PROPOSED REMEDIAL ACTION PLAN

Former Silver Cleaners
State Superfund Project
Rochester, Monroe County
Site No. 828186
February 2020

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.

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:

02/27/2020 to 03/27/2020

A public meeting is scheduled for the following date:

03/18/2020 at 6:30 pm

Public meeting location:

Rochester City Hall, 30 Church Street, Room 208A

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 through 03/27/2020 to:

Matt Dunham
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
matthew.dunham@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 Former Silver Cleaners site is located in downtown Rochester, Monroe County. The site is comprised of three contiguous parcels totaling 0.30 acres located at the corner of Andrews Street and North Clinton Avenue. The addresses for the three contiguous parcels are 245 Andrews

Street, 151 and 159-169 Pleasant Street. The site is bounded by Andrews Street to the north, North Clinton Avenue to the east and commercial properties to the west and south.

Site Features:
The main site feature is the one-story vacant on-site building with a paved parking area on the east side of the property.

Current Zoning and Land Use:
The site is currently being used as a surface parking lot and is zoned Center City District (CCD). The CCD is intended to foster a vibrant, safe, twenty-four-hour Center City by encouraging residential development while retaining and further developing a broad range of commercial, office, institutional, public, cultural and entertainment uses and activities.

Past Use of the Site:
The 245 Andrews Street parcel was utilized as a dry cleaner from 1949 to 2011. The 151 and 159-169 Pleasant Street parcels were utilized as a gas station from 1935 to 1955.

Site Geology and Hydrogeology:
The on-site soils consist of miscellaneous fill material that is underlain with fine sand with trace silt and gravel. The miscellaneous fill material consists of soil, concrete, and brick. The Genesee River is located approximately 0.2 miles west of the site. The local groundwater flow direction is to the north. The depth to groundwater in the area is approximately 6 to 9 feet below ground surface.

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, alternatives (or an alternative) that restrict(s) the use of the site to restricted-residential use (commercial use and industrial use) as described in Part 375-1.8(g) are/is being evaluated in addition to an alternative which would allow for unrestricted use of the site.

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

SECTION 5: ENFORCEMENT STATUS

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

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

Silver Cleaners and Launderers/Silver Cleaning Co., Inc.

PJ Man Holding, Inc.

The PRPs for the site declined to implement a remedial program when requested by the Department. After the remedy is selected, the PRPs will again be contacted to assume responsibility for the remedial program. If an agreement cannot be reached with the PRPs, the Department will evaluate the site for further action under the State Superfund. The PRPs are subject to legal actions by the state for recovery of all response costs the state has incurred.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

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

The following general activities are conducted during an RI:

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

The analytical data collected on this site includes data for:

- groundwater
- soil
- indoor air
- sub-slab vapor

6.1.1: Standards, Criteria, and Guidance (SCGs)

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

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media-specific SCGs. The Department has

developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. The tables found in Exhibit A list the applicable SCGs in the footnotes. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

6.1.2: RI Results

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

tetrachloroethene (PCE)
cis-1,2-dichloroethene
trichloroethene (TCE)

As illustrated in Exhibit A, the contaminant(s) of concern exceed the applicable SCGs for:

- groundwater
- soil
- soil vapor intrusion

6.2: Interim Remedial Measures

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

The following IRM(s) has/have been completed at this site based on conditions observed during the RI.

IRM - Sub Slab Depressurization System (SSD) Installation

The Department performed Soil Vapor Intrusion (SVI) sampling during the heating seasons in 2014 and 2016 at structures overlying the groundwater contamination plume emanating from the former dry cleaner. Three off-site property owners agreed to sampling. Based on the sampling results, no further action was recommended for one structure and the installation of a sub-slab depressurization (SSD) system was recommended at two structures immediately adjacent to the site. One system was installed in March 2019. The other system was installed under the Brownfield Cleanup Program (ref. Site No. C828195).

IRM - Tank Removal

A focused IRM was completed in August 2015 to identify whether underground storage tanks (USTs) existed on the site. One 500-gallon UST was removed from the site. At the completion of the IRM, a Construction Completion Report, dated December 2019, was prepared.

6.3: Summary of Environmental Assessment

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

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

Soil and groundwater were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), and pesticides. Groundwater samples were also analyzed for the emerging contaminants per and polyfluorinated alkyl substances (PFAS) and 1,4-dioxane. Based upon investigations conducted to date, the primary contaminants of concern are tetrachloroethene (PCE) and its associated degradation products.

Soil - Tetrachloroethene (PCE) is found in shallow and deeper soil, predominantly under and to the south of the on-site building extending off-site. Concentrations of tetrachloroethene found on-site at levels, up to 670 parts per million (ppm), significantly exceed the soil cleanup objectives for the protection of groundwater (1.3 ppm) and for restricted residential use (19 ppm). Concentrations of trichloroethene and cis-1,2-dichloroethene were not found at levels that exceed the soil cleanup objectives for the protection of groundwater (1.3 ppm) or for restricted residential use (21 and 100 ppm, respectively).

Groundwater - PCE and its associated degradation products are found in groundwater on and off-site, substantially exceeding groundwater standard of 5 parts per billion (ppb), with a maximum concentration of 130,000 ppb of PCE. Concentrations of trichloroethene found on and off-site, substantially exceed groundwater standard of 5 ppb, with a maximum concentration of 2,500 ppb. Concentrations of cis-1,2-dichloroethene found on and off-site, substantially exceed groundwater standard of 5 ppb) with a maximum concentration of 150 ppb.

PFAS - Perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) were reported in groundwater at concentrations of up to 19 and 25 parts per trillion (ppt), respectively. These levels exceed their respective screening levels of 10 ppt. No other individual PFAS exceeded the 100 ppt screening level. The total concentration of PFAS, including PFOA and PFOS, were reported at concentrations of up to 64.6 ppt. The highest concentrations are found on-site under the southern part of the building slab.

Sub-slab Vapor and Indoor Air - 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 at three buildings from 2014-2016. Soil vapor intrusion sampling was offered to four additional properties, but access was not granted. The maximum concentrations of PCE and TCE in sub-slab vapor samples were as follows: 400,000 micrograms per cubic meter (ug/m3) and 8,200 ug/m3, respectively. Similarly, PCE and TCE were found in indoor air samples at maximum

levels of 72 ug/m3 and 1.4 ug/m3, respectively. The DOH air guidelines for indoor air samples are, 30 ug/m3 for PCE and 2 ug/m3 for TCE. The concentrations of these VOCs in outdoor air samples were found to be consistent with background ranges.

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.*

People are not expected to come into direct contact with site related contaminants in the soil because a building and pavement cover most of the site. People may come into direct contact with site-related contaminants if they dig below the surface. People are not drinking contaminated groundwater associated with the site because the area is served by a public water supply that obtains its water from a different source not affected by this contamination. Volatile organic compounds in soil vapor (air spaces within the soil) may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Because the site is currently vacant, inhalation of site contaminants in indoor air due to soil vapor intrusion does not represent a concern. However, the potential exists for the inhalation of site contaminants due to soil vapor intrusion for any future on-site development. Actions have been implemented off-site where necessary to address the potential for inhalation of site related contaminants via soil vapor intrusion. Additional sampling is recommended off-site at locations where access was not previously obtained.

6.5: Summary of the Remediation Objectives

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

The remedial action objectives for this site are:

Groundwater

RAOs for Public Health Protection

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

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.

Soil

RAOs for Public Health Protection

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

RAOs for Environmental Protection

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

Soil Vapor

RAOs for Public Health Protection

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

SECTION 7: SUMMARY OF 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 remedial action objectives 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 at Exhibit D.

The proposed remedy is referred to as the Excavation and In-Situ Chemical Treatment remedy.

The estimated present worth cost to implement the remedy is $3,310,000.00. The cost to construct the remedy is estimated to be $3,200,000.00 and the estimated average annual cost is $25,000.00

The elements of the proposed remedy are as follows:

1. A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program.

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 gas and other emissions;
- increasing energy efficiency and minimizing use of non-renewable energy;
- conserving and efficiently managing resources and materials;
- reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- 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.

2. The existing on-site building will be demolished and materials which can't 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.

3. Excavation and off-site disposal of contaminant source areas, including grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u) and soils which exceed the protection of groundwater soil cleanup objectives (PGWSCOs), as defined by 6 NYCRR Part 375-6.8 for those contaminants found in site groundwater above standards. Approximately 1950 cubic yards of contaminated soil will be removed from the site. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the site. Dust and storm water run-off control measures will be employed to minimize any short-term impacts associated with the excavation.

