

DECISION DOCUMENT

71 Tonawanda Street
Brownfield Cleanup Program
Buffalo, Erie County
Site No. C915024
February 2023



**Department of
Environmental
Conservation**

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

DECLARATION STATEMENT - DECISION DOCUMENT

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Statement of Purpose and Basis

This document presents the remedy for the 71 Tonawanda Street 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 71 Tonawanda 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;
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development; and
- Additionally, to incorporate green remediation principles and techniques to the extent feasible in the future development at this site, any future on-site buildings will include, at a minimum, a 20-mil vapor barrier/waterproofing membrane on the foundation to improve energy

efficiency as an element of construction.

2. Excavation: Excavation and off-site disposal of 3,000 tons of soil that exceed the restricted residential soil cleanup objectives (SCOs) to 1-foot depth in areas where asphalt paving and concrete will be installed, and 2-foot depth in areas where a clean soil cover will be installed. In addition, TCE impacted soils that exceed the groundwater protection SCOs in (an area approximately 10 feet long by 10 feet wide by 12 feet deep) will be excavated and transported off-site for disposal. Lastly, surface soil with selenium impacted soils that exceed the groundwater protection SCOs in will be excavated and transported off-site for disposal. The site will be re-graded to accommodate the installation of a cover system described in Paragraph 3 below.

3. Cover System: 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 exceeds the applicable 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 will include, but are not necessarily limited to: pavement, concrete, paved surface parking areas, sidewalks, building foundations and building slabs.

4. Enhanced Bioremediation: In-situ enhanced bioremediation will be employed to treat chlorinated VOCs in overburden groundwater at the rear of the property. The biological breakdown of contaminants through anaerobic reductive dechlorination will be enhanced by the installation of a Permeable Reactive Barrier (PRB) wall. The reactive media and depth of the PRB will be determined during remedial design.

In addition, in-situ enhanced bioremediation will be employed to treat chlorinated VOCs in overburden groundwater upgradient of the site. The biological breakdown of contaminants through anaerobic reductive dechlorination will be enhanced by the injection of a soluble organic carbon substrate containing zero valent iron or other similar product. The method and depth of injection will also be determined during remedial design.

5. Vapor Mitigation: Any occupied on-site buildings will be required to have sub-slab depressurization systems, or other acceptable measures, to mitigate the migration of vapors into the on-site buildings from soil and/or groundwater. The layout and specific components of these systems will be determined during the remedial design.

6. Institutional Controls: Imposition of an institutional control in the form of an Environmental Easement for the controlled property that:

(a) 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);

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

7. 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 engineering controls remain in place and effective:

- Institutional Controls: The Environmental Easement discussed in Paragraph 6 above; and
- Engineering Controls: The site cover system discussed in Paragraph 3 above, and the sub-slab depressurization systems discussed in Paragraph 5 above.

This plan includes, but may not be limited to:

- An Excavation Plan that details the provisions for management of future excavations in areas of remaining contamination;
- A provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Paragraph 3 above will be placed in any areas where the upper two feet of exposed surface soil exceed the applicable soil cleanup objectives (SCOs);
- Descriptions of the provisions of the Environmental Easement including any land use and groundwater use restrictions;
- Provisions for the management and inspection of the identified engineering controls;
- Maintaining site access controls and Department notification; and
- The steps necessary for periodic reviews and certification of the institutional and 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 soil vapor, indoor air and/or sub-slab pressure testing to assess the performance and effectiveness of the sub-slab depressurization systems, and groundwater monitoring to assess the effectiveness of in-situ groundwater treatment. Enhancements to the sub-slab depressurization systems and additional groundwater injections will be completed as necessary;
- A schedule of monitoring and frequency of submittals to the Department;
- Monitoring for vapor intrusion for any future buildings constructed on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

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

2/16/2023

Date

Michael Cruden, Director
Remedial Bureau E

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Buffalo, Erie County
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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, where a contaminant is present at levels exceeding the soil cleanup objectives or other health-based or environmental standards, criteria or guidance, based on the reasonably anticipated use of the property.

