	$80,000	$7,655,000
4 - Source Soil Excavation and Groundwater Treatment	$6,320,000	$220,000 Year 2	$270,000 Year 4	$80,000	$8,103,000
5 - Partial Source Soil Excavation and Prevention of Off-site Migration	$7,720,000	$190,000 Year 2	$190,000 Year 4	$80,000	$9,397,000
6 - Partial Source Soil Excavation, Cover, and Prevention of Off-site Migration	$9,270,000			$80,000	$10,858,000

Exhibit D

SUMMARY OF THE PROPOSED REMEDY

The Department is proposing *Alternative 3: Source Excavation, Soil Treatment Through In-Situ Stabilization, and Groundwater Treatment with Site Management* as the remedy for this site. Alternative 3 would achieve the remediation goals for the site by excavation or treatment of soil above the groundwater table and by in-situ chemical treatment of groundwater and soil below the groundwater table. The elements of this remedy are described in Section 7.

Basis for Selection

The proposed remedy is based on the results of the RI and the evaluation of alternatives in the FS. The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375. A detailed discussion of the evaluation criteria and comparative analysis is provided in the FS Report.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

Alternative 3 satisfies this criterion by removing contaminated soil from above the water table, treating contaminated soil below the water table, treating contaminated groundwater, and addressing the potential for exposures related to soil vapor intrusion. Alternative 3 addresses the sources of groundwater contamination at the site, which are the most significant threat to public health and the environment.

Alternative 1 (No Action) does not provide any protection to public health and the environment and will not be evaluated further. Alternative 2, by removing soil above the water table with COC concentrations that exceed Unrestricted soil cleanup objectives, meets this threshold criterion. Alternatives 3, 4, 5, and 6 also comply with this criterion but to a lesser degree or with lower certainty, because either not all soil above the water table that exceeds Unrestricted soil cleanup objectives is removed or not as much of the dissolved-phase chlorinated VOC plume is actively treated.

Alternatives 2 through 6 would remove accessible soils above the water table with known exceedances of cleanup objectives. In-situ chemical treatment of VOCs in groundwater is also included in Alternatives 3 and 4. Alternative 5 would prevent further off-site migration of VOCs in groundwater at the property boundary downgradient of Building 101 but does not include active treatment of VOCs in groundwater beneath and near Building 101. Alternative 6 would prevent further off-site migration of VOCs in groundwater along the property boundary but does not include active treatment of VOCs in groundwater beneath the site. Each of Alternatives 2 through 6 would address PFAS in on-site groundwater through colloidal carbon injection for sequestration. Alternatives 3 through 6 would rely on a restriction of groundwater use at the site to protect human health. Alternative 2 may require a short-term restriction on groundwater use; however, it is expected that this restriction would be able to be removed following completion of remediation. The potential for soil vapor intrusion would be significantly reduced by Alternatives 2 through 6 because sources of VOC impacts to vapors in the unsaturated zone would be removed.

Off-site impacts in groundwater will be addressed through reduction of COC concentrations in on-site soil and groundwater, which will reduce COC concentrations in off-site groundwater over time. Additionally, the implementation of property restrictions and/or activities and use limitations to prevent exposure to groundwater with COC exceedances and provide protection to human health and the environment.

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the Department has determined to be applicable on a case-specific basis.

Alternative 3 complies with SCGs to the extent practicable. Alternative 3 addresses areas of contamination in soil and complies with the Restricted Use SCGs in surface soil through removal or treatment and a site cover system, if deemed necessary. Alternative 3 also creates the conditions necessary to restore groundwater quality to the extent practicable.

Alternative 1 would not comply with SCGs and is not appropriate for further consideration. Alternative 2 complies with Unrestricted Use SCGs, and Alternative 4 complies with Restricted Use SCGs to the extent practicable. Alternatives 5 and 6 also comply with this criterion but to a lesser degree or with lower certainty because, although both prevent further off-site migration of VOCs in groundwater at the property boundary, neither alternative incorporates active treatment of all VOCs-impacted groundwater beneath the site.

The "primary balancing criteria" described below are used to compare the positive and negative aspects of each of the remedial alternatives. Because Alternatives 2 through 6 each satisfy the two threshold criteria, these remaining criteria are particularly important in selecting a final remedy for the site.

3. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternative after implementation. If wastes or treated residuals remain on-site after the selected alternative has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

Long-term effectiveness is best accomplished by those alternatives involving excavation of vadose zone soil source areas throughout the site; Alternatives 2, 3, and 4 all include this remedial component. Alternative 2 would result in removal all vadose zone soil with COC concentrations that exceed unrestricted use criteria and thus does not require property use restrictions and long-term monitoring. Alternative 2 offers a high value in long-term effectiveness and permanence. Alternative 2 directly addresses known site contaminants in soil through excavation and in groundwater through groundwater extraction and treatment. Following active remediation, on-site monitoring would be conducted to ensure residual VOC, PFAS, and metals concentrations in groundwater have either met unrestricted use criteria or have established downward concentration trends that achieve remedial endpoint goals.

Alternatives 3 through 6 would result in the removal of all or most vadose zone soil with COC concentrations that exceed restricted use criteria but would require an environmental easement and long-term monitoring. Alternatives 3 through 5 have slightly less long-term effectiveness and permanence than Alternative 2. PFAS in groundwater that would be sorbed to the injected colloidal carbon could desorb over time resulting in some uncertainty in long term permanence of this remedial component. Alternative 6 would be the least effective in the long term and is the least permanent of the alternatives (excluding Alternative 1) because this alternative does not include treatment of VOCs below the water table.

4. <u>Reduction of Toxicity, Mobility or Volume.</u> Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

Alternative 2 would directly target and address COPC impacts in soil and groundwater both on- and off-site.

Alternatives 2, 3 and 4 would reduce the mobility and volume of on-site waste by transferring the material to an approved off-site disposal location. However, depending on the disposal facility, the volume of waste material would not necessarily be reduced. Alternatives 5 and 6 would result in less reduction in the mobility and volume of on-site waste than Alternatives 2, 3, and 4 because COC-impacted soil beneath Building 101 would be left in place.

Alternatives 3 and 4 would result in significant reduction of toxicity, mobility, and volume of contaminants in unsaturated soils through targeted excavations. Additionally, significant reduction of toxicity, mobility, and volume of VOCs in on-site groundwater would be achieved through in-situ chemical treatment. PFAS mobility in groundwater would be reduced through colloidal carbon injections. However, PFAS would remain in site media bound to the injected carbon with the potential for long-term desorption over time. Off-site groundwater impacts would be addressed over time through reduction of mass flux from the site as a result of on-site removal and treatment activities.

