

New York State Department of Environmental Conservation

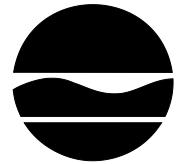
Division of Environmental Remediation

Remedial Bureau E, 12th Floor

625 Broadway, Albany, New York 12233-7017

Phone: (518) 402-9814 • Fax: (518) 402-9819

Website: www.dec.ny.gov



Joe Martens
Commissioner

January 22, 2015

Mr. Dante Gullace, Member
Genesee Valley Real Estate Co., LLC
Hartel Properties, LLC
First Federal Plaza
28 East Main Street, Suite 500
Rochester, New York 14614

RE: 690 Saint Paul Street, Site ID No. C828159
City of Rochester, Monroe County
Decision Document

Dear Mr. Gullace:

Enclosed is a copy of the New York State Department of Environmental Conservation's (the Department) Decision Document for the site. The remedy is to be implemented in accordance with this Decision Document. Please ensure that a copy of the Decision Document is placed in the document repositories.

Please contact the Department's Project Manager, Mr. Frank Sowers, at 585-226-5357 or frank.sowers@dec.ny.gov at your earliest convenience to discuss next steps. Please recall the Department requires seven (7) days notice prior to the start of field work.

Sincerely,



Michael J. Cruden, P.E.
Director
Remedial Bureau E
Division of Environmental Remediation

Enclosure

cc: R. Schick, DER
M. Ryan, DER
B. Putzig, Region 8
F. Sowers, Region 8
D. Noll, LaBella Associates

J. Mahoney, Region 8
K. Anders, NYSDOH
J. Deming, NYSDOH
B. Boyd, NYSDOH

DECISION DOCUMENT

690 Saint Paul Street
Brownfield Cleanup Program
Rochester, Monroe County
Site No. C828159
December 2014



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

DECLARATION STATEMENT - DECISION DOCUMENT

690 Saint Paul Street
Brownfield Cleanup Program
Rochester, Monroe County
Site No. C828159
December 2014

Statement of Purpose and Basis

This document presents the remedy for the 690 Saint Paul Street site, a brownfield cleanup site. The remedial program was chosen in accordance with the 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 decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the 690 Saint Paul Street site and the public's input to the proposed remedy presented by the Department.

Description of Selected Remedy

The elements of the selected 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. 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.

2. Site Cover

A site cover will be required to allow for restricted residential use of the site. The cover will

consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum of two feet of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for restricted residential use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

3. In-Situ Chemical Reduction (ISCR)

ISCR with enhanced bioremediation will be implemented to treat contaminants in groundwater in AOC 1. Chemical reducing and bioremediation agents will be injected into the subsurface via an infiltration gallery and injection points to destroy the contaminants remaining in AOC 1 groundwater where trichloroethene and related compounds were elevated in the groundwater. Dispersion of the injected agents within the groundwater will be enhanced by temporarily extracting groundwater downgradient of the injection areas. The method and depth of injection and the location of the extraction wells will be determined during the remedial design. If treatment is needed, granular active carbon (GAC) will be used to remove dissolved contaminants from extracted groundwater by adsorption. The GAC system will consist of one or more vessels filled with carbon connected in series and/or parallel. Following treatment, the groundwater will be discharged to the sanitary sewer.

4. In-Situ Chemical Oxidation (ISCO)

ISCO will be implemented to treat contaminants in groundwater in AOC 8. A chemical oxidant will be injected into the subsurface via infiltration galleries to destroy the contaminants remaining in AOC 8 groundwater where trichloroethene and related compounds were elevated in the groundwater. The location and depth of the injection galleries will be determined during the remedial design.

5. Light Non-Aqueous Phase Liquid (LNAPL) Removal

Groundwater extraction and treatment will be implemented to remove LNAPL in groundwater. The groundwater extraction system will be designed and installed to intercept the LNAPL contaminant plume to control further migration and remove recoverable LNAPL to the extent feasible from the area of the LNAPL contaminant plume.

Further details of the extraction system will be determined during the remedial design. Prior to the full implementation of this technology, studies will be conducted to more clearly define design parameters, including extraction well spacing and the most efficient LNAPL removal technology.

6. Actions to Reduce Indoor Air Levels of COCs

Actions are required to reduce the indoor air levels of site-related contaminants of concern in any buildings which are occupied at the site to within background levels. Actions may include, but are not limited to, the installation of additional sub-slab depressurization systems, indoor air quality monitoring, and further assessment of the sources of COCs in the indoor air. Provisions are also required to document the effectiveness of the actions and that the actions remain

protective until they are no longer needed.

A sub-slab depressurization system was previously installed and is operating under Building 14B. Continued operation and maintenance of the system is required.