4. In-situ chemical treatment will be implemented to treat contaminants in saturated soil and groundwater. A chemical oxidant will be injected into the subsurface to destroy the contaminants at the site. The method and depth of injection will be determined during the remedial design.

5. A site cover will be required to allow for restricted-residential use of the site in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where a soil cover is to be used it will be a minimum of two feet 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 for the use of the site as 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. Any on-site building(s) will be required to have a sub-slab depressurization, or other acceptable measures, to mitigate the migration of vapors into the building from soil and/or groundwater.

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

- require the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allow the use and development of the controlled property for restricted-residential 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; and
- require compliance with the Department approved Site Management Plan.

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

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 discussed above.

Engineering Controls: The sub-slab depressurization system and site cover discussed above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- a provision for the evaluation of the potential for soil vapor intrusion for occupied off-site buildings, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- a provision that should the owners of properties where sampling was previously declined requests to have their properties sampled in the future, the NYSDEC, in consultation with the NYSDOH, shall assess the need for soil vapor intrusion sampling and take appropriate action;
- descriptions of the provisions of the environmental easement including any land use and groundwater;
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

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

- monitoring of groundwater to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department;

- monitoring for vapor intrusion for any buildings off-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 system(s); and
- compliance inspection of the system(s) to ensure proper O&M as well as providing the data for any necessary reporting.

Exhibit A

Nature and Extent of Contamination

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

For each medium for which contamination was identified, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the media and compares the data with the applicable SCGs for the site. 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, waste/source materials were identified at the site and are impacting groundwater, soil and/or 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 were 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, dry cleaning chemicals were either spilled to the ground surface or to floor drains, where they flowed/leaked into the soil at the site. The source area is located beneath the vacant, on-site building.

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

Groundwater

Groundwater samples were collected from overburden and bedrock monitoring wells. The samples were collected to assess groundwater conditions on and off-site. The results indicate that contamination in the overburden and bedrock groundwater on and off-site exceeds the SCGs for volatile organic compounds.

Table #1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
Tetrachloroethene (PCE)	ND[c] – 130,000	5	34/61
Trichloroethene (TCE)	ND – 2,500	5	16/61
cis-1,2-Dichloroethene	ND – 150	5	4/61

a - ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.

b- SCG: Standard Criteria or Guidance - Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).
c – Not Detected

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, tetrachloroethene (PCE) and its associated degradation products.

Soil

Soil samples were collected at the site during the RI, from on-site and off-site locations to further delineate the source area. Soil samples were collected in the vicinity of the source area, beneath the former on-site building for analysis primarily for VOCs.

The RI soil sampling results were compared to the applicable Soil Cleanup Objectives (SCOs) for unrestricted use and restricted use/protection of groundwater, as discussed in Section 3, and indicate that the primary contaminants of concern on-site are VOCs that 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 data.

The soil VOC results indicate that a VOC contaminant source still exists on the site. The VOC contamination exceeding the unrestricted and protection of groundwater SCOs was determined to emanate from the source area beneath the concrete slab of the former Silver Cleaners building.

Table #2 - Soil

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG[c] (ppm)	Frequency Exceeding Restricted SCG
VOCs					
Tetrachloroethene (PCE)	ND - 670	1.3	12/32	1.3	12/32
Trichloroethene (TCE)	ND	0.47	0/32	0.47	0/32
cis-1,2-Dichloroethene	ND	0.25	0/32	0.25	0/32

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

Based on the findings of the Remedial Investigation, the past disposal of hazardous waste has resulted in the contamination of on and off-site soil. The site contaminants identified in soil which are considered to be the primary contaminants of concern, to be addressed by the remedy selection process are, tetrachloroethene (PCE) and its associated degradation products.

Soil Vapor

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 at three off-site buildings from 2014-2016. Soil vapor intrusion sampling was offered to four additional properties, but access was not granted. The maximum concentrations of PCE and TCE in sub-slab vapor samples were as follows: 400,000 micrograms per cubic meter (ug/m3) and 8,200 ug/m3, respectively. Similarly, PCE and TCE were found in indoor air samples at maximum levels of 72 ug/m3 and 1.4 ug/m3, respectively. The level of PCE is above the DOH air guidelines for indoor air samples, 30 ug/m3 for PCE, but the level of TCE is below the air guideline of 2 ug/m3 for TCE. The concentrations of these VOCs 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 in two buildings and no further action in one building.

One system was installed in March, 2019. The second system was installed, by others, under the Brownfield Cleanup Program (ref. Site No. C828195).

Based on the findings of the Remedial Investigation, the disposal of hazardous waste has resulted in the contamination of soil vapor. The site contaminants identified in sub-slab vapor which are the primary contaminants of concern, to be addressed by the remedy selection process are tetrachloroethene (PCE) and its associated degradation products.

Exhibit B

Description of Remedial Alternatives

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

Alternative #1: No Further Action

The No Further Action Alternative recognizes the remediation of the site completed by the IRM(s) described in Section 6.2. This alternative leaves the site in its present condition and does not provide any additional protection of the environment.

Alternative #2: No Further Action with Site Management

The No Further Action with Site Management Alternative recognizes the remediation of the site completed by the IRM(s) described in Section 6.2 and Site Management and Institutional Controls and Engineering Controls are necessary to confirm the effectiveness of the IRM. This alternative maintains engineering controls which were part of the IRM and includes institutional controls, in the form of an environmental easement and site management plan, necessary to protect public health and the environment from contamination remaining at the site after the IRMs.

Present Worth: *$393,000.00*
Capital Cost: *$85,000.00*
Annual Costs: *$20,000.00*

Alternative #3: Restoration to Pre-Disposal or Unrestricted Conditions

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A and soil meets the unrestricted soil clean objectives listed in Part 375-6.8 (a). This alternative would include the demolition and off - site disposal of the on-site building, excavation and off-site disposal of all waste and soil contamination above the unrestricted soil cleanup objectives. The remedy will not rely on institutional or engineering controls to prevent future exposure. There is no Site Management, no restrictions, and no periodic review. This remedy will have no annual cost, only the capital cost.

Capital Cost: *$10,590,000.00*

Alternative #4: In-Situ Chemical Treatment

This alternative would include, in-situ chemical treatment implementation to treat PCE and its degradation products in soil and groundwater. Treatment of soil and groundwater would be implemented using in-situ chemical treatment, either chemical oxidation or chemical reduction depending on the results of the bench and pilot scale tests. Depending on the contact time chemical oxidants are capable of converting the VOC mass to a non-toxic compound; however multiple treatments will be required. Prior to the full implementation of this

technology, laboratory and on-site pilot scale studies will be conducted to more clearly define design parameters. The method and depth of injection will be determined during the remedial design. A site cover will be required to allow for commercial use of the site in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Any on-site building(s) will be required to have a sub-slab depressurization, or other acceptable measures, to mitigate the migration of vapors into the building from soil and/or groundwater.

Present Worth: *$3,190,000.00*
Capital Cost: *$2,970,000.00*
Annual Costs: *$25,000.00*

Alternative #5: Excavation and In-Situ Chemical Treatment

The existing on-site building(s) will be demolished and materials which can't be beneficially reused on-site will be taken off-site for proper disposal in order to implement the remedy. Excavation and off-site disposal of contaminant source areas, including grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u). Approximately 1950 cubic yards of contaminated soil will be removed from the site. Excavation and removal of any underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination. Confirmation sampling for VOCs would be conducted during excavation activities, with analytical results verifying 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 the designed grades at the site. A site cover will be required to allow for commercial use of the site in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Any on-site building(s) will be required to have a sub-slab depressurization, or other acceptable measures, to mitigate the migration of vapors into the building from soil and/or groundwater.

Treatment of the saturated soil and groundwater would be implemented using in-situ chemical treatment, either chemical oxidation or chemical reduction depending on the results of the bench and pilot scale tests. Depending on the contact time chemical oxidants are capable of converting the VOC mass to a non-toxic compound; however multiple treatments maybe required. Prior to the full implementation of this technology, laboratory and on-site pilot scale studies will be conducted to more clearly define design parameters. The method and depth of injection will be determined during the remedial design.

Present Worth: *$3,310,000.00*
Capital Cost: *$3,200,000.00*
Annual Costs: *$25,000.00*

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
No Action	$0	$0	$0
No Further Action with Site Management	$85,000.00	$20,000.00	$393,000.00
Restoration to Pre-Disposal or Unrestricted Conditions	$10,580,000.00	$0	$10,580,000.00
In-Situ Chemical Treatment	$2,970,000.00	$25,000.00	$3,190,000.00
Excavation and In-Situ Chemical Treatment	$3,200,000.00	$25,000.00	$3,310,000.00

Exhibit D

SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative 5, Excavation and In-Situ Chemical Treatment as the remedy for this site. Alternative 5 would achieve the remediation goals for the site by excavation of soil above the water table and the treatment of groundwater and soil below the groundwater table using in-situ chemical treatment. The elements of this remedy are described in Section 7. The proposed remedy is depicted in Figure 8.