Alternative 5 and 6 would also result in significant reduction of toxicity, mobility, and volume of contaminants in unsaturated soils through targeted excavations, although less so than in Alternatives 2, 3, and 4. PFAS mobility in groundwater would be reduced through colloidal carbon injections. However, PFAS would remain in site media bound to the injected carbon with the potential for long-term desorption over time. Reduction of VOC concentrations in on-site groundwater would occur over time through reduction of mass flux as a result of soil excavation activities. COCs at concentrations that exceed SCOs would remaining in groundwater and saturated soil and may continue to mobilize while attenuating. PRBs would result in direct treatment of VOCs in groundwater at the property boundary. Off-site impacts to groundwater would be addressed over time through reduction of mass flux from the site as a result of on-site removal and treatment activities.

5. <u>Short-term Impacts and Effectiveness.</u> The potential short-term adverse impacts of the remedial alternative upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve remedial objectives is also estimated and compared against the other alternatives. Alternatives 2 through 5 all have short-term impacts that would be readily controlled.

Alternative 2 would have the largest short-term impact due to the need to excavate a large volume of soil both above and below the groundwater table. This alternative would have manageable risk to workers and the environment during implementation and construction related to the use of heavy equipment during soil excavation, system install, and trenching. These risks would be managed through utility clearance, use of standard excavation techniques, following Occupational Safety and Health Administration standards, and implementation of run-off controls where applicable to protect against potential deleterious impacts to the environment. There are also management risks associated with the continued operation and maintenance of the treatment system post construction and install. While manageable, the installation of extraction wells off site in heavily wooded areas will increase the risks to workers required for maintenance of this infrastructure.

Alternatives 3 and 4 would also have manageable risks to workers and the environment during excavation activities. There would also be manageable risks to worker health and the environment during implementation of chemical treatment and colloidal carbon injections associated mainly with the risk of exposure to the chemical amendment, injection pressures, and colloidal carbon. Alternatives 3 and 4 rank slightly better than Alternative 2 for short-term impacts and effectiveness because of the smaller working footprint and overall duration of their implementation.

Alternatives 5 and 6 have manageable risks, similar to those discussed previously, during excavation and implementation of chemical treatment and colloidal carbon injections. These alternatives would also have manageable risks during installation of one or more PRB associated with heavy equipment, installation of deep trenches, and handling of ZVI. The implementation period associated with PRB installation these two alternatives would be of much shorter duration than the construction activities in Alternative 2.

The projected time to achieve remediation objectives is shortest for Alternatives 3 and 4, with both projected at 15 years. The projected time to achieve remediation objectives is longest for Alternatives 2, 5, and 6, all projected at 20 years.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

While the implementation specifics of each of Alternatives 3 through 6 will depend on the results of laboratory bench and/or on-site pilot testing, these alternatives would all be implementable. Alternatives 3 and 4 are more easily implemented than Alternatives 5 and 6. Alternative 2 is also implementable, but installation and operation of pumping wells under this alternative would necessitate increased on-site presence and longer construction and operations and maintenance time periods than the other alternatives. Alternative 2 also has a lower implementability ranking relative to Alternatives 3 through 6 because of the potential for the complex geology underlying the site, comprising fine and silty sands, to limit the ability to effectively extract impacted groundwater. Construction of the infrastructure required to implement this alternative is complicated by the steeply sloping wooded terrain located off-site. The presence of an active railway immediately south of the site is an additional complication for connection of off-site infrastructure to the on-site treatment facility (i.e., a horizontal well must be drilled beneath the railway). Off-site access would also be required to install and operate the extraction wells in off-site areas and to install the trenches and piping to relay extracted water back to the on-site treatment system.

The main potential implementability challenges for Alternatives 3 and 4 would be injection and distribution of chemical treatment amendment and colloidal carbon in the challenging and complex geology underlying the site.

Alternatives 5 and 6 also include injection of chemical treatment amendment and colloidal carbon and thus would have the same implementability challenges discussed previously. While implementable, installation of a PRB along the southern property boundary in Alternative 5 would be complicated as a result of site constraints and challenging terrain. In particular, the presence of Building 101 north of this site boundary and active railroad tracks to its south limit implementation space and would require significant clearing and potential removal and replacement of fencing for access. Alternative 6 would have additional challenges associated with installation of additional PRBs. Depth to groundwater at the proposed PRB locations on the western edge of the property will require installation using biopolymer slurry or other methods, adding to the complexity of install.

7. Cost-Effectiveness. Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision.

The costs of the alternatives vary significantly. Because of the large volume of soil to be excavated and disposed off-site and of extracted groundwater to be treated, Alternative 2 would have the highest present worth cost. Alternatives 3 and 4 are the least costly, with Alternative 3 having a slightly lower present worth cost than Alternative 4.

The ranking of Alternatives 2 through 6 in order of total present value cost (from lowest to highest rounded up to the nearest $100,000) is shown below:

1. Alternative 3 – Source Soil Excavation, Soil Treatment, and Groundwater Treatment ($7.7 million)
2. Alternative 4 – Source Soil Excavation and Groundwater Treatment ($8.1 million)
3. Alternative 5 – Partial Source Soil Excavation and Prevention of Off-site Migration ($9.4 million)
4. Alternative 6 – Partial Source Soil Excavation, Cover, and Prevention of Off-site Migration ($10.9 million)
5. Alternative 2 – Return to Pre-Disposal Conditions ($16.7 million)

8. Land Use. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

Alternative 2 would return the site to pre-disposal conditions and result in unrestricted land use. Because the anticipated future use of the site is commercial, Alternatives 5 and 6 would be the least desirable of Alternatives 2 through 6 because at least some contaminated soil would remain on the property. Alternatives 3 and 4 would attain unrestricted land use for soil by reducing COC concentrations in site soil below Protection of Groundwater SCOs through removal or in-situ treatment; however, COC concentrations in site groundwater would still exceed NYSDEC groundwater Standard or Guidance Values. Alternatives 5 and 6 would not attain unrestricted land use for soil or groundwater; COC concentrations in both media would continue to exceed Protection of Groundwater SCOs and NYSDEC groundwater Standard or Guidance Values and SCOs.

9. Green and Sustainable Remediation and Impact to Disadvantaged Communities and Potential Environmental Justice Areas. The Department considers green and sustainable remediation in the selection of the soil remedy. “Green Remediation” (or greener cleanups) can be defined as “the practice of considering all environmental effects of remedy implementation and incorporating options to minimize the environmental footprint of cleanup actions”, as stated in the Department’s program policy DER-31 (Green Remediation).

The ranking of each of Alternatives 2 through 6, in order of most sustainable to least sustainable, is shown below. Rankings were determined based on a holistic overview of multiple sustainability criteria, including anticipated energy requirements, air emissions, water requirements and impact on water resources, land use and ecosystem impact, material consumption and waste generation, climate resilience, and social impacts. The SiteWise™ Tool for green and sustainable remediation was used to quantify these metrics for evaluation, in addition to qualitative evaluation based on alternative and site details. The alternatives were assessed and ranked based on overall performance relative to these criteria.