7. Institutional Controls

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

- requires 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);
- allows the use and development of the controlled property for restricted residential, commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restricts 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
- requires compliance with the Department approved Site Management Plan.

8. Site Management Plan

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 in Paragraph 7 above.

Engineering Controls: The soil cover discussed in Paragraph 2, the LNAPL removal system discussed in paragraph 5, and the sub-slab depressurization system discussed in Paragraph 6 above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
 - descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;
 - a provision for further evaluation of the potential for soil vapor intrusion should the on-site buildings become occupied and for any buildings developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
 - provisions for the management and inspection of the identified engineering controls;
 - maintaining site access controls and Department notification; and
 - the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.
- 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 including non-aqueous phase liquid, sub-slab soil vapor, indoor air, and ambient air 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 occupied or developed on the site, as may be

required by the Institutional and Engineering Control Plan discussed above.

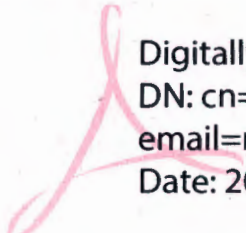
c. An Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, optimization, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:

- 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.

Declaration

The remedy conforms with promulgated standards and criteria that are directly applicable, or that are relevant and appropriate and takes into consideration Department guidance, as appropriate. The remedy is protective of public health and the environment.

Michael J Cruden



Digitally signed by Michael J Cruden
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email=mjcruden@gw.dec.state.ny.us, c=US
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Date

Michael Cruden, Director
Remedial Bureau E

DECISION DOCUMENT

690 Saint Paul Street
Rochester, Monroe County
Site No. C828159
December 2014

SECTION 1: SUMMARY AND PURPOSE

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for the above referenced site. The disposal of contaminants at the site has resulted in threats to public health and the environment that would be addressed by the remedy. The disposal or release of contaminants at this site, as more fully described in this document, has contaminated various environmental media. Contaminants include hazardous waste and/or petroleum.

The New York State Brownfield Cleanup Program (BCP) is a voluntary program. The goal of the BCP is to enhance private-sector cleanups of brownfields and to reduce development pressure on "greenfields." A brownfield site is real property, the redevelopment or reuse of which may be complicated by the presence or potential presence of a contaminant.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and 6 NYCRR Part 375. This document is a summary of the information that can be found in the site-related reports and documents.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all remedies. A public comment period was held, during which the public was encouraged to submit comment on the proposed remedy. All comments on the remedy received during the comment period were considered by the Department in selecting a remedy for the site. Site-related reports and documents were made available for review by the public at the following document repositories:

Central Library of Rochester and Monroe County
115 South Avenue
Rochester, NY 14604-1896
Phone: 585-428-7300

Phillis Wheatley Community Library
33 Dr. Samuel McCree Way
Rochester, NY 14608
Phone: (585) 428-8212

Rochester City School District Offices
131 W Broad St
Rochester, NY 14614-1187
Phone: (585) 262-8100

Lincoln Branch Library
851 Joseph Avenue
Rochester, NY 14621
Phone: (585) 428-8210

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 690 Saint Paul Street site is located in an urban area in the City of Rochester, Monroe County, just north of the intersection of Saint Paul Street and Upper Falls Boulevard.

Site Features: The site covers approximately 4.7 acres. The main site features include four buildings. Three of the buildings are interconnected, seven stories tall and made of brick. The fourth building is a metal framed slab on grade structure. These buildings have a total footprint of approximately 89,280 square feet. All of the buildings are at least partially occupied. A paved parking lot is located on the northern and eastern portions of the site. Lawn area and a small playground are on the eastern side of the site.

Current Zoning and Land Use: The site is zoned for industrial uses. One of the large brick buildings is occupied by the Rochester City School District and a charter school. The remaining buildings are partially occupied but with significant vacancy. Current uses include a school, light industrial operations, and a workshop for creating theater sets. The site is bound by roads on all sides. Residential, commercial and vacant properties are located across from the site.

Past Use of the Site: The site was developed prior to 1875 and was primarily used for residential purposes until the 1920s. From around 1920 until the late 1960s, the property was owned and operated by Bausch & Lomb (B&L) to manufacture lenses and other products. A foundry was also present near the northeast corner of the site. Since the early 1970s, the site has been used for storage as well as commercial and light industrial activities.

Prior uses that appear to have led to site contamination include underground storage tanks (USTs) that may have leaked. These tanks appear to have contained chlorinated solvents including trichloroethene (TCE) and petroleum products including gasoline and fuel oil. In 2002, a 500-gallon UST was removed from the site and contaminated soil was encountered. The contaminated soil was used to backfill the area of the tank removal. In 2008, an investigation was performed to determine the extent of soil and groundwater contamination associated with the 2002 tank removal. The investigation identified an area of petroleum contaminated soil, but did not detect significant TCE soil contamination. The investigation was followed by the excavation of approximately 1,650 cubic yards of petroleum impacted soil and a previously undocumented UST. An area of petroleum impacted soil could not be safely removed because it was close to an underground electric line.