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 repository:

DECInfo Locator - Web Application
<https://gisservices.dec.ny.gov/gis/dil/index.html?rs=C915024>

Riverside Branch Library
820 Tonawanda St.
Buffalo, NY 14207
Phone:

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 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 71 Tonawanda Street Site consists of a 1.76-acre parcel at the northeast corner of West Avenue and Tonawanda Street in the Black Rock section of the City of Buffalo, Erie County. The site is bordered by a bike path and Scajaquada Creek to the east; West Avenue and the 31 and 150 Tonawanda Street BCP Site (Site No. C915299) to the south; Tonawanda Street and the 68 Tonawanda Street BCP Site (Site No. C915316) to the west; and the former Pratt and Lambert Inc. inactive hazardous waste disposal site (Site No. 915251) to the north. The New York State Thruway and the Black Rock Canal are located about 0.25 miles southwest of the site.

Site Features:

The 71 Tonawanda Street property contains an approximately 115,000 square foot 2- to 4-story building that is vacant and deteriorated. The roof is caved in at the southern end of the building while the northern end was destroyed by fire sometime after 2008. A narrow parking lot extends from the building to almost the eastern site boundary. This parking lot is located on a portion of the Class 3 Fedders Automotive inactive hazardous waste disposal site (Site No.915024).

Current Zoning and Land Use:

The property is zoned for commercial use and building at the site is currently vacant. Surrounding properties are zoned for commercial and industrial use and are mostly vacant. Neighboring BCP sites have been redeveloped for residential and commercial use. Residential properties are located approximately 1,250 feet to the west and approximately 600 feet to the southeast. The planned future use of the site is restricted residential.

Past Use of the Site:

In the late 1800s the site consisted of individual residential and small storefront properties. The eastern part of the property was the location of the former Hall and Son Fire Brick factory that operated from about 1866 to the early 1940s. This plant contained large storage sheds for bricks, a flue house and numerous kilns.

In 1907 the Fedders Manufacturing Works was located at 57-59 Tonawanda Street, which included what is now 71 Tonawanda Street. Available information indicates that the initial plant was a 3-story building located at 55 Tonawanda Street. A major building expansion took place

in 1910, followed by another major expansion in 1915.

Initially, Fedders made milk cans, kerosene tanks for the Standard Oil Co., and bread pans for the National Biscuit Co., and later converted the plant to make radiators for automobiles. During World War I the company also made radiators for airplanes and manufactured appliances for heating and electrical refrigeration. During World War II, Fedders received contracts to make links and clips for machine-gun belts and rifle bullets. In the late 1940s through the 1960s, Fedders made room air conditioners and electric water coolers, heaters, radiators, radiator cores, home radiators, convectors, hot-water boilers and women's handbag frames, as well as heat-transfer equipment, including convectors, condensers, evaporators, and dehumidifiers. By 1990 the company was sold to FEDCO who manufactured automobile heating equipment. Manufacturing operations at the facility ceased in June 2005 and the property was sold to Black Rock Trade Center, Inc. later that year.

The Fedders Manufacturing Company had a history of using various chemicals, oils, solvents and other materials in their manufacturing processes. Processes at the property included metal stamping, soldering, brazing, welding, painting, acid washing and degreasing. Industrial wastes were reported to include solder dross, degreasing still bottoms including trichloroethene (TCE) and tetrachloroethene (PCE), and petroleum-based lubricating fluids. Also, from 1974 to 1981, approximately 165 gallons of waste oil per year were spread over the parking lot behind the building for dust control. This practice was discontinued when the parking lot was covered with gravel.

In 1985 the Department completed a Phase I Investigation at the Fedders Automotive inactive hazardous waste disposal site (Site No. 915024). This was followed by the completion of a Site Investigation by the Fedders Automotive Components Co. in 1989, and a Phase II Investigation by the Department in 1990. These investigations documented the presence of volatile organic compounds (VOCs), primarily chlorinated solvents, in groundwater and semi-volatile organic compounds (SVOCs), primarily polycyclic aromatic hydrocarbons (PAHs), and select metals (arsenic, cadmium, chromium, lead, manganese and mercury) in soils at concentrations exceeding restricted residential soil cleanup objectives (SCOs).