Basis for Selection

The proposed remedy is based on the results of the RI and the evaluation of alternatives. 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 included 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.

The proposed remedy (Alternative 5) would satisfy this criterion by removing the source of groundwater contamination from above the water table, treating the soil below the water table, and addressing the potential for exposures related to soil vapor intrusion. Alternative 5 addresses the source of the groundwater contamination, which is 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 3, by removing all soil contaminated above the unrestricted soil cleanup objective, meets the threshold criteria. Alternatives 2, 4, and 5 also comply with this criterion but to a lesser degree or with lower certainty due to not removing all contaminated soil. Alternatives 2, 4 and 5 rely on a restriction of groundwater use at the site to protect human health. Alternative 3 may require a short-term restriction on groundwater use; however, it is expected the restriction will be able to be removed. The potential for soil vapor intrusion will be significantly reduced by Alternative 3 and, to a somewhat lesser extent, Alternative 5 because the source of vapors in the unsaturated zone will be removed. The potential for soil vapor intrusion will remain high under Alternatives 2 and 4. Soil vapor mitigation is required under Alternatives 4 and 5 in order to protect human health.

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 5 complies with SCGs to the extent practicable. It addresses source areas of contamination and complies with the restricted use soil cleanup objectives at the surface through soil removal and a site cover system. It also creates the conditions necessary to restore groundwater quality to the extent practicable. Alternatives 2 and 4 also comply with this criterion but to a lesser degree or with lower certainty due to the lack of soil removal. Because Alternatives 2 and 4 satisfy the threshold criteria, the remaining criteria are particularly important in selecting a final remedy for the site. It is expected Alternative 3 will achieve groundwater SCGs in less than 5 years, while groundwater contamination above SCGs will remain on-site under Alternatives 2 and 4 for many years.

The next six "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on-site after the selected remedy 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 the contaminated overburden soils (Alternatives 3 and 5). Alternative 3 results in removal of all of the chemical contamination at the site and removes the need for property use restrictions and long-term monitoring. Alternative 5 would result in the removal of most of the contaminated soil at the site, but it also requires an environmental easement and long-term monitoring. For Alternative 2, site management remains effective, but it will not be desirable in the long term. The long-term effectiveness of Alternative 4 will depend on laboratory and on-site pilot testing.

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

Alternative 2 would control potential exposures with institutional controls only and will not reduce the toxicity, mobility or volume of contaminants remaining. Alternatives 3 and 4, reduce the mobility and volume of on-site waste by transferring the material to an approved off-site location. However, depending on the disposal facility, the volume of the material would not be reduced. Alternatives 4 and 5 would permanently reduce the toxicity, mobility and volume of contaminants by the use of chemical treatment to destroy the contamination.

5. Short-term Impacts and Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

Alternatives 2 through 5 all have short-term impacts which could easily be controlled, however, Alternative 2 would have the smallest impact. Alternative 3 would have the largest short-term impact due to the need to excavate a large volume of soil both above and below the water table. The time needed to achieve the remediation goals is the shortest for Alternative 3 and longer for Alternative 5. Alternatives 2 and 4 will take the longest to achieve the remediation goals.

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.

Alternatives 2 and 5 are favorable in that they are readily implementable. Alternative 3 is also implementable, but the volume of soil excavated under this alternative would necessitate increased truck traffic on local roads for several months. Alternative 3 would also require extensive structural support and dewatering associated with the deep excavation. The implementability of Alternative 4 and to a lesser degree Alternative 5 will depend on laboratory and on-site pilot testing.

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. Alternative 2 has a low cost, but the contaminated soil would not be addressed other than by institutional controls. With its large volume of soil to be handled, Alternative 3 would have the highest present work cost. Alternative 5 would be much less expensive than Alternative 3, yet it would provide equal protection of the groundwater resource, and so is more cost-effective. The present worth costs of Alternatives 4 and 5 are similar to each other, although the capital cost for Alternative 5 would be higher than that of Alternative 4.

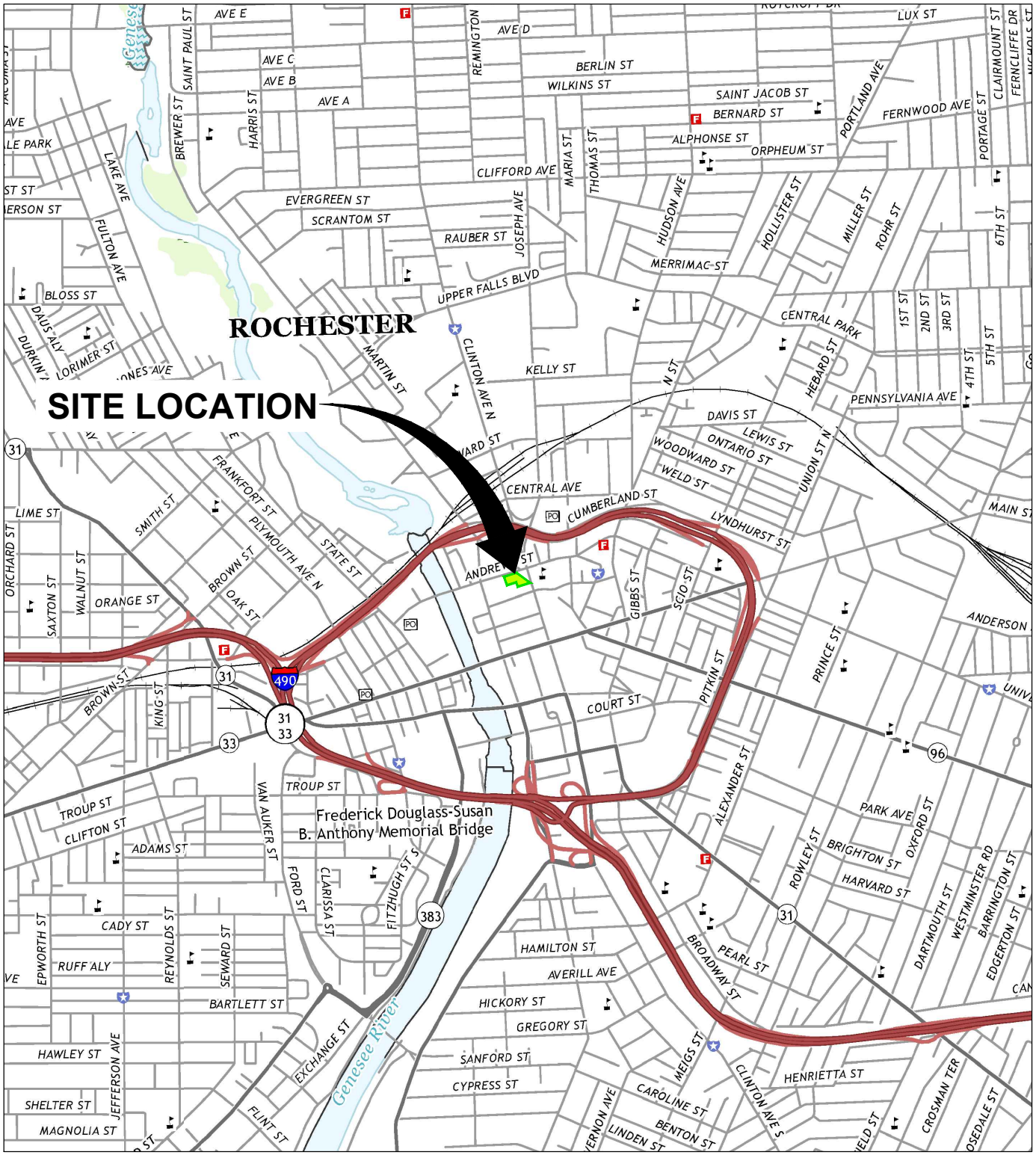
8. Land Use. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

Since the anticipated use of the site is commercial, Alternatives 2 and 4 would be less desirable because at least some contaminated soil would remain on the property whereas Alternative 3 and 5 would remove or treat the contaminated soil permanently. However, the residual contamination with Alternative 4 would be controllable with implementation of a Site Management Plan. With Alternative 3, removing all the overburden from the site, restrictions on the site use would not be necessary.

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

9. 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.