Groundwater sample results from 2008 also identified an area impacted by chlorinated solvents, primarily TCE, near Building 14B which was occupied by the City of Rochester School District. The chlorinated solvent impact area did not appear to be associated with the petroleum impacted soils and UST that were removed from the site in 2008. A sub-slab depressurization system (SSDS) was subsequently installed under Building 14B to mitigate the potential for contaminant vapors to migrate through the floor and into the indoor air. An interim Site Management Plan was developed under the BCP to address the operation, maintenance, and monitoring of the SSDS. Indoor air monitoring results indicate that the SSDS has successfully controlled vapor migration into the building. Additionally, pressure field extension testing indicates that the SSDS has successfully created a negative pressure underneath the building slab.

Site Geology and Hydrogeology: The ground surface at the site generally slopes to the south and west. The depth to bedrock ranges from less than two feet on the southern portion of the site to twelve feet on the northern portion. The overburden consists of a combination of fill and native soil. Where present, the fill material is up to eight feet thick and includes sand, crushed gravel and brick, construction and demolition debris, foundry sand, cinders, ash, and imported sandy soil. The underlying native soil is primarily a glacial till that is up to ten feet thick. The till contains silt, sand, and gravel in varying amounts.

The Decew Dolomite (a type of bedrock) underlies the overburden at the site. The thickness of this unit is generally 8 to 12 feet. The Rochester Shale underlies the Decew Dolomite.

The depth to groundwater ranges from approximately four to nine feet below the ground surface. Groundwater generally flows to the west and is likely influenced by the Genesee River Gorge which is approximately 1,000 ft to the west/southwest. The Genesee River in this area is also about 100 ft. below the Site. Although the overall groundwater flow in the overburden is towards the Genesee River Gorge, areas of the site may be influenced by preferential pathways (e.g., subsurface utilities and associated bedding materials).

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 (which allows for commercial use and industrial use) as described in Part 375-1.8(g) were/was evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the Remedial Investigation (RI) to the appropriate standards, criteria and guidance values (SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is available in the RI Report.

SECTION 5: ENFORCEMENT STATUS

The Applicant(s) under the Brownfield Cleanup Agreement is a/are Volunteer(s). The Volunteer(s) does/do not have an obligation to address off-site contamination. The Department has determined that this site poses a significant threat to human health and the environment and there are off-site impacts that require remedial activities; accordingly, enforcement actions are necessary.

The Department will seek to identify any parties (other than the Volunteer(s)) known or suspected to be responsible for contamination at or emanating from the site, referred to as Potentially Responsible Parties (PRPs). The Department will bring an enforcement action against the PRPs. If an enforcement action cannot be brought, or does not result in the initiation of a remedial program by any PRPs, the Department will evaluate the off-site contamination for action under the State Superfund. The PRPs are subject to legal actions by the State for recovery of all response costs the State incurs or has incurred.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A remedial investigation (RI) serves as the mechanism for collecting data to:

- characterize site conditions;
- determine the nature of the contamination; and
- assess risk to human health and the environment.

The RI is intended to identify the nature (or type) of contamination which may be present at a site and the extent of that contamination in the environment on the site, or leaving the site. The RI reports on data gathered to determine if the soil, groundwater, soil vapor, indoor air, surface water or sediments may have been contaminated. Monitoring wells are installed to assess groundwater and soil borings or test pits are installed to sample soil and/or waste(s) identified. If other natural resources are present, such as surface water bodies or wetlands, the water and sediment may be sampled as well. Based on the presence of contaminants in soil and groundwater, soil vapor will also be sampled for the presence of contamination. Data collected in the RI influence the development of remedial alternatives. The RI report is available for review in the site document repository and the results are summarized in section 6.3.

The analytical data collected on this site includes data for:

- outdoor air
- groundwater
- soil
- soil vapor
- 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. 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 contaminant 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 below. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified at this site is/are:

TRICHLOROETHENE (TCE)	DIBENZ[A,H]ANTHRACENE
VINYL CHLORIDE	indeno(1,2,3-cd)pyrene
XYLENE (MIXED)	Chrysene
PCB-AROCOR 1254	Petroleum Products
BENZ(A)ANTHRACENE	LEAD
BENZO(A)PYRENE	MANGANESE
BENZO(B)FLUORANTHENE	cis-1,2-Dichloroethene

The contaminant(s) of concern exceed the applicable SCGs for:

- groundwater
- soil
- indoor air
- 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 Decision Document.