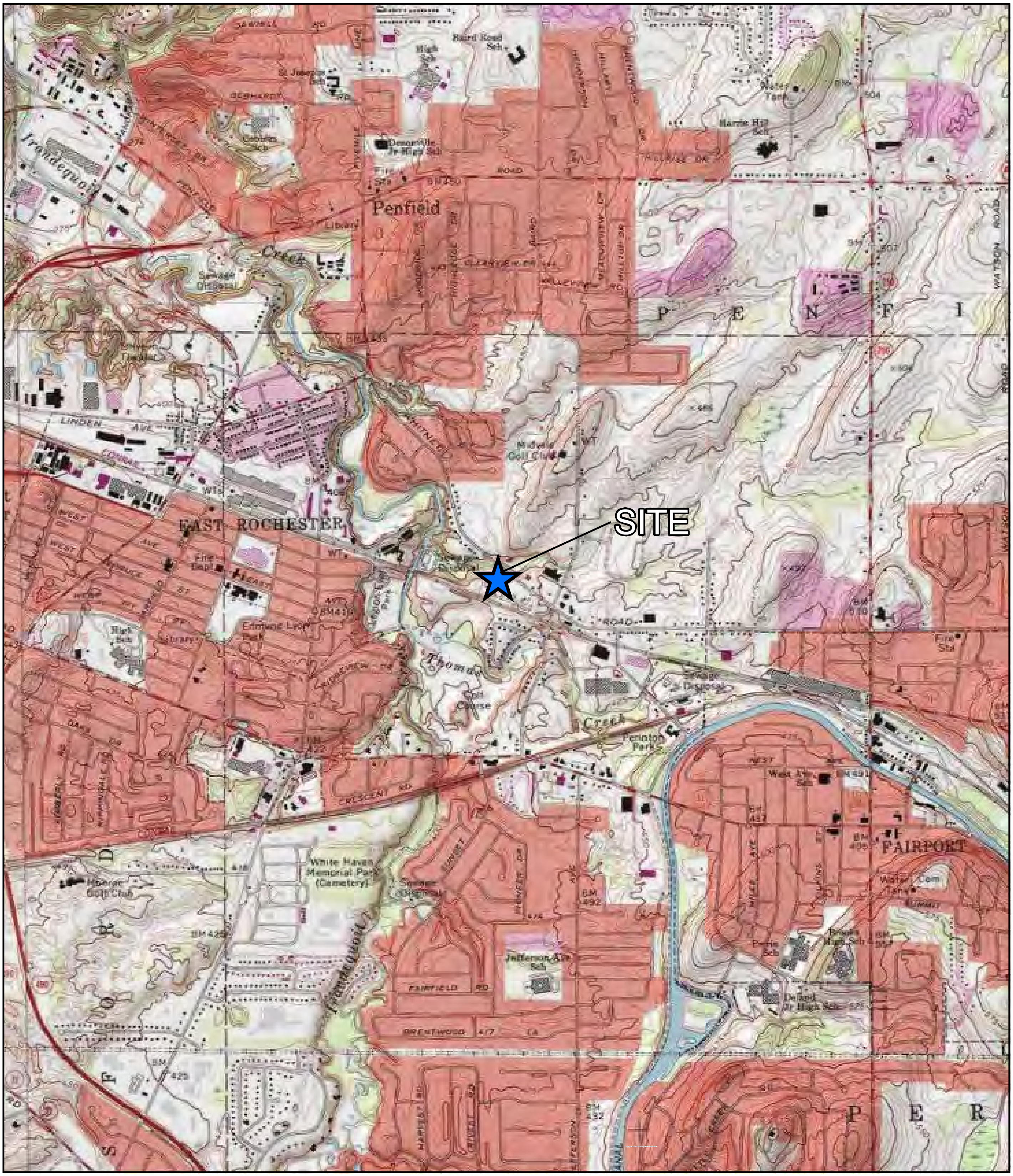
1. Alternative 6 – Partial Source Soil Excavation, Cover, and Prevention of Off-site Migration
2. Alternative 5 – Partial Source Soil Excavation and Prevention of Off-site Migration
3. Alternative 3 – Source Soil Excavation, Soil Treatment, and Groundwater Treatment
4. Alternative 4 – Source Soil Excavation and Groundwater Treatment
5. Alternative 2 – Return to Pre-Disposal Conditions

Each alternative that meets regulatory objectives has impacts associated with the materials needed, waste created and operation of equipment to perform the remediation. Because Alternative 6 would have a smaller excavation volume and relatively small area of engineered cover, it would rank slightly ahead of Alternative 5 in terms of sustainability. Additionally, both of these alternatives have smaller overall footprints than the alternatives that include removal of Building 101.

The final criterion, Community Acceptance, is considered a "modifying criterion" and is taken into account after evaluating those criteria discussed above. It is evaluated after public comments on the PRAP have been received.

10. Community Acceptance. Concerns of the community regarding the investigation, the evaluation of alternatives, and the PRAP are evaluated. A responsiveness summary will be prepared that describes public comments received and the manner in which the Department will address the concerns raised. If the selected remedy differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

Alternative 3, Source Excavation, Soil Treatment Through In-Situ Stabilization, and Groundwater Treatment with Site Management, is being proposed because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.



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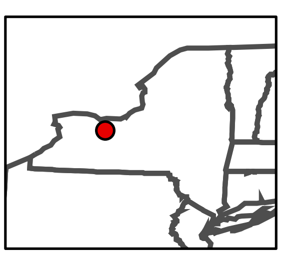


N

GEORGE A. ROBINSON & CO., INC. (SITE #8-28-065)
477 WHITNEY ROAD
PENFIELD, NEW YORK
REMEDIAL INVESTIGATION

SITE LOCATION

ARCADIS

FIGURE
1

0 125 250 500 750 1,000
Feet

Legend

- Site Boundary
- Site Fence
- Historical Settling Pond
- Historical Wastewater Lagoon

Note: Historical boundaries are approximate.