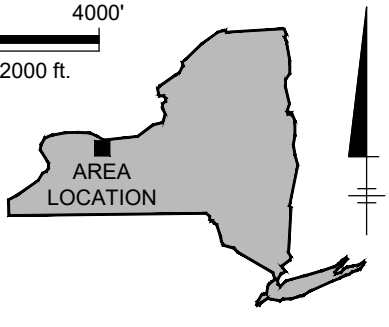
Alternative 5 is being proposed because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.



REFERENCE: BASE MAP USGS 7.5. MIN. TOPO. QUAD., ROCHESTER EAST & WEST, NEW YORK, 2016.

0 2000' 4000'

Approximate Scale: 1 in. = 2000 ft.



NEW YORK STATE DEPT. OF ENVIRONMENTAL CONSERVATION
FORMER SILVER CLEANERS SITE #828186
ROCHESTER, NEW YORK

REMEDIAL INVESTIGATION

SITE LOCATION MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE 1

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DB: E. KRAHMER PIC: PM: TM: TR: R. CLARE LYR:(Opt)ON=*;OFF=*REF*
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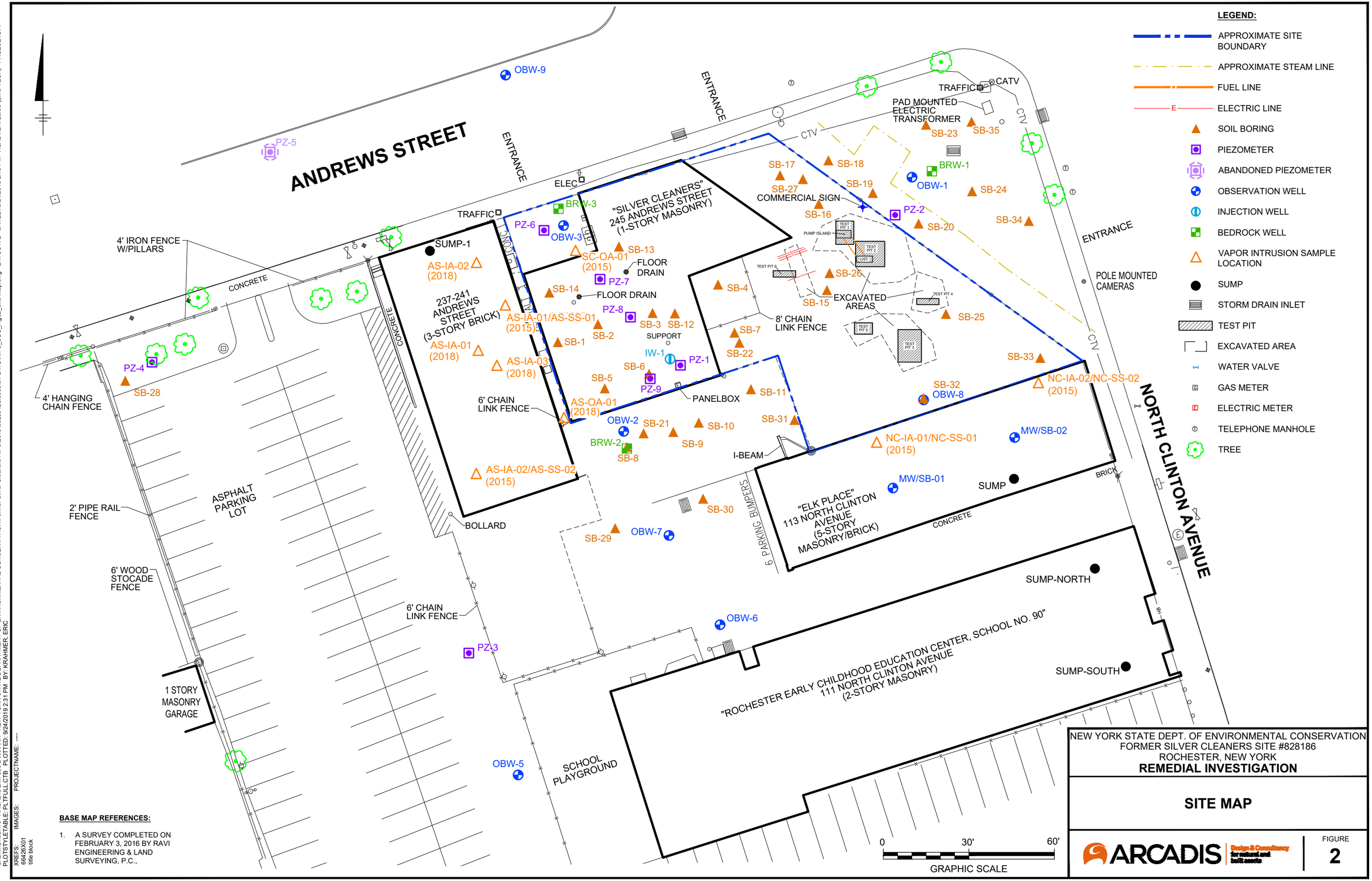
NY_Rochester_West_20160824_TM_geo.png



BASE MAP REFERENCES:

1. A SURVEY COMPLETED ON FEBRUARY 3, 2016 BY RAVI ENGINEERING & LAND SURVEYING, P.C.,

NEW YORK STATE DEPT. OF ENVIRONMENTAL CONSERVATION
FORMER SILVER CLEANERS SITE #828186
ROCHESTER, NEW YORK
REMEDIAL INVESTIGATION

SITE MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE
2

CITY: SYRACUSE NY DIV/GROUP: ENV/CAD DB: E. KRAHMER PIC: PM: TM: TR: R. CLARE LYR:(On)(Off)=*;*OFF;*REF*
C:\BIM\OneDrive - ARCADIS\BIM 360 Docs\ANA - NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION\Former Silver Cleaners RIFS\2019\00286426.0000\01-DWG\RIFS_SCC_Fig02_Site Map.dwg LAYOUT: 2 SAVED: 9/24/2019 2:15 PM ACADVER: 23.0S (LMS TECH) PAGESETUP: ----
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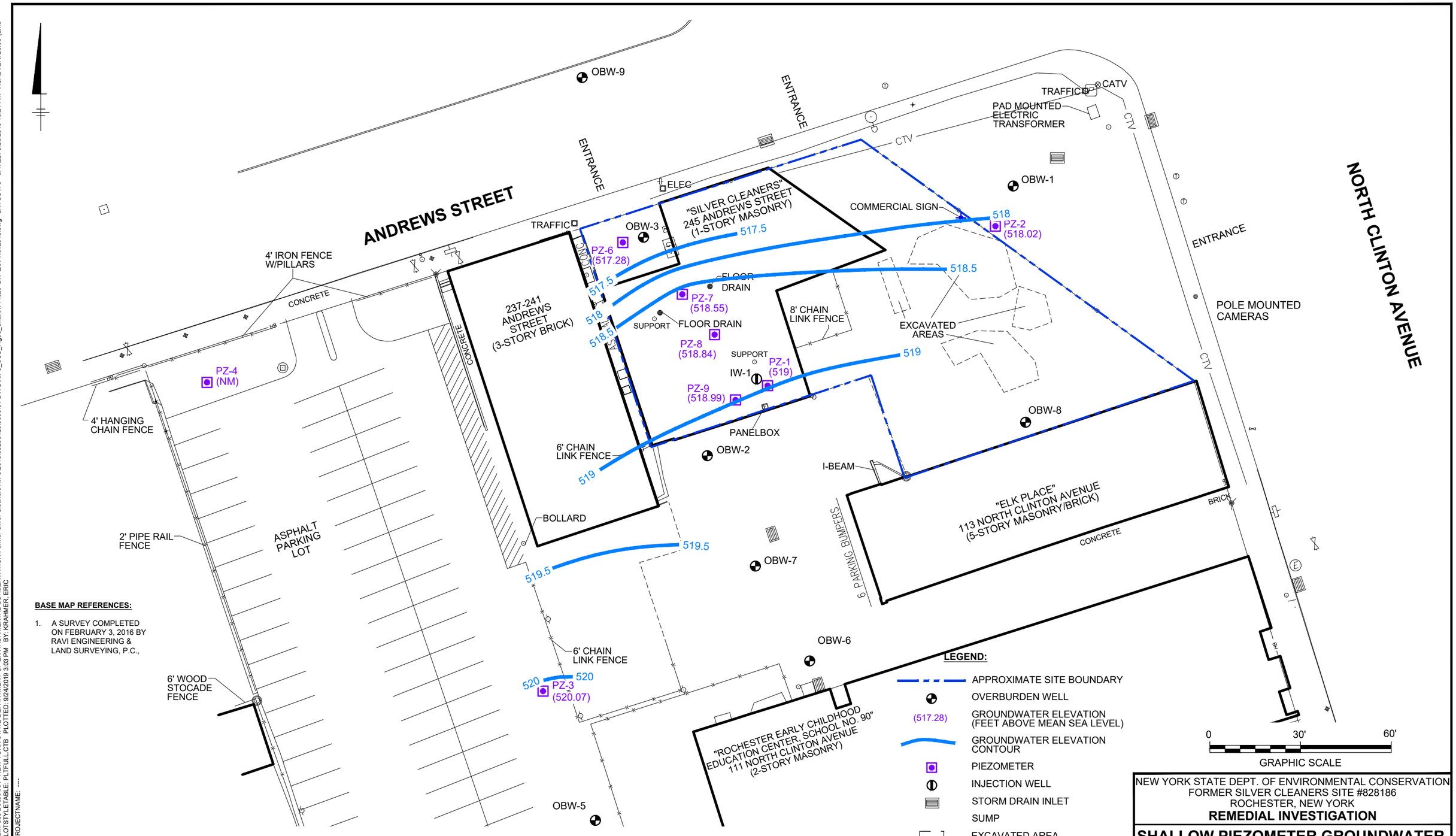