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

Soil Removal - Former Oil House Area (AOC 1)

Based on the preliminary investigation results, it was determined that there was an area of TCE contaminated soil that could be readily excavated.

An IRM was conducted in 2011 which included the excavation and off-site disposal of 142 tons of soil and 185 tons of bedrock. Additionally, 32,000 gallons of water were removed from the excavation and disposed of off-site. Post-excavation soil sample results were below unrestricted SCOs, with minor exceptions.

Soil Removal - Former Foundry (AOC 2) and Other Miscellaneous Areas (AOC 6A-D)

The subsurface investigation of the site identified five areas of contaminated soil and one area of contaminated groundwater that could be readily cleaned up by an interim remedial measure (IRM). The primary contaminants are different in each area and include petroleum-related volatile organic compounds, semi-volatile organic compounds, and lead.

The IRM was completed from July 2012 to May 2013 and included excavating contaminated soils from five specific areas of the site and treating groundwater in one area. A total of approximately 840 cubic yards of soil were excavated and properly disposed of off-site. The excavations were then backfilled with clean soil meeting the soil cleanup objectives for restricted-residential use. Soil testing indicated some remaining contamination exceeding restricted residential or protection of groundwater SCOs was identified in 4 of the 5 areas. To prevent human contact with this remaining contamination, a demarcation layer was placed and the areas of concern were either covered with stone in preparation of being re-paved or covered with at least 2-feet of clean soil.

Approximately 28,400 gallons of groundwater were removed from the excavations and properly disposed of off-site. A biological amendment was also added to one excavation to treat remaining petroleum related groundwater contamination.

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 RI report presents a detailed discussion of any existing and potential impacts from the site to fish and wildlife receptors.

Nature and Extent of Contamination:

Based upon investigations conducted to date, the primary contaminants of concern include trichloroethene (TCE) and its associated degradation products, petroleum related compounds including light non-aqueous phase liquid (LNAPL), and polycyclic aromatic hydrocarbons (PAHs). Additional contaminants include some pesticides, polychlorinated biphenyls (PCBs) and metals.

Investigation activities at the site focused on the eight (8) areas of concern (AOCs) described below:

AOC 1: Former Oil House located in the central portion of the site;

ACO 2: Former Foundry building located near the northeast corner of the site;

AOC 3: Former Agitator Building located along the northern site boundary;

AOC 4: A 125,000-gallon above-ground reservoir located on the ground floor of a former manufacturing building;

AOC 5: The remaining on-site buildings;

AOC 6: All portions of the site not covered by the other AOCs;

AOC 7: A former dust collector located in the central portion of the site; and

AOC 8: The northwest corner of the site.

Soil: Concentrations of TCE identified in soil remaining on site (up to about 0.8 ppm) slightly exceed the soil cleanup objectives for the protection of groundwater (0.47 ppm). The TCE impacted soils are located under the parking lot in the northwest portion of the site (AOC 8) at depths of 8 feet to the top of bedrock (about 12 feet). TCE contaminated soils are not expected to extend off-site.

Petroleum related compounds, primarily xylene, are present in the central portion of the site (AOC 6) and along the site boundary in the northeast corner of the site (AOC 2). Concentrations of xylene (up to about 33 ppm) in AOC 6 significantly exceed the soil cleanup objectives for unrestricted use (0.26 ppm). This area of petroleum impacts is located underneath buried electric lines and is approximately 30-ft wide starting at depths of about 4 ft below ground surface to the top of bedrock (about 9 ft). Petroleum related compounds are expected to be present offsite near AOC 2.

Concentrations of xylene (up to 5.6 ppm) along the northeast site boundary of AOC 2 moderately exceed the soil cleanup objectives for unrestricted use. This area represents the low level contamination remaining along the site boundary after the completion of an IRM. The impacted area is under pavement and is approximately 50-ft wide starting at depths of 8 to 10 ft below ground surface to the top of bedrock (about 12 ft). Xylene likely extends off site in this area. Off-site land use immediately adjacent to this area consists of a sidewalk and then Martin Street.

PAHs, including benzo(a)pyrene (BaP), are present in the central portion of the site (AOC 6) and underneath site buildings (AOC 5). Concentrations of BaP (up to 2.7 ppm) in AOC 6 slightly exceed the soil cleanup objectives for restricted residential use (1 ppm). This area of PAH impacted soil covers approximately 2,000 square feet and is located underneath a demarcation

layer and 2-ft of clean soil that was installed as an IRM. Impacts start just under the demarcation layer and extend to about 7 ft below ground surface.