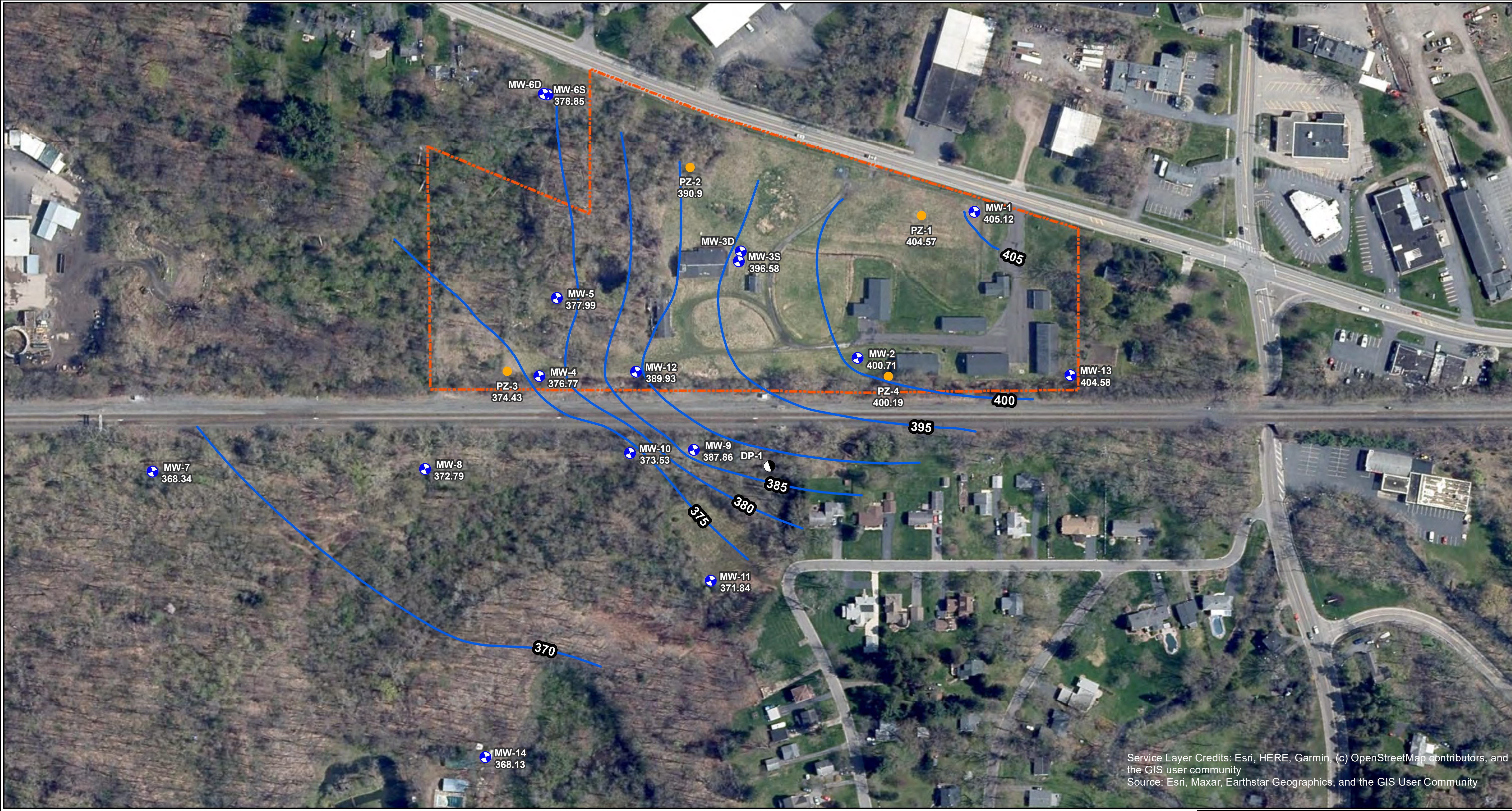
N

GEORGE A. ROBINSON & CO., INC. (SITE #8-28-065)
477 WHITNEY ROAD
PENFIELD, NEW YORK
REMEDIAL INVESTIGATION

SITE MAP

ARCADIS

FIGURE
2



0 140 280 560 840 1,120
Feet

Legend

◑	Drive Point		Equal Elevation Potentiometric Contour
	Monitoring Well	368.34	Groundwater Elevation (in feet above mean sea level)
	Piezometer	375	Groundwater Contour (in feet above mean sea level)
	Site Boundary		DP-1 was a temporary monitoring point and was not measured in 2022.

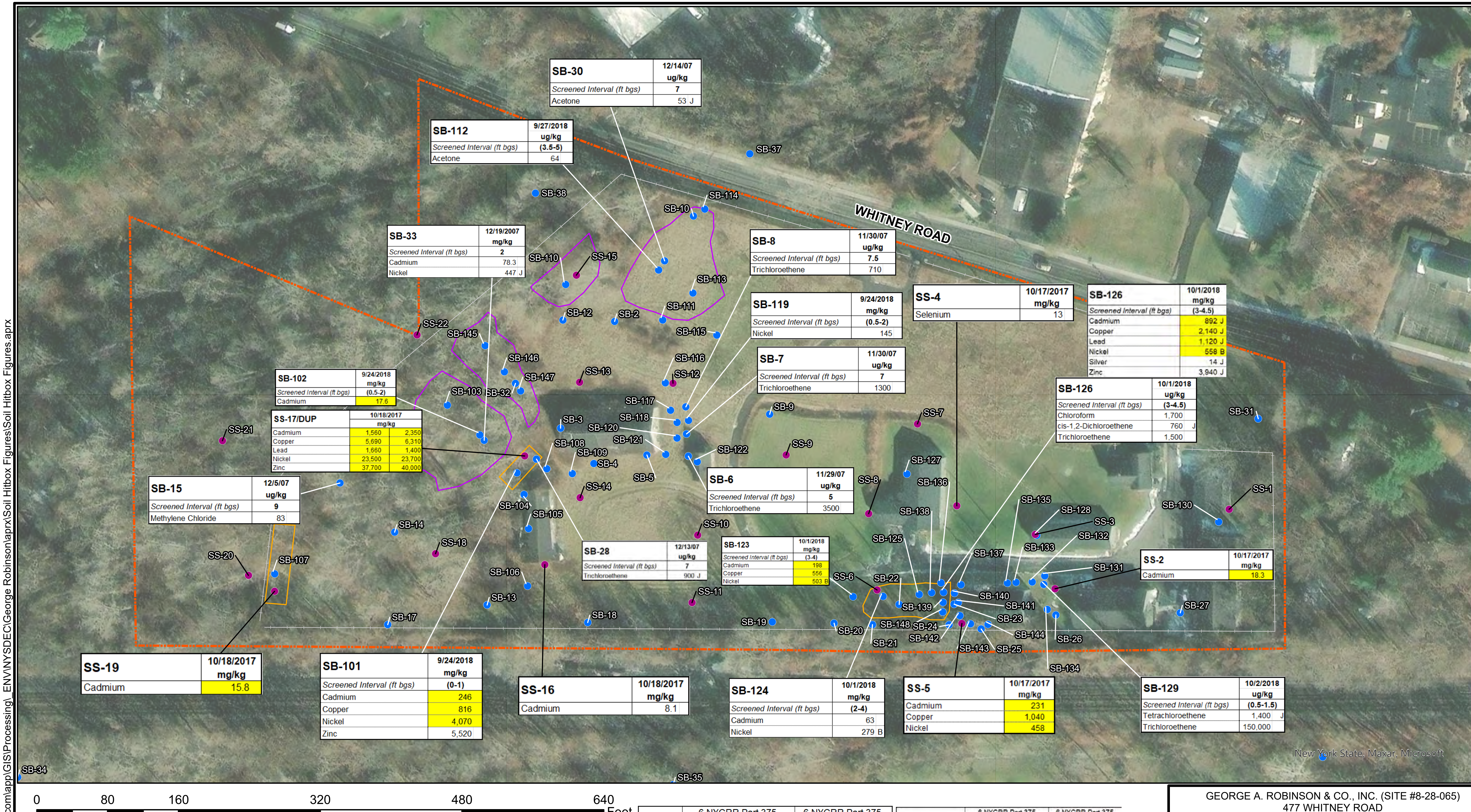
N

GEORGE A. ROBINSON & CO., INC. (SITE #8-28-065)
477 WHITNEY ROAD
PENFIELD, NEW YORK
REMEDIAL INVESTIGATION

GROUNDWATER ELEVATIONS
AUGUST 2022

ARCADIS

FIGURE
3



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Legend

- Surface Soil Sample
- Soil Boring
- Site Boundary
- Site Fence (Approximate)
- Settling Pond (Approximate)
- Historic Wastewater Lagoon (Approximate)