BASE MAP REFERENCES:

1. A SURVEY COMPLETED ON FEBRUARY 3, 2016 BY RAVI ENGINEERING & LAND SURVEYING, P.C.,

LEGEND:

- APPROXIMATE SITE BOUNDARY
- OVERBURDEN WELL
- (517.28) GROUNDWATER ELEVATION (FEET ABOVE MEAN SEA LEVEL)
- GROUNDWATER ELEVATION CONTOUR
- PIEZOMETER
- INJECTION WELL
- STORM DRAIN INLET
- SUMP
- EXCAVATED AREA
- WATER VALVE
- GAS METER
- ELECTRIC METER
- TELEPHONE MANHOLE
- NM NOT MEASURED

NEW YORK STATE DEPT. OF ENVIRONMENTAL CONSERVATION
FORMER SILVER CLEANERS SITE #828186
ROCHESTER, NEW YORK
REMEDIAL INVESTIGATION

SHALLOW PIEZOMETER GROUNDWATER ELEVATIONS NOVEMBER 19, 2018

ARCADIS Design & Consultancy for natural and built assets

FIGURE 3

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DB: E. KRAHMER PIC: PM: TM: TR: R. CLARE LYR:(Off|On|*;*OFF*;*REF* C:\BIM\OneDrive - ARCADIS\BIM 360 Docs\ANA - NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION\Former Silver Cleaners RIFS\2019\00266426.0000\01-DWG\RIFS_SCC_Fig06_Shallow-Piezo-GW-Elev-Nov2018.dwg LAYOUT: 6 SAVED: 8/26/2019 10:21 AM ACADVER: 23.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 9/24/2019 3:03 PM BY: KRAHMER, ERIC
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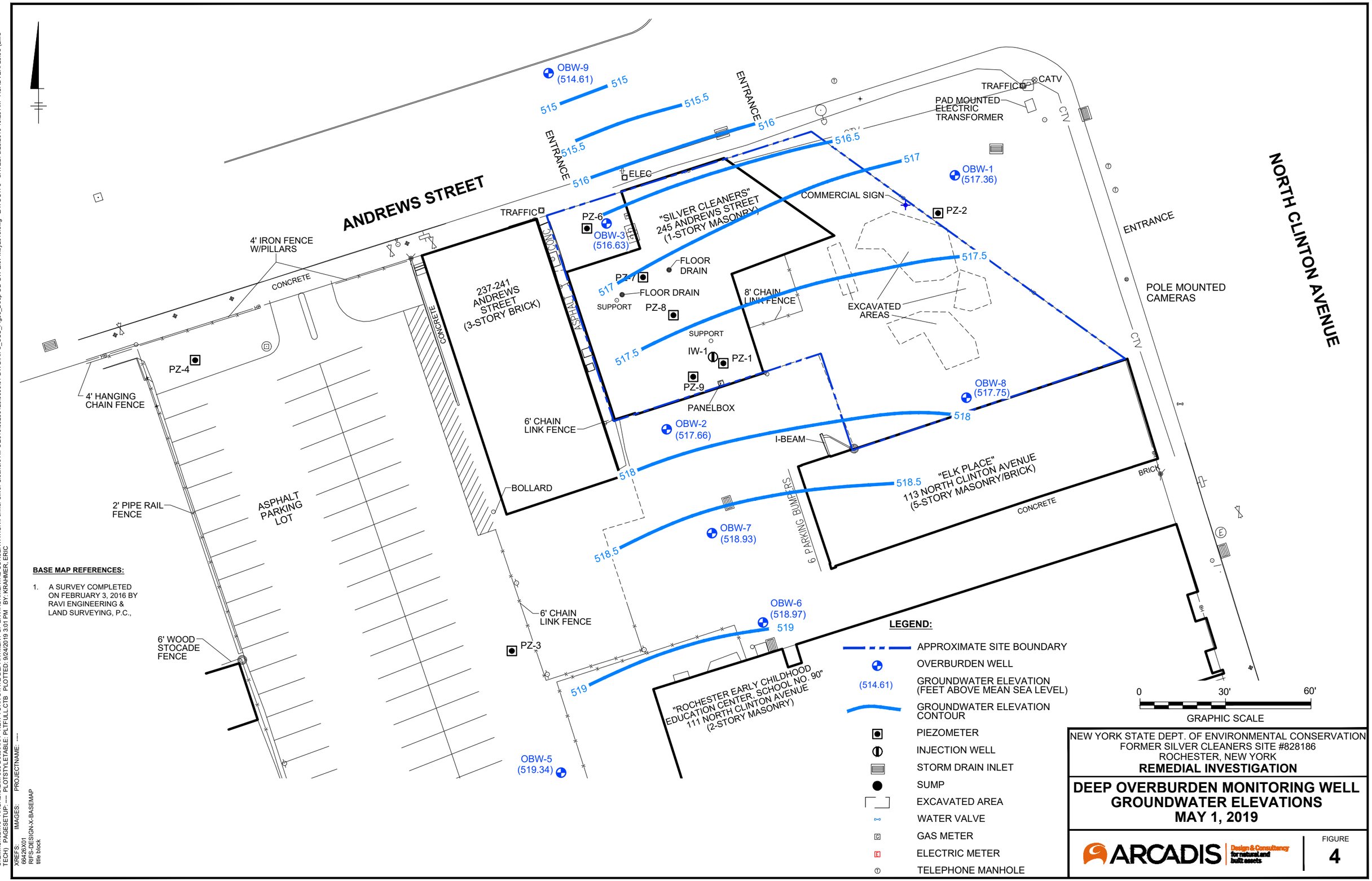

BASE MAP REFERENCES:

1. A SURVEY COMPLETED ON FEBRUARY 3, 2016 BY RAVI ENGINEERING & LAND SURVEYING, P.C.,

LEGEND:

- APPROXIMATE SITE BOUNDARY
- OVERBURDEN WELL
- (514.61) GROUNDWATER ELEVATION (FEET ABOVE MEAN SEA LEVEL)
- GROUNDWATER ELEVATION CONTOUR
- PIEZOMETER
- INJECTION WELL
- STORM DRAIN INLET
- SUMP
- EXCAVATED AREA
- WATER VALVE
- GAS METER
- ELECTRIC METER
- TELEPHONE MANHOLE

NEW YORK STATE DEPT. OF ENVIRONMENTAL CONSERVATION
FORMER SILVER CLEANERS SITE #828186
ROCHESTER, NEW YORK
REMEDIAL INVESTIGATION

DEEP OVERBURDEN MONITORING WELL GROUNDWATER ELEVATIONS MAY 1, 2019

ARCADIS Design & Consultancy for natural and built assets

FIGURE 4

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DB: E. KRAHMER PIC: PM: TM: TR: R. CLARE LYR:(Off|On*):*OFF*=*REF*
C:\BIM\OneDrive - ARCADIS\BIM 360 Docs\ANA - NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION\Former Silver Cleaners RIFS\2019\00266426.0000\01-DWG\RIFS_SCC_Fig08_Deep OB-GW-Elev-May2019.dwg LAYOUT: 8 SAVED: 8/26/2019 10:23 AM ACADVER: 23.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 9/24/2019 3:01 PM BY: KRAHMER, ERIC
XREFS: IMAGES: PROJECTNAME: ----
66426X01
RIFS-DESIGN-X-BASEMAP
title block

SB-3	
Sample Depth (feet)	10 - 12
Date	8/21/2015
VOCs (mg/kg)	
Tetrachloroethene	**12**

SB-14	
Sample Depth (feet)	12 - 13.5
Date	1/14/2016
VOCs (mg/kg)	
Tetrachloroethene	**6.1**