Concentrations of BaP (up to 45 ppm) in AOC 5 exceed the soil cleanup objectives for restricted residential use. Elevated levels of PAHs in AOC 5 soils were detected sporadically and AOC 5 soils are covered by building slabs. Site-related PAHs are not anticipated to extend off-site.

Fill material below the asphalt parking lot (portions of AOCs 2, 3, 6, and 8) has the potential to sporadically contain manganese and lead at concentrations above the soil cleanup objectives for restricted residential use. Some pesticides, polychlorinated biphenyls (PCBs) and metals are also present sporadically throughout the site at concentrations above soil cleanup objectives for unrestricted use, but below soil cleanup objectives for residential use and below 1 ppm for PCBs.

Groundwater: Chlorinated solvents, specifically TCE and its associated degradation products, are present in the central portion of the site (AOC 1) and the northwest portion of the site (AOC 8). In AOC 1, chlorinated solvents significantly exceed groundwater standards (typically 5 ppb), with a maximum concentration of approximately 9,700 ppb (sum of TCE and associated degradation products). Vertically, TCE contamination in AOC 1 is limited to the shallow bedrock zone approximately 8.7 to 18.7 feet below ground. Chlorinated solvents did not exceed groundwater standards in the 27 to 37 foot depth interval. Chlorinated solvents associated with AOC 1 appear to be migrating off-site in the bedrock groundwater. Slight amounts (approximately 157 ppb) of TCE and associated degradation products are have migrated under site buildings and about 180 feet to the western site boundary along Saint Paul Street.

TCE is the primary groundwater contaminant at AOC 8, significantly exceeding groundwater standards (5 ppb), with a maximum concentration of approximately 13,000 ppb. Vertically, TCE contamination is primarily associated with the overburden in this area. TCE in the shallow bedrock slightly exceeds groundwater standards ranging from 17 ppb to 34 ppb. TCE degradation products are also present at low levels. TCE from AOC 8 appears to be migrating off-site in the overburden groundwater. A moderate amount (approximately 2,000 ppb) of TCE has migrated about 60 feet to the western site boundary along Saint Paul Street.

Light Non-Aqueous Phase Liquid (LNAPL): A thin layer of LNAPL is present in several wells in the central portion of the site (AOCs 1 and 6). This material is primarily Lube Oil, but also contains PCBs and TCE. LNAPL is not anticipated to extend off-site.

Soil Vapor and Indoor Air: Sub-slab and indoor air sampling indicated actions were needed to address soil vapor intrusion within each of the onsite buildings. PCE, TCE, and cis-1,2-DCE were detected at levels above those which are expected to be found in indoor air. TCE was detected in the indoor air of an unoccupied building at a concentration of 6.5 micrograms per cubic meter which slightly exceeds the NYSDOH guidance value of 5 micrograms per cubic meter. Sub-slab sampling results were relatively low, with maximum PCE, TCE, and cis-1,2-DCE levels of 2.6, 21, and 15 micrograms per cubic meter, respectively.

A sub-slab depressurization system was installed under Building 14B in 2008 to mitigate the potential for contaminant vapors to migrate through the floor and into the indoor air.

Approximately 40 post-mitigation indoor air sampling events have been completed. For each sampling event, indoor air samples were collected from up to four locations within the building. The average TCE indoor air concentration for the four locations ranged from 1.2 to 2.2 micrograms per cubic meter.

Property line soil vapor sampling indicated the potential for off-site soil vapor migration, particularly near AOC 8, with maximum levels of PCE, TCE, and cis-1,2-DCE levels of 32, 4,400, and 170 micrograms per cubic meter, respectively.

Significant Threat:

The site presents a significant threat to public health and/or the environment due to:

- The presence of two groundwater plumes with significant levels of chlorinated solvents (up to 9,700 ppb and 9,500 ppb);
- Off-site migration of chlorinated solvents in groundwater from each of the two plumes. Off-site migration appears to be most significant with the northernmost plume (AOC 8; TCE up to 2,000 ppb at the downgradient property line); and
- An area of LNAPL on the site.

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 likely to come into contact with contaminated soils because they have been removed from the site or are covered by buildings and pavement. People are not drinking the contaminated groundwater because the area is served by a public water supply that is not affected by this contamination. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. A sub-slab ventilation system has been installed in Building 14B to address exposures from soil vapor intrusion. Environmental sampling at the property boundary indicates that off-site vapor intrusion is a potential exposure pathway that warrants additional investigation.

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.
- 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.

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: ELEMENTS OF THE SELECTED REMEDY

The alternatives developed for the site and the evaluation of the remedial criteria are presented in the Alternative Analysis. The remedy is selected pursuant to the remedy selection criteria set forth in DER-10, Technical Guidance for Site Investigation and Remediation and 6 NYCRR Part 375.