Definitions

J - Estimated value
ug/kg - micrograms per kilogram
mg/kg - milligrams per kilogram

NOTE: The yellow highlighted data exceed the Commercial Use Soil Cleanup Objective and the unhighlighted data exceed the Protection of Groundwater Soil Cleanup Objective.

	6 NYCRR Part 375 Protection of Groundwater Soil Cleanup Objective mg/kg	6 NYCRR Part 375 Commercial Use Soil Cleanup Objective mg/kg
Cadmium	7.5	9.3
Copper	1720	270
Lead	450	1,000
Nickel	130	310
Selenium	4	1,500
Zinc	2480	10,000

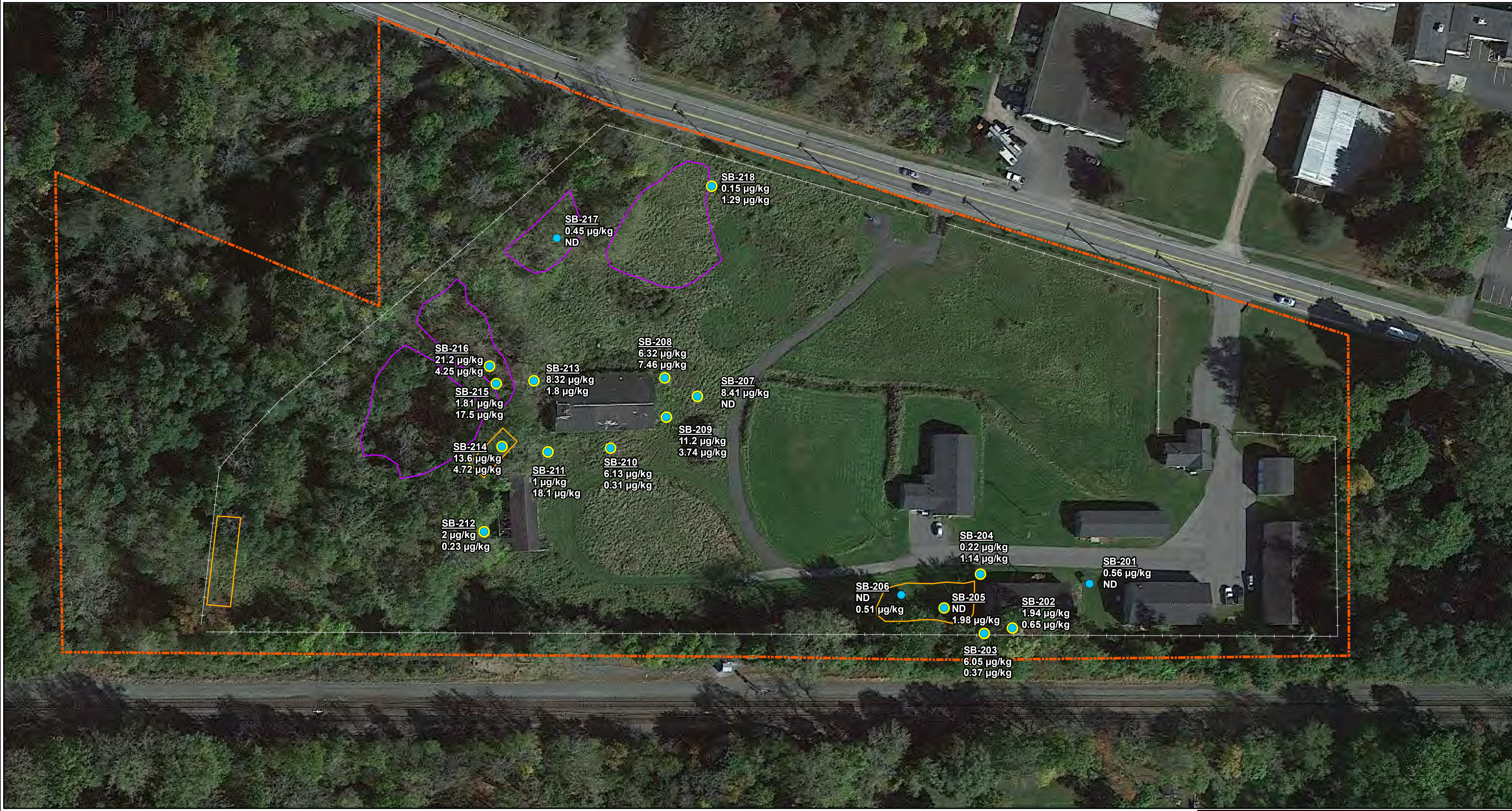
	6 NYCRR Part 375 Protection of Groundwater Soil Cleanup Objective ug/kg	6 NYCRR Part 375 Commercial Use Soil Cleanup Objective ug/kg
Acetone	50	500,000
Chloroform	370	350,000
cis-1,2-Dichloroethene	250	500,000
Methylene Chloride	50	500,000
Trichloroethene	470	200,000

GEORGE A. ROBINSON & CO., INC. (SITE #8-28-065)
477 WHITNEY ROAD
PENFIELD, NEW YORK
FEASIBILITY STUDY

VOCs and Metals in Unsaturated Soil with Concentrations Exceeding Protection of Groundwater SCOs

ARCADIS

FIGURE
4



Legend

2023 Soil Boring

- No PFOS Exceedances
- Protection of Groundwater PFOS Exceedance

Protection of Groundwater Guideline Value = 1.0 µg/kg
µg/kg = micrograms per kilogram
PFOS = Perfluorooctanesulfonic acid
ND = Not Detected

- Site Boundary
- Site Fence (Approximate)
- Settling Pond (Approximate)
- Historic Wastewater Lagoon (Approximate)

0 75 150 300 450 600
Feet

N

SB-112 Location ID
2.0 ng/L Surface Soil PFOS Concentration
0.22 ng/L Shallow Soil PFOS Concentration