SB-2	
Sample Depth (feet)	6 - 8
Date	8/21/2015
VOCs (mg/kg)	
Tetrachloroethene	**3.4 J**

OBW-3		
Sample Depth (feet)	13 - 15	22 - 24
Date	1/13/2016	1/15/2016
VOCs (mg/kg)		
Tetrachloroethene	**3.8**	**7.6**

SB-13	
Sample Depth (feet)	12 - 13.5
Date	1/13/2016
VOCs (mg/kg)	
Tetrachloroethene	**5.80**

SB-4	
Sample Depth (feet)	12 - 13.2
Date	8/18/2015
SVOCs (mg/kg)	
Benzo(a)anthracene	**1.5**
Benzo(a)pyrene	**1.3**
Benzo(b)flouranthene	**1.7**
Chrysene	**1.3**
Indeno(1,2,3-cd)pyrene	**0.76**

SB-20	
Sample Depth (feet)	11 - 13
Date	1/15/2016
VOCs (mg/kg)	
Ethylbenzene	**19**
n-Propylbenzene	**7.7**

SB-12	
Sample Depth (feet)	10 - 12
Date	1/12/2016
VOCs (mg/kg)	
Tetrachloroethene	**20**

PZ-8			
Sample Depth (feet)	4.0	5 - 7	11 - 12
Date	1/13/2016	1/13/2016	1/13/2016
VOCs (mg/kg)			
Tetrachloroethene	**1.6**	**10**	**11**

SB-6			
Sample Depth (feet)	2 - 4	6 - 8	8 - 9.5
Date	8/21/2015	8/21/2015	8/21/2015
VOCs (mg/kg)			
Tetrachloroethene	**28**	**2.1**	**36**

PZ-9	
Sample Depth (feet)	12 - 13
Date	1/15/2016
VOCs (mg/kg)	
Tetrachloroethene	**670**

IW-1	
Sample Depth (feet)	15 - 16
Date	1/12/2016
VOCs (mg/kg)	
Tetrachloroethene	**74**

PZ-1	
Sample Depth (feet)	6-8
Date	8/21/2015
VOCs (mg/kg)	
Tetrachloroethene	**1.9**

OBW-2		
Sample Depth (feet)	24 - 25	25 - 26
Date	1/14/2016	1/14/2016
VOCs (mg/kg)		
Tetrachloroethene	**3.0**	**9.3**

Constituent	6 NYCRR Part 375 Unrestricted Use SCO (mg/kg) **(BOLD)**	6 NYCRR PART 375 PROTECTION OF PUBLIC HEALTH - COMMERCIAL SCO (mg/kg)
Tetrachloroethene	1.3	150
Ethylbenzene	1	390
n-Propylbenzene	3.9	500
Benzo(a)anthracene	1	5.6
Benzo(a)pyrene	1	1
Benzo(b)fluoranthene	0.8	5.6
Chrysene	1	56
Indeno(1,2,3-cd)pyrene	0.5	5.6

NOTES:

1. ALL CONCENTRATIONS ARE SHOWN IN MILLIGRAMS PER KILOGRAM (mg/kg).
2. BOLDED CONCENTRATIONS EXCEED THE 6 NYCRR PART 375 UNRESTRICTED USE SCO.
3. ORANGE SHADED CONCENTRATIONS EXCEED 6 NYCRR PART 375 PROTECTION OF PUBLIC HEALTH - COMMERCIAL SCO
4. J = ESTIMATED BELOW LABORATORY REPORTING LIMIT.
5. NO SCO EXCEEDANCES AT SOIL BORINGS WITH NO DATA SHOWN.
6. ANALYTES DETECTED AT CONCENTRATIONS LESS THAN UNRESTRICTED USE SCO ARE NOT SHOWN.
7. VOC = VOLATILE ORGANIC COMPOUNDS. SVOC = SEMIVOLATILE ORGANIC COMPOUNDS. SCO = SOIL CLEANUP OBJECTIVES.

BASE MAP REFERENCES:

1. A SURVEY COMPLETED ON FEBRUARY 3, 2016 BY RAVI ENGINEERING & LAND SURVEYING, P.C.,

0 30' 60'

GRAPHIC SCALE

LEGEND:

- APPROXIMATE SITE BOUNDARY
- APPROXIMATE STEAM LINE
- SOIL BORING
- PIEZOMETER
- OVERBURDEN WELL
- INJECTION WELL
- ANALYTICAL DATA HAD NO VOC EXCEEDANCES
- STORM DRAIN INLET
- EXCAVATED AREA
- WATER VALVE
- GAS METER
- ELECTRIC METER
- TELEPHONE MANHOLE

NEW YORK STATE DEPT. OF ENVIRONMENTAL CONSERVATION
FORMER SILVER CLEANERS SITE #828186
ROCHESTER, NEW YORK
REMEDIAL INVESTIGATION

SOIL VOC AND SVOC CONCENTRATIONS

ARCADIS Design & Consultancy for natural and built assets

FIGURE 5

PZ-6		
Date	2/4/2016	11/20/2018
VOCs (µg/L)		
cis-1,2-Dichloroethene	**150**	**13**
Tetrachloroethene	**3,500**	**420**
Trichloroethene	ND	**6.5**

PZ-7		
Date	10/2/2017	11/20/2018
VOCs (µg/L)		
Tetrachloroethene	**94,000**	**26,000**
Trichloroethene	**690 J**	**200 J**

SB-26 (10-15)	
Date	6/22/2016
VOCs (µg/L)	
n-Butylbenzene	**17**
sec-Butylbenzene	**10**
Ethylbenzene	**460**
Isopropylbenzene (Cumene)	**57**
Naphthalene	**410**
n-Propylbenzene	**72**
Tetrachloroethene	**48**
1,2,4-Trimethylbenzene	**180**
m+p Xylene	**190**
o-Xylene	**6.3 J**

SB-27 (10-15)	
Date	6/22/2016
VOCs (µg/L)	
Benzene	**1.5 J**
Ethylbenzene	**160**
Isopropylbenzene (Cumene)	**35**
Naphthalene	**170**
n-Propylbenzene	**35**
1,2,4-Trimethylbenzene	**190**
m+p Xylene	**120**
o-Xylene	**6.6**

SB-23 (8-13)	
Date	6/22/2016
VOCs (µg/L)	No VOCs Detected

SB-35 (10-15)	
Date	11/1/2018
VOCs (µg/L)	
n-Butylbenzene	**89 JL**
sec-Butylbenzene	**110 JL**
tert-Butylbenzene	**22 JL**
Ethylbenzene	**86 JL**
Isopropylbenzene (Cumene)	**150 JL**
1,2,4-Trimethylbenzene	**1,100 JL**
1,3,5-Trimethylbenzene	**6.4 JL**
m+p Xylene	**30 JL**
o-Xylene	**12 JL**

PZ-2				
Date	8/27/2015	2/3/2016	10/2/2017	11/19/2018
VOCs (µg/L)				
Acetone	**110 J**	ND	ND	ND
n-Butylbenzene	NA	NA	**5.7 J**	**6.1 J**
Ethylbenzene	**470**	**170**	**190**	**420**
Isopropylbenzene (Cumene)	**38**	**11**	**9.5 J**	**21**
Toluene	**210**	**170**	**200**	**210**
1,2,4-Trimethylbenzene	NA	NA	**260**	**300**
1,3,5-Trimethylbenzene	NA	NA	**85**	**110**
m+p Xylene	**1,600**	**1,000**	**1,400**	**1,700**
o-Xylene	**660**	**470**	**610**	**680**

SB-34 (11-16)	
Date	11/1/2018
VOCs (µg/L)	No VOCs Detected

SB-24 (8-13)	
Date	6/22/2016
VOCs (µg/L)	
Benzene	**1.5 J**
Ethylbenzene	**260**
Isopropylbenzene (Cumene)	**26**
Naphthalene	**110**
n-Propylbenzene	**27**
Toluene	**34**
1,2,4-Trimethylbenzene	**270**
1,3,5-Trimethylbenzene	**47**
m+p Xylene	**190**
o-Xylene	**140**

SB-33 (11-16)	
Date	10/31/2018
VOCs (µg/L)	
Tetrachloroethene	**18 JL**

SB-25 (10-15)	
Date	6/23/2016
VOCs (µg/L)	
n-Butylbenzene	**5.4**
Tetrachloroethene	**140**
Trichloroethene	**14**