The selected remedy is a Track 4: Restricted use with site-specific soil cleanup objectives remedy.

The selected remedy is referred to as the In-situ Chemical Oxidation and Reduction remedy.

The elements of the selected remedy, as shown in Figure 2, 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. 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.

2. Site Cover

A site cover will be required to allow for restricted residential use of the site. The cover will consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum of two feet of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for restricted residential use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

3. In-Situ Chemical Reduction (ISCR)

ISCR with enhanced bioremediation will be implemented to treat contaminants in groundwater in AOC 1. Chemical reducing and bioremediation agents will be injected into the subsurface via an infiltration gallery and injection points to destroy the contaminants remaining in AOC 1 groundwater where trichloroethene and related compounds were elevated in the groundwater. Dispersion of the injected agents within the groundwater will be enhanced by temporarily extracting groundwater downgradient of the injection areas. The method and depth of injection and the location of the extraction wells will be determined during the remedial design. If treatment is needed, granular active carbon (GAC) will be used to remove dissolved contaminants from extracted groundwater by adsorption. The GAC system will consist of one or more vessels filled with carbon connected in series and/or parallel. Following treatment, the groundwater will be discharged to the sanitary sewer.

4. In-Situ Chemical Oxidation (ISCO)

ISCO will be implemented to treat contaminants in groundwater in AOC 8. A chemical oxidant will be injected into the subsurface via infiltration galleries to destroy the contaminants remaining in AOC 8 groundwater where trichloroethene and related compounds were elevated in the groundwater. The location and depth of the injection galleries will be determined during the remedial design.

5. Light Non-Aqueous Phase Liquid (LNAPL) Removal

Groundwater extraction and treatment will be implemented to remove LNAPL in groundwater. The groundwater extraction system will be designed and installed to intercept the LNAPL contaminant plume to control further migration and remove recoverable LNAPL to the extent feasible from the area of the LNAPL contaminant plume.

Further details of the extraction system will be determined during the remedial design. Prior to the full implementation of this technology, studies will be conducted to more clearly define design parameters, including extraction well spacing and the most efficient LNAPL removal technology.

6. Actions to Reduce Indoor Air Levels of COCs

Actions are required to reduce the indoor air levels of site-related contaminants of concern in any buildings which are occupied at the site to within background levels. Actions may include, but are not limited to, the installation of additional sub-slab depressurization systems, indoor air quality monitoring, and further assessment of the sources of COCs in the indoor air. Provisions are also required to document the effectiveness of the actions and that the actions remain protective until they are no longer needed.

A sub-slab depressurization system was previously installed and is operating under Building 14B. Continued operation and maintenance of the system is required.

7. Institutional Controls

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

- requires 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);
- allows the use and development of the controlled property for restricted residential, commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restricts 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
- requires compliance with the Department approved Site Management Plan.

8. Site Management Plan

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 in Paragraph 7 above.

Engineering Controls: The soil cover discussed in Paragraph 2, the LNAPL removal system discussed in paragraph 5, and the sub-slab depressurization system discussed in Paragraph 6 above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;
- a provision for further evaluation of the potential for soil vapor intrusion should the on-site buildings become occupied and for any buildings developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

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 including non-aqueous phase liquid, sub-slab soil vapor, indoor air, and ambient air 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 occupied or developed 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, optimization, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:

- 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.