Remedial History:

The BCP Remedial Investigation field activities were completed between December 2019 and March 2020 with the completion of soil borings and monitoring wells, and the collection of soil and groundwater samples for chemical analysis. The Remedial Investigation report was approved in June 2020.

During the Remedial Investigation, Erie County foreclosed on the 57 Tonawanda Street Parcel and sold it at auction. This foreclosure and sale have been in litigation since that time.

A Decision Document for 57-71 Tonawanda Street BCP Site was issued by the NYSDEC on June 11, 2020. Remedial activities, however, were not completed due to the ownership issue. To keep the remaining redevelopment project moving forward, the BCP applicant submitted a BCP amendment, and the site boundary was modified in March 2022 to include just the 71 Tonawanda Street property.

Site Geology and Hydrogeology:

Fill material exists throughout the site at thicknesses ranging from 2 feet along Tonawanda Street to 5.5 feet at the eastern site boundary. The fill material consists mainly of grey gravel with some silt and concrete along Tonawanda Street and black sand, cinders, brick, ash, slag, and gravel under the parking lot. Native reddish-brown clay or silty clay directly underlies the fill material throughout most of the site. River deposits, consisting of gray gravelly sand and gray sandy silty clay, directly underlie the fill material in the east-central portion of the site.

Bedrock was not encountered at the site; however, at the Iroquois Gas/Westwood Pharmaceutical Site (Site No. 915141) located east of the site across Scajaquada Creek, depth to bedrock ranges from 72.3 to 89.2 feet below ground surface (bgs).

Depth to groundwater ranges from 1.7 to 4.1 feet. Overburden groundwater flow is to the southeast toward Scajaquada Creek.

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) 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.

As noted in the site Remedial History in Section 3, a Decision Document was issued for the 57-71 Tonawanda Street Site in June of 2020, which included a positive significant threat determination for that entire site. The site boundary was later amended to include only the 71 Tonawanda Street parcel. The 57 Tonawanda Street parcel, which was removed from the program, contributed to the positive significant threat determination, and will require further remediation. This remediation will be pursued either by the Department under the State Superfund Program or by re-entry into the BCP program under a new application once site ownership issues are resolved.

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:

- groundwater
- soil
- 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:

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:

acetone	cadmium
trichloroethene (TCE)	copper
1,1,1-Trichloroethane (TCA)	lead
cis-1,2-dichloroethene	manganese
1,1-dichloroethane	selenium
vinyl chloride	polycyclic aromatic hydrocarbons (PAHS),
1,4-dioxane	total
arsenic	

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 Decision Document.

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

6.3: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water. The RI report presents a detailed discussion of any existing and potential impacts from the site to fish and wildlife receptors.

During the Remedial Investigation completed in 2019 and 2020, samples for analysis were collected from surface fill, subsurface fill, native soil, sub-slab soil vapor, and groundwater. Surface soil/fill samples (0-6 inch depth) were analyzed for semi-volatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), metals, per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane. Samples of subsurface fill (1-4 feet depth) and native soil

(6-13 feet depth) were analyzed for volatile organic compounds (VOCs), SVOCs, pesticides, PCBs, metals, PFAS and 1,4-dioxane. Groundwater samples were analyzed for VOCs, SVOCs, pesticides, PCBs, metals, PFAS and 1,4-dioxane. Sub-slab soil vapor samples were analyzed for VOCs. The Remedial Investigation determined that chlorinated VOCs (trichloroethene (TCE), trichloroethane (TCA), cis-1,2-dichloroethene (DCE), dichloroethane (DCA) and vinyl chloride (VC)), acetone, 1,4-dioxane, select metals and polycyclic aromatic hydrocarbons (PAHs) were the primary contaminants of concern at the site.