MW/SB-02	
Date	11/26/2018
VOCs (µg/L)	No VOCs Detected

SB-32 (11-16)	
Date	11/1/2018
VOCs (µg/L)	
Tetrachloroethene	**8.7 JL**

113 NC SUMP	
Date	11/20/2015
VOCs (µg/L)	No VOCs Detected

111 NC-South Sump	
Date	8/27/2015
VOCs (µg/L)	
Acetone	**90 J**

111 NC-North Sump	
Date	8/27/2015
VOCs (µg/L)	
Acetone	**840**
2-Butanone(MEK)	**77**

Andrews St.-Sump-1		
Date	8/27/2015	11/20/2015
VOCs (µg/L)		
cis-1,2-Dichloroethylene	**40**	**45**
Ethylbenzene	ND	**7.61 J**
Tetrachloroethene	**630 J+**	**660 J**
Toluene	ND	**9.42 J**
Trichloroethene	**21**	**21**
m+p Xylene	ND	**14.4 J**

PZ-8			
Date	2/4/2016	10/2/2017	11/20/2018
VOCs (µg/L)			
Tetrachloroethene	**88,000**	**93,000**	**45,000**
Trichloroethene	ND	**470 J**	ND

IW-1			
Date	2/3/2016	10/2/2017	11/20/2018
VOCs (µg/L)			
Tetrachloroethene	**34,000**	**3,000**	**7,700**
Trichloroethene	ND	**10**	ND

PZ-4			
Date	8/27/2015	2/4/2016	10/3/2017
VOCs (µg/L)			
Tetrachloroethene	ND	**15**	**18**

PZ-9			
Date	2/4/2016	10/2/2017	11/20/2018
VOCs (µg/L)			
Tetrachloroethene	**130,000**	**58,000**	**39,000**

PZ-1				
Date	8/27/2015	2/4/2016	10/2/2017	11/20/2018
VOCs (µg/L)				
Tetrachloroethene	**5,300 J+**	**4,500**	**1,100**	**5,200**
Trichloroethene	**46 J**	ND	**8.6 J**	ND

PZ-3				
Date	8/27/2015	2/4/2016	10/2/2017	11/20/2018
VOCs (µg/L)				
Tetrachloroethene	ND	**30**	0.55 J	0.38 J

SB-31 (10-15)	
Date	10/31/2018
VOCs (µg/L)	No VOCs greater than GA Guidance Values

SB-30 (11-16)	
Date	10/31/2018
VOCs (µg/L)	No VOCs greater than GA Guidance Values

SB-29 (11-16)	
Date	10/31/2018
VOCs (µg/L)	No VOCs greater than GA Guidance Values

MW/SB-01	
Date	11/26/2018
VOCs (µg/L)	No VOCs Detected

ANDREWS STREET
ENTRANCE
ELEC
TRAFFIC
"SILVER CLEANERS"
245 ANDREWS STREET
(1-STORY MASONRY)
237-241 ANDREWS STREET (3-STORY BRICK)
SUMP-1
CONCRETE
ASPHALT
4' IRON FENCE W/PILLARS
4' HANGING CHAIN FENCE
2' PIPE RAIL FENCE
ASPHALT PARKING LOT
6' WOOD STOCADE FENCE
6' CHAIN LINK FENCE
BOLLARD
FLOOR DRAIN
SUPPORT
8' CHAIN LINK FENCE
EXCAVATED AREAS
PANELBOX
I-BEAM
PAD MOUNTED ELECTRIC TRANSFORMER
TRAFFIC
CATV
COMMERCIAL SIGN
POLE MOUNTED CAMERAS
NORTH CLINTON AVENUE
"ELK PLACE" 113 NORTH CLINTON AVENUE (5-STORY MASONRY/BRICK)
6 PARKING BUMPS
SUMP
SUMP-NORTH
SUMP-SOUTH
BRICK
"ROCHESTER EARLY CHILDHOOD EDUCATION CENTER, SCHOOL NO. 90" 111 NORTH CLINTON AVENUE (2-STORY MASONRY)
PZ-1 PZ-2 PZ-3 PZ-4 PZ-6 PZ-7 PZ-8 PZ-9 IW-1
SB-1 SB-2 SB-3 SB-4 SB-5 SB-6 SB-7 SB-8 SB-9 SB-10 SB-11 SB-12 SB-13 SB-14 SB-15 SB-16 SB-17 SB-18 SB-19 SB-20 SB-23 SB-24 SB-25 SB-26 SB-27 SB-28 SB-29 SB-30 SB-31 SB-32 SB-33 SB-34 SB-35
MW/SB-01 MW/SB-02

BASE MAP REFERENCES:

1. A SURVEY COMPLETED ON FEBRUARY 3, 2016 BY RAVI ENGINEERING & LAND SURVEYING, P.C.,

Constituent	NYSDEC GA STANDARD/ GUIDANCE VALUE (µg/L)
Acetone	50*
Benzene	1
2-Butanone (MEK)	50
n-Butylbenzene	5
sec-Butylbenzene	5
tert-Butylbenzene	5
cis-1,2-Dichloroethene	5
Ethylbenzene	5
Isopropylbenzene (Cumene)	5
Naphthalene	10
n-Propylbenzene	5
Tetrachloroethene	5
Toluene	5
Trichloroethene	5
1,2,4-Trimethylbenzene	5
1,3,5-Trimethylbenzene	5
m+p Xylene	5
o-Xylene	5

NOTES:

1. ALL CONCENTRATIONS ARE SHOWN IN MICROGRAMS PER LITER (µg/L).
2. BOLDED CONCENTRATIONS EXCEED THE NYSDEC GA STANDARDS OR GUIDANCE VALUE.
3. J = ESTIMATED
4. J+ = ESTIMATED BIASED HIGH
5. JL = ESTIMATED BIASED LOW
6. NA = NOT ANALYZED
7. ANALYTES DETECTED AT CONCENTRATIONS LESS THAN CLASS GA GROUNDWATER STANDARDS ARE NOT SHOWN.
8. VOC = VOLATILE ORGANIC COMPOUNDS. ND = NONE DETECTED.

LEGEND:

- APPROXIMATE SITE BOUNDARY
- APPROXIMATE STEAM LINE
- PIEZOMETER
- SOIL BORING WITH GROUNDWATER GRAB SAMPLE COLLECTED
- SOIL BORING
- INJECTION WELL
- STORM DRAIN INLET
- SUMP
- EXCAVATED AREA
- WATER VALVE
- GAS METER
- ELECTRIC METER
- TELEPHONE MANHOLE

0 30' 60'
GRAPHIC SCALE

NEW YORK STATE DEPT. OF ENVIRONMENTAL CONSERVATION
FORMER SILVER CLEANERS SITE #828186
ROCHESTER, NEW YORK
REMEDIAL INVESTIGATION

SHALLOW OVERBURDEN GROUNDWATER VOC CONCENTRATIONS

ARCADIS Design & Consultancy for natural and built assets

FIGURE 6

OBW-9

Date	5/3/2019
VOCs (µg/L)	
Benzene	**3.2**
Tetrachloroethene	**75**
Trichloroethene	**33**

BRW-3

Date	11/20/2018	5/3/2019
VOCs (µg/L)	No VOCs greater than Class GA Guidance Values	

OBW-3

Date	2/3/2016	10/2/2017	11/20/2018	5/3/2019
VOCs (µg/L)				
Tetrachloroethene	**25,000**	**45,000**	**38,000**	**45,000**
Trichloroethene	**1,900**	**2,500**	**2,000**	**1,800**

OBW-1

Date	2/3/2016	10/2/2017	11/19/2018	5/3/2019
VOCs (µg/L)				
Benzene	**3.6**	**6.1**	**6.2**	**8.1**
1,2-Dichloroethane	**2.7**	**2.4**	**1.5**	1.0 U
Elthylbenzene	**20**	**5.7**	3.5	**7.9**
Tetrachloroethene	**7.5**	0.39 J	0.7 J	1.0 U
Toluene	**10**	0.71 J	1.4	1.4
m+p Xylene	**6.8**	0.49 J	0.87 J	0.89 J
o-Xylene	**18**	0.42 J	1.1	1.2

BRW-1

Date	11/19/2018	5/3/2019
VOCs (µg/L)	No VOCs greater than Class GA Guidance Values	

OBW-8

Date	5/3/2019
VOCs (µg/L)	No VOCs greater than Class GA Guidance Values

OBW-2

Date	2/4/2016	11/19/2018	5/3/2019
VOCs (µg/L)			
Tetrachloroethene	**48,000 J+**	**95,000**	**89,000**
Trichloroethene	**870**	**1,100**	**1,200**

BRW-2

Date	11/19/2018	5/3/2019
VOCs (µg/L)		
Tetrachloroethene	**21,000**	**6,000**
Trichloroethene	**50 J**	**61 J**