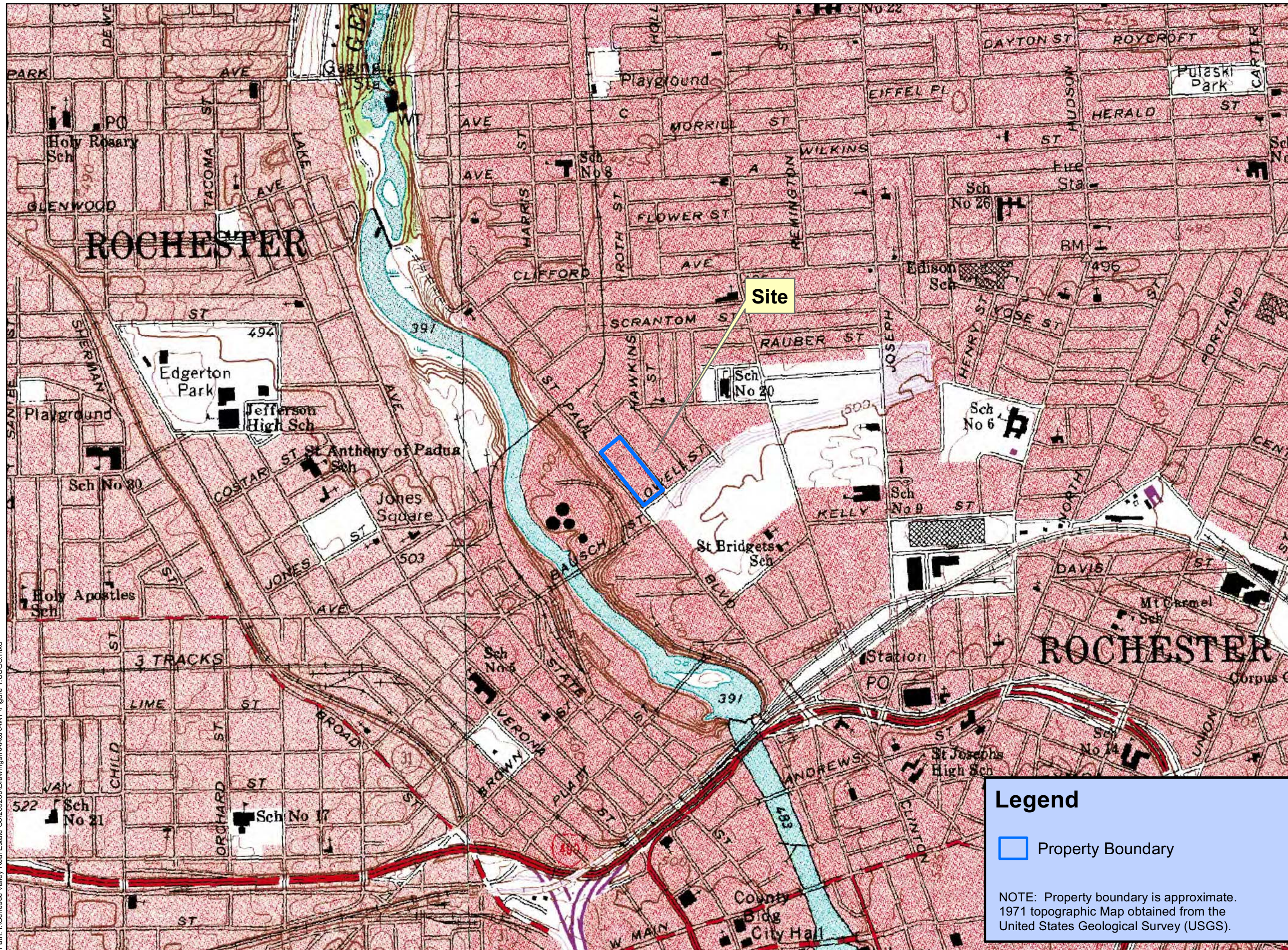
PROJECT LOCUS MAP

REMEDIAL ALTERNATIVES ANALYSIS

BROWNFIELD CLEANUP PROGRAM

690 SAINT PAUL STREET
ROCHESTER, NEW YORK

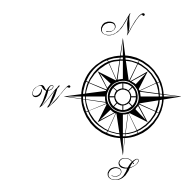
VOLUNTEER:
GENESEE VALLEY
REAL ESTATE COMPANY



Legend

 Property Boundary

NOTE: Property boundary is approximate.
1971 topographic Map obtained from the
United States Geological Survey (USGS).



250 0 1,000

1 inch = 1,000 feet
Intended to print as 11" x 17".

[209280]

[FIGURE 1]