Background Aerial: Google Satellite

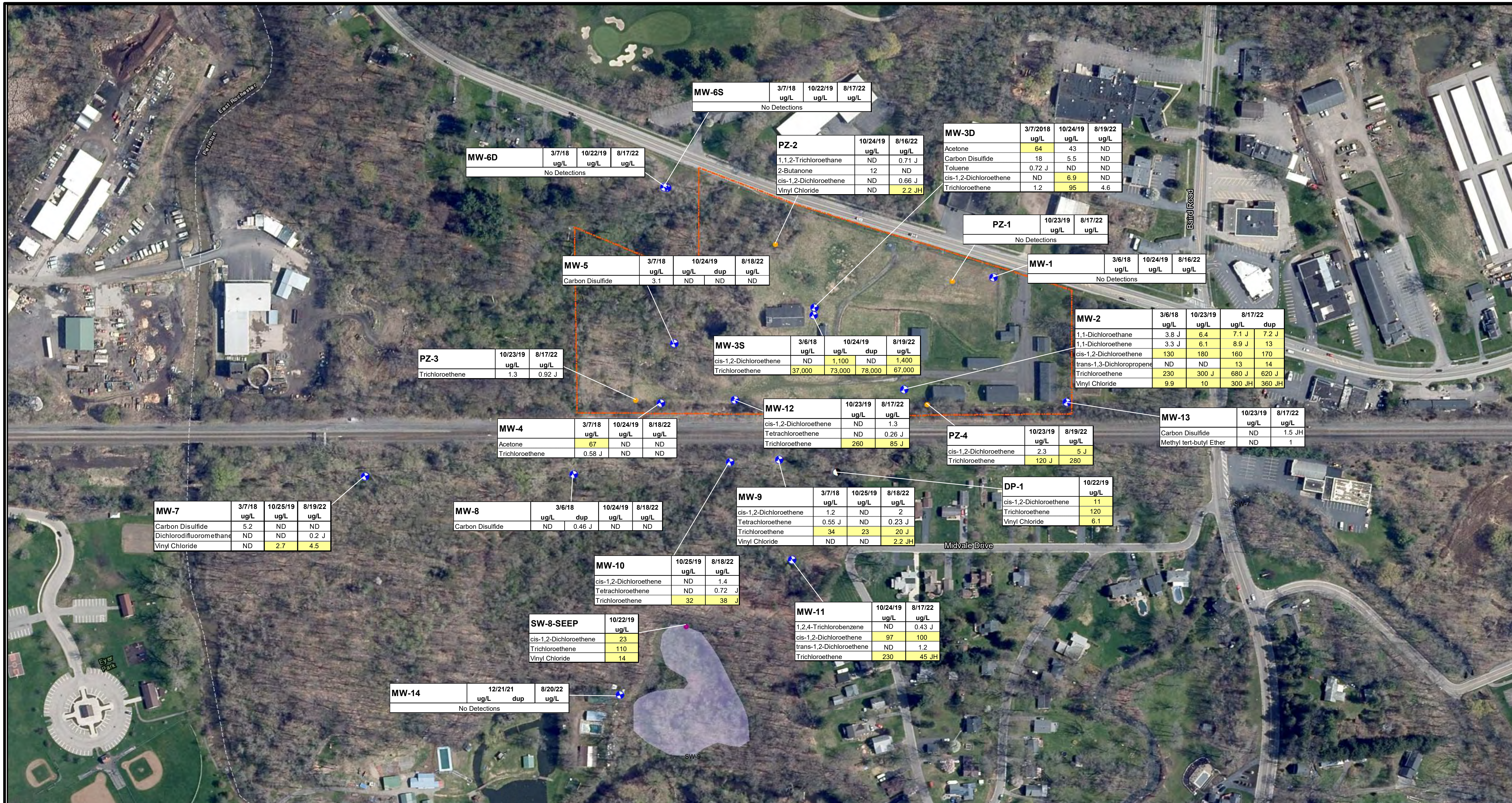
GEORGE A. ROBINSON & CO., INC. (SITE #8-28-065)
477 WHITNEY ROAD
PENFIELD, NEW YORK
FEASIBILITY STUDY

PFOS EXCEEDANCES IN SOIL

ARCADIS

FIGURE
5

Document Path: T:_ENV\NYSDEC\George Robinson\mxd\PFOS_Exceedances.mxd



Legend

- Seep Sample
- Drive Point
- Monitoring Well
- 1-inch Monitoring Well
- Approximate Wet Area
- Site Boundary

Notes:
ND = Not Detected.
J = Estimated value.
JH= Estimated, with a bias high.
Units are in micrograms per liter (ug/l)
Concentration exceeds corresponding NYSDEC GA Standard or Guidance Value

GEORGE A. ROBINSON & CO., INC. (SITE #8-28-065)
477 WHITNEY ROAD
PENFIELD, NEW YORK
FEASIBILITY STUDY

VOLATILE ORGANIC COMPOUND CONCENTRATIONS IN GROUNDWATER

ARCADIS

FIGURE
6

Document Path: T:_ENV\NYSDEC\George Robinson\mxd\GW_Wells_VOC_Hitbox - 2022.mxd

MW-6S	3/7/2018 ug/L	10/22/2019 ug/L	8/17/2022 ug/L
Antimony	ND	ND	15 J
Arsenic	29	42	35 J
Iron	58,100	64,100	67000 J
Magnesium	38,000	39,100	43000 J
Manganese	3,500	3,900	3700 J

MW-6D	3/7/2018 ug/L	10/22/2019 ug/L	8/17/2022 ug/L
Iron	870	420	1100 J
Magnesium	31,800	33,700	39000 J

PZ-2	10/24/2019 ug/L	8/17/2022 ug/L
Arsenic	41	47 JL
Chromium	77	4.9 JL
Iron	46,700	47000 JL
Manganese	4,700	5000 JL

MW-3D	3/7/2018 ug/L	10/24/2019 ug/L	8/17/2022 ug/L
Iron	40 J	ND	600 J
Magnesium	20,400	1,900	39000 JH

PZ-1	10/24/2019 ug/L	8/17/2022 ug/L
Iron	28,500	54,000
Magnesium	19,000	190000 J
Manganese	490	7,400
Thallium	ND	46 J

MW-5	3/7/2018	10/25/2019		8/17/2022
	ug/L	ug/L	Dup	ug/L
Iron	320	210	230	750
Magnesium	21,000	27,800	27,600	40000 J

MW-1	3/6/2018 ug/L	10/24/2019 ug/L	8/17/2022 ug/L
Magnesium	44,300	17,300	16000 JL

PZ-3	10/25/2019 ug/L	8/17/2022 ug/L
Arsenic	35	11 JH
Berylium	3.3	ND
Chromium	150	120
Hexavalent Chr	NR	73
Iron	134,000	73,000
Lead	54	ND
Magnesium	132,000	190000 J
Manganese	3,900	5,200
Nickel	130	71