OBW-5

Date	10/2/2017	11/19/2018	5/3/2019
VOCs (µg/L)	No VOCs greater than Class GA Guidance Values		

OBW-7

Date	5/3/2019
VOCs (µg/L)	No VOCs greater than Class GA Guidance Values

OBW-6

Date	5/3/2019
VOCs (µg/L)	No VOCs greater than Class GA Guidance Values

ANDREWS STREET

NORTH CLINTON AVENUE

"SILVER CLEANERS"
245 ANDREWS STREET
(1-STORY MASONRY)

237-241
ANDREWS
STREET
(3-STORY BRICK)

"ELK PLACE"
113 NORTH CLINTON AVENUE
(5-STORY MASONRY/BRICK)

"ROCHESTER EARLY CHILDHOOD
EDUCATION CENTER, SCHOOL NO. 90"
111 NORTH CLINTON AVENUE
(2-STORY MASONRY)

ENTRANCE

TRAFFIC

ELEC

CATV

PAD MOUNTED
ELECTRIC
TRANSFORMER

COMMERCIAL SIGN

POLE MOUNTED
CAMERAS

FLOOR
DRAIN

SUPPORT

8' CHAIN
LINK FENCE

EXCAVATED
AREAS

PANELBOX

I-BEAM

6 PARKING BUMPERS

4' IRON FENCE
W/PILLARS

CONCRETE

4' HANGING
CHAIN FENCE

2' PIPE RAIL
FENCE

ASPHALT
PARKING
LOT

6' CHAIN
LINK FENCE

BOLLARD

6' WOOD
STOCADE
FENCE

ASPHALT

BRICK

OBW-9
OBW-3
BRW-3
OBW-1
BRW-1
OBW-8
OBW-2
BRW-2
OBW-7
OBW-6
OBW-5

BASE MAP REFERENCES:

1. A SURVEY COMPLETED ON FEBRUARY 3, 2016 BY RAVI ENGINEERING & LAND SURVEYING, P.C.,

Constituent	NYSDEC GA STANDARD/ GUIDANCE VALUE (µg/L)
Acetone	50*
Benzene	1
1,2-Dicholoroethane	0.6
Ethylbenzene	5
Tetrachloroethene	5
Toluene	5
Trichloroethene	5
m+p Xylene	5
o-Xylene	5

NOTES:

1. ALL CONCENTRATIONS ARE SHOWN IN MICROGRAMS PER LITER (µg/L).
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7. VOC = VOLATILE ORGANIC COMPOUNDS.

LEGEND:

- APPROXIMATE SITE BOUNDARY
- APPROXIMATE STEAM LINE
- OVERBURDEN WELL
- BEDROCK WELL
- STORM DRAIN INLET
- EXCAVATED AREA
- WATER VALVE
- GAS METER
- ELECTRIC METER
- TELEPHONE MANHOLE

0 30' 60'

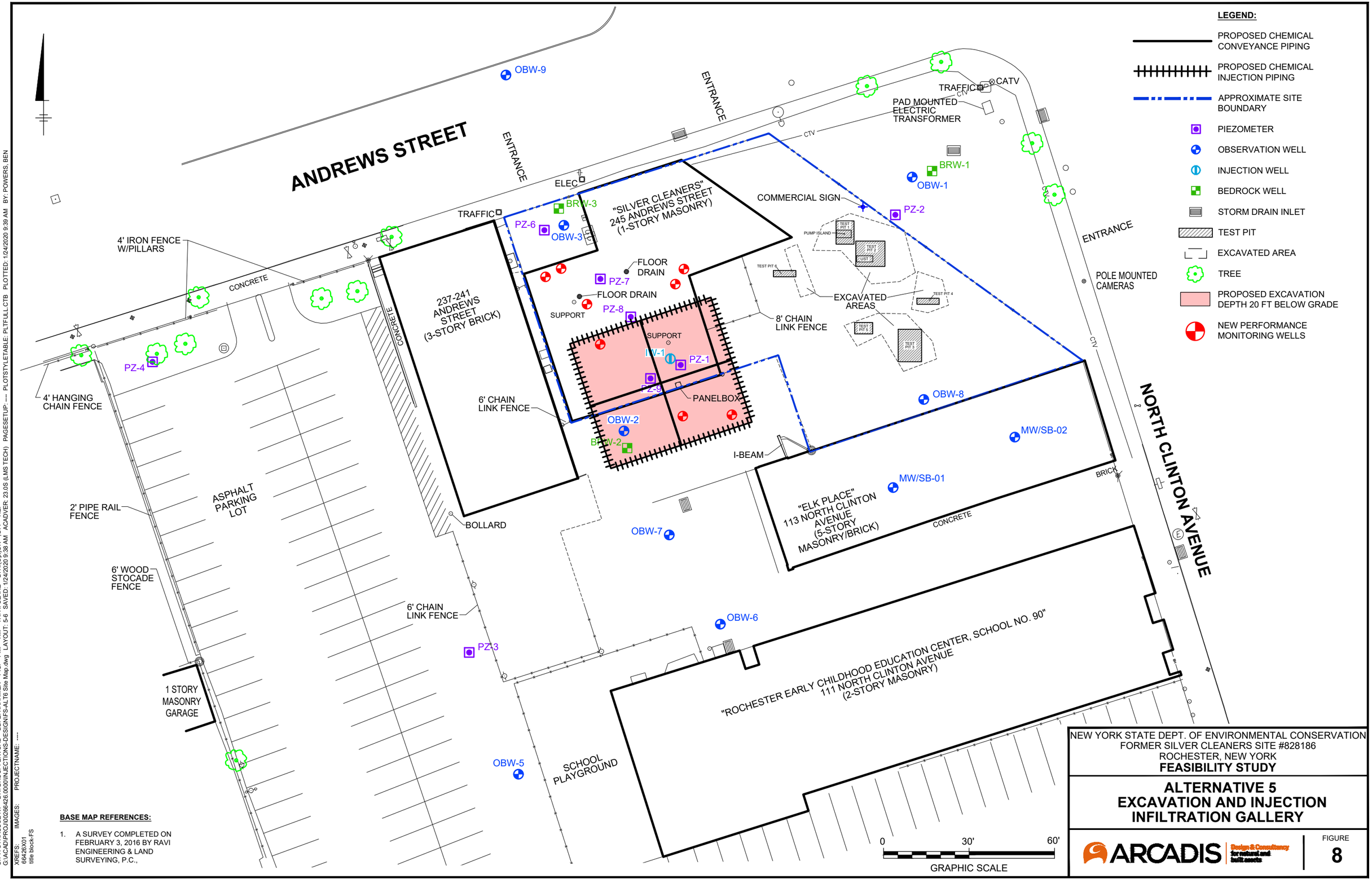
GRAPHIC SCALE

NEW YORK STATE DEPT. OF ENVIRONMENTAL CONSERVATION
FORMER SILVER CLEANERS SITE #828186
ROCHESTER, NEW YORK
REMEDIAL INVESTIGATION

DEEP OVERBURDEN AND BEDROCK GROUNDWATER VOC CONCENTRATIONS

ARCADIS Design & Consultancy for natural and built assets

FIGURE
7



LEGEND:

- PROPOSED CHEMICAL CONVEYANCE PIPING
- PROPOSED CHEMICAL INJECTION PIPING
- APPROXIMATE SITE BOUNDARY
- PIEZOMETER
- OBSERVATION WELL
- INJECTION WELL
- BEDROCK WELL
- STORM DRAIN INLET
- TEST PIT
- EXCAVATED AREA
- TREE
- PROPOSED EXCAVATION DEPTH 20 FT BELOW GRADE
- NEW PERFORMANCE MONITORING WELLS

BASE MAP REFERENCES:

1. A SURVEY COMPLETED ON FEBRUARY 3, 2016 BY RAVI ENGINEERING & LAND SURVEYING, P.C.,

NEW YORK STATE DEPT. OF ENVIRONMENTAL CONSERVATION
FORMER SILVER CLEANERS SITE #828186
ROCHESTER, NEW YORK
FEASIBILITY STUDY

ALTERNATIVE 5 EXCAVATION AND INJECTION INFILTRATION GALLERY

ARCADIS Design & Consultancy for natural and built assets

FIGURE 8

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DB: E. KRAHMER PIC: PM: TM: TR: R. CLARE LYR:(Opt)ON=*;OFF=*REF*
G:\ACAD\PROJ\00286426.0000\INJECTIONS-DESIGN\FS-ALT6 Site Map.dwg LAYOUT: 5-6 SAVED: 1/24/2020 9:38 AM ACADVER: 23.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 1/24/2020 9:39 AM BY: POWERS, BEN
XREFS: IMAGES: PROJECTNAME: ----
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