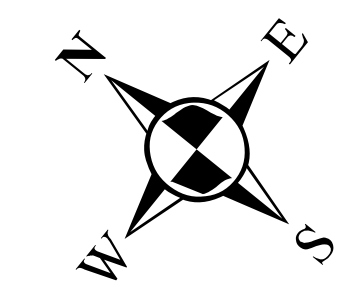
Area of Concern (AOC) Locations

REMEDIAL ALTERNATIVES ANALYSIS

BROWNFIELD CLEANUP PROGRAM

**690 SAINT PAUL STREET
 ROCHESTER, NEW YORK**

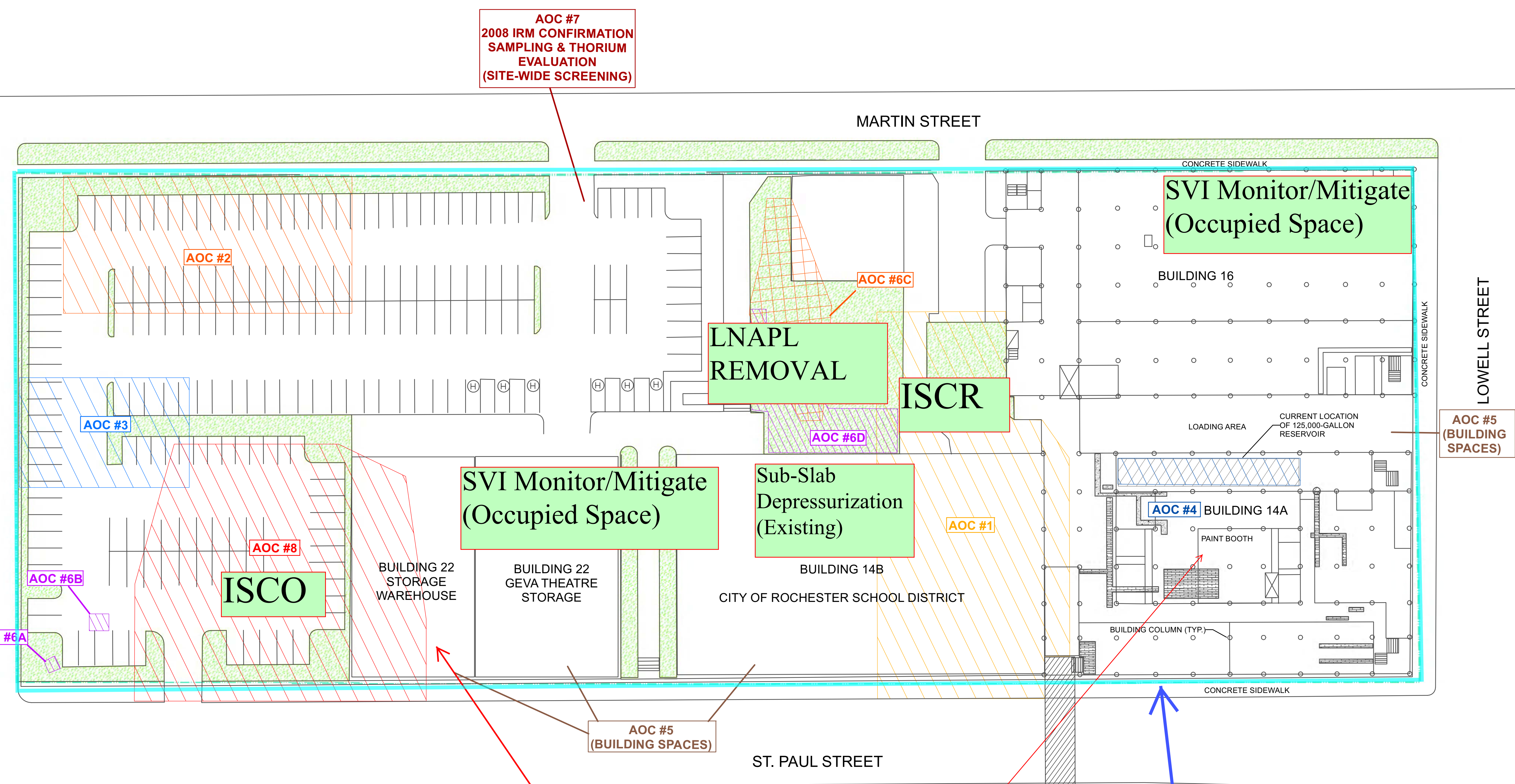
**VOLUNTEER:
 GENESEE VALLEY
 REAL ESTATE COMPANY**



0 50 Feet
 1 inch = 30 feet
 Intended to print as ANSI D size.

[209280]

[FIGURE 2]



**AOC #7
 2008 IRM CONFIRMATION
 SAMPLING & THORIUM
 EVALUATION
 (SITE-WIDE SCREENING)**

**SVI Monitor/Mitigate
 (Occupied Space)**

**LNAPL
 REMOVAL**

ISCR

**Sub-Slab
 Depressurization
 (Existing)**

**SVI Monitor/Mitigate
 (Occupied Space)**

ISCO

**AOC #5
 (BUILDING SPACES)**

**Currently Unoccupied.
 SVI Monitoring/Mitigation
 When Occupied**

**Property/BCP Site
 Boundary**

LEGEND

	CONCRETE FILLED FLOOR TRENCH (POSSIBLE FORMER PIPE CHASE)
	OPEN FLOOR TRENCH (POSSIBLE PIPE CHASE)
	GRASS COVERED MEDIAN
	STAIRWAY
	BCP BOUNDARY

Note:
 (1) SITE PLAN DEVELOPED FROM BERO ASSOCIATES ARCHITECTS SITE PLAN FOR 690 SAINT PAUL STREET, ROCHESTER CHARTER SCHOOL SCIENCE AND TECHNOLOGY, DATED APRIL 11, 2000. LOCATIONS OF VEGETATED AREAS, CONCRETE, ETC. ARE CONSIDERED APPROXIMATE.