MW-3S	3/6/2018	10/24/2019		8/17/2022
	ug/L	ug/L	Dup	ug/L
Chromium	93	15	14	8.4 J
Hexavalent Chr	88	5.8 J	ND	ND
Manganese	490	250	230	450 JH
Nickel	140	73	69	110 J

MW-2	3/6/2018	10/23/2019	8/17/2022	
	ug/L	ug/L	ug/L	DUP
Arsenic	31	37	27 J	100 J
Cadmium	180	140	370 J	220 J
Copper	1,100	550	1300 J	890 J
Iron	13,500	3,400	1800 J	2000 J
Manganese	2,400	4,400	3100 J	3200 J
Nickel	9,400	2,200	2900 J	4300 J

MW-12	10/23/2019 ug/L	8/17/2022 ug/L
Manganese	69	640 J

MW-13	10/23/2019 ug/L	8/17/2022 ug/L
No Exceedances		

MW-4	3/7/2018 ug/L	10/24/2019 ug/L	8/17/2022 ug/L
Iron	450	ND	830 JH
Magnesium	15,800	7,500	36000 JH

PZ-4	10/24/2019 ug/L	8/17/2022 ug/L
Cadmium	28	21 JH
Chromium	53	36 J
Iron	6,300	8500 J
Magnesium	29,500	44000 JH
Manganese	320	470 JH

MW-7	3/8/2018 ug/L	10/25/2019 ug/L	8/17/2022 ug/L
Iron	1,100	3,100	3500 J
Magnesium	38,000	56,700	61000 JH

MW-8	3/6/2018		10/24/2019	8/17/2022
	ug/L	Dup	ug/L	ug/L
Iron	2,500	2,400	1,300	41000 JH
Magnesium	49,000	46,900	40,300	42000 JH

MW-9	3/6/2018 ug/L	10/25/2019 ug/L	8/17/2022 ug/L
Iron	110	ND	880
Magnesium	36,500	39,300	38,000
Manganese	190	55	370

DP-1	10/24/2019 ug/L
Antimony	10 J
Arsenic	90
Beryllium	5.3
Chromium	200
Copper	260
Iron	231,000
Lead	110
Magnesium	247,000
Manganese	7,600
Mercury	1.1
Nickel	290

MW-10	10/25/2019 ug/L	8/17/2022 ug/L
Magnesium	34,700	35000 J

MARSH AREA / SW-8-SEEP	4/10/2019 ug/L	10/22/2019 ug/L
No Exceedances		

MW-11	10/24/2019 ug/L	8/17/2022 ug/L
Magnesium	47,800	66,000
Manganese	2,400	3,000

MW-14	12/21/2021 ug/L	8/17/2022 ug/L
Manganese	68	310 JH

0 200 400 800 1,200 1,600 Feet

Legend
- Seep Sample
- Drive Point
- Monitoring Well
- 1-inch Monitoring Well
- Approximate Wet Area
- Site Boundary

Notes:
ND = Not Detected.
J = Estimated value.
JH = Estimated, with a bias high.
Units are micrograms per liter (ug/l).
MARSH AREA and SW-8-SEEP samples were collected from the same location
MARSH AREA and SW-8-SEEP sample results were for Dissolved Metals
MARSH AREA and SW-8-SEEP sample results are compared against TOGS 1.1.1 H(WS) Classes A-C Standards

Concentration exceeds corresponding NYSDEC GA Standard or Guidance Value

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GEORGE A. ROBINSON & CO., INC. (SITE #8-28-065)
477 WHITNEY ROAD
PENFIELD, NEW YORK
FEASIBILITY STUDY

METALS CONCENTRATIONS IN GROUNDWATER

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FIGURE 7

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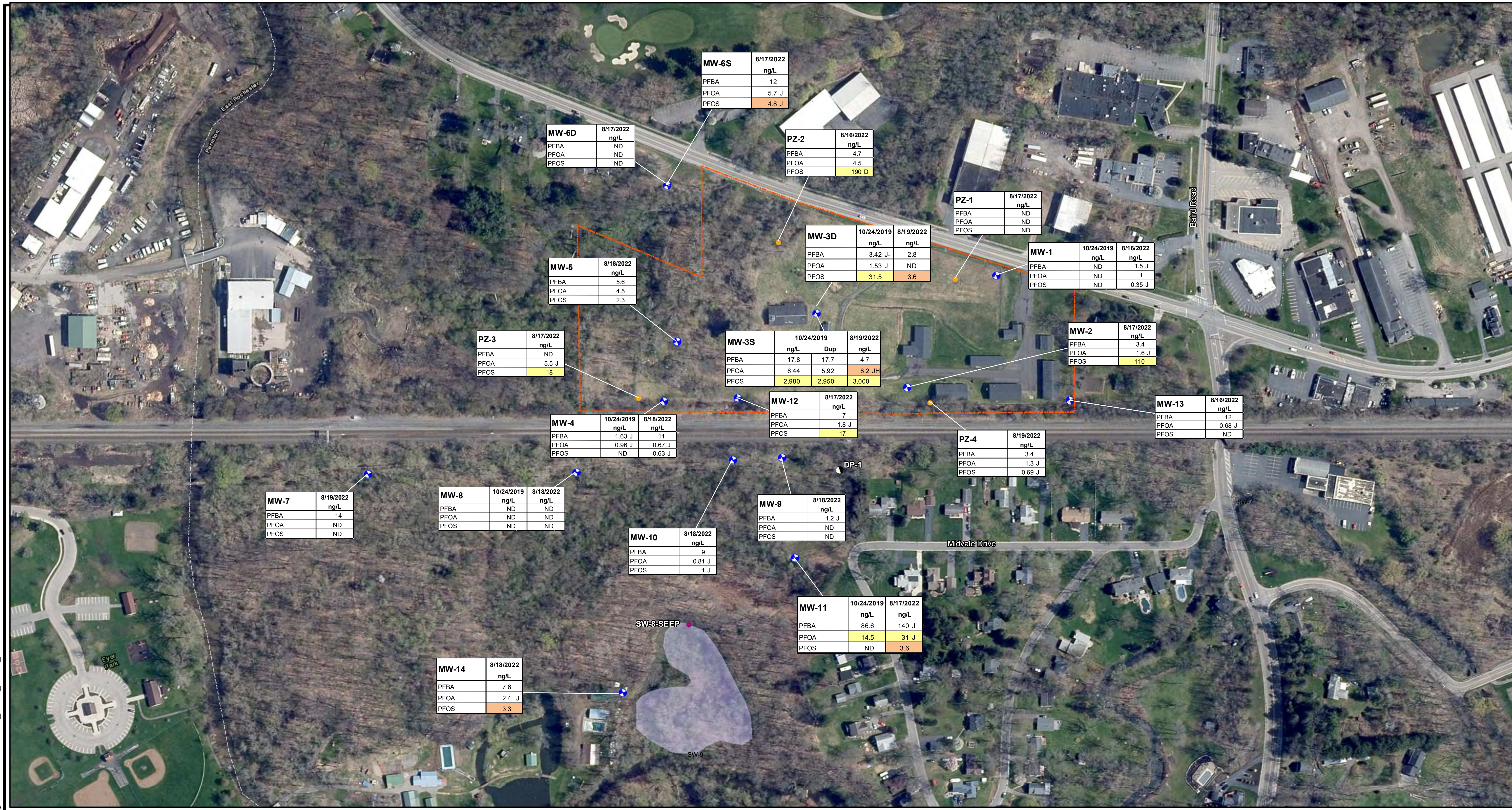

0 200 400 800 1,200 1,600 Feet

N

Legend

- Seep Sample
- Drive Point
- Monitoring Well
- 1-inch Monitoring Well
- Approximate Wet Area
- Site Boundary

Notes:
J = Estimated value.
J- = Estimated value; may have a low bias.
D = A dilution was performed by the laboratory.
Units are nanograms per liter (ng/l)
PFBA - Perfluorobutanoic acid
PFOA - Perfluorooctanoic acid
PFOS - Perfluorooctanesulfonic acid
Exceeds NYSDEC Ambient Water Quality Guidance Value for Protection of Human Health (PFOA = 6.7 ng/L, PFOS = 2.7 ng/L), April 2023.
Exceeds NYSDEC Ambient Water Quality Guidance Value and New York State MCLs for PFOA and PFOS in drinking water.

GEORGE A. ROBINSON & CO., INC. (SITE #8-28-065)
477 WHITNEY ROAD
PENFIELD, NEW YORK
REMEDIAL INVESTIGATION

PFAS CONCENTRATIONS IN GROUNDWATER

ARCADIS

FIGURE
8

Document Path: T:_ENV\NYSDEC\George Robinson\mxd\GW_Wells_PFAS_Hitbox - 2022.mxd

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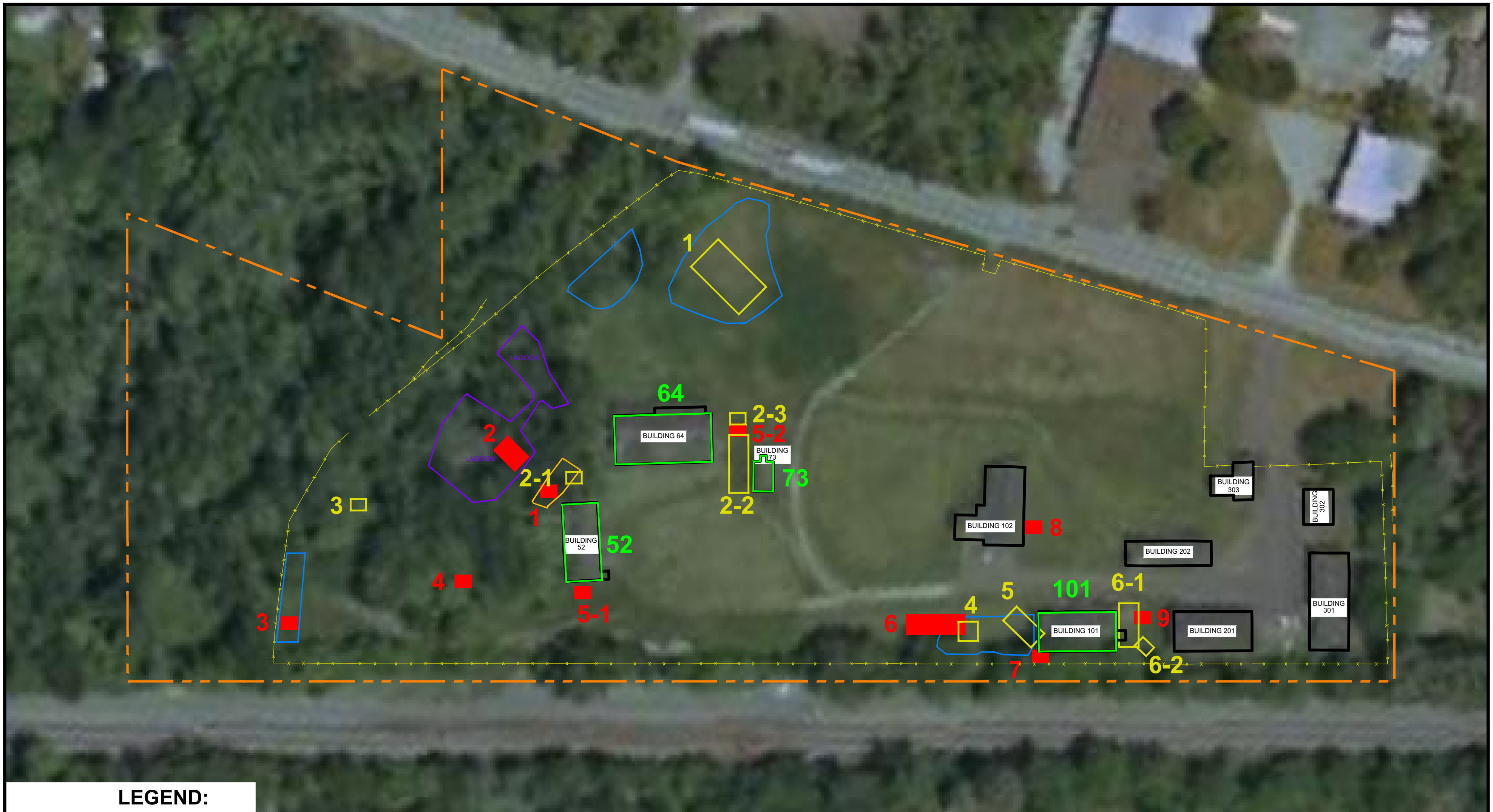

LEGEND:

- SITE BOUNDARY
- SITE FENCE
- HISTORICAL SETTLING POND
- HISTORICAL WASTEWATER LAGOON
- 3 4 52 EXCAVATION AREA IDENTIFICATION NUMBER
- IN-SITU STABILIZATION TO ADDRESS METALS IN SOIL
- EXCAVATION TO ADDRESS VOCs IN SOIL
- POST-BUILDING DEMOLITION EXCAVATION

NOTE: HISTORICAL BOUNDARIES ARE APPROXIMATE.

0 150' 300'
GRAPHIC SCALE

GEORGE A. ROBINSON & CO. INC. (SITE #8-28-065)
477 WHITNEY ROAD
PENFIELD, NEW YORK
FEASIBILITY STUDY REPORT

ALTERNATIVE 3: SOURCE SOIL EXCAVATION AND SOIL TREATMENT

ARCADIS

FIGURE
9

GEORGE A. ROBINSON & CO. INC. (SITE #8-28-065)
477 WHITNEY ROAD
PENFIELD, NEW YORK
FEASIBILITY STUDY REPORT

ALTERNATIVE 3: GROUNDWATER TREATMENT

ARCADIS

FIGURE
10