Surface Soil/Fill:

Three surface soil/fill samples were collected from the site during the Remedial Investigation. These samples were analyzed for SVOCs, pesticides, PCBs, metals, PFAS and 1,4-dioxane. Several SVOCs, specifically PAHs, exceeded the NYSDEC Part 375 Restricted Residential Soil Cleanup Objectives (SCOs) (Figure 2A). These PAHs (with the number of exceedances and highest concentrations) are summarized as follows:

- benzo(a)anthracene (2 samples exceeded the 1 part per million (ppm) SCO; maximum detection 14.8 ppm);
- benzo(a)pyrene (2 samples exceeded the 1 ppm SCO; maximum detection 16.8 ppm);
- benzo(b)fluoranthene (2 samples exceeded the 1 ppm SCO; maximum detection 21.3 ppm);
- benzo(k)fluoranthene (2 samples exceeded the 3.9 ppm SCO; maximum detection 11.3 ppm);
- chrysene (2 samples exceeded the 3.9 ppm SCO; maximum detection 17.6 ppm);
- dibenz[a,h]anthracene (2 samples exceeded the 0.33 ppm SCO; maximum detection 4.32 ppm); and
- indeno(1,2,3-cd)pyrene (2 samples exceeded the 0.5 ppm SCO; maximum detection 14.3 ppm).

Metals also exceeded the NYSDEC Part 375 Restricted Residential SCOs in surface soil/fill at the site (Figure 2A). These metals (with the number of exceedances and highest concentrations) are summarized as follows:

- cadmium (1 sample exceeded the 4.3 ppm SCO; maximum detection 5.26 ppm);
- lead (1 sample exceeded the 400 ppm SCO; maximum detection 442 ppm); and
- selenium (1 sample exceeded the 4.0 ppm Protection of Groundwater SCO; maximum detection 6.1 ppm);

No concentrations of pesticides, PCBs, PFAS or 1,4-dioxane exceeded the NYSDEC Part 375 Restricted Residential SCOs or guidance values in surface soil/fill at the site.

Subsurface Fill:

Six subsurface fill samples were collected from the site during the Remedial Investigation. These samples were analyzed for VOCs, SVOCs, pesticides, PCBs, metals, PFAS and 1,4-dioxane. Several SVOCs, specifically PAHs, exceeded the NYSDEC Part 375 Restricted Residential SCOs in subsurface fill at the site (Figures 2A and 2B). These PAHs (with the number of exceedances and highest concentrations) are summarized as follows:

benzo(a)anthracene (5 samples exceeded the 1 ppm SCO; maximum detection 16.6 ppm);
benzo(a)pyrene (4 samples exceeded the 1 ppm SCO; maximum detection 12.5 ppm);
benzo(b)fluoranthene (5 samples exceeded the 1 ppm SCO; maximum detection 10.9
ppm);
benzo(k)fluoranthene (1 sample exceeded the 3.9 ppm SCO; maximum detection 10.1
ppm);
chrysene (1 sample exceeded the 3.9 ppm SCO; maximum detection 13.9 ppm);
dibenz[a,h]anthracene (3 samples exceeded the 0.33 ppm SCO; maximum detection 1.85
ppm); and
indeno(1,2,3-cd)pyrene (4 samples exceeded the 0.5 ppm SCO; maximum detection 7.71
ppm).

Metals also exceeded the NYSDEC Part 375 Restricted Residential SCOs in subsurface fill at the site (Figures 2A and 2B). These metals (with the number of exceedances and highest concentrations) are summarized as follows:

arsenic (1 sample exceeded the 16 ppm SCO; maximum detection 17.3 ppm);
copper (3 samples exceeded the 270 ppm SCO; maximum detection 3,390 ppm);
lead (2 samples exceeded the 400 ppm SCO; maximum detection 2,240 ppm); and
manganese (1 sample exceeded the 2000 ppm SCO; maximum detection 2,150 ppm).

No concentrations of VOCs, pesticides, PCBs, PFAS or 1,4-dioxane exceeded the NYSDEC Part 375 Restricted Residential SCOs or guidance values in subsurface fill at the site.

Native Soil:

Eight native soil samples were collected from the site during the Remedial Investigation. These samples were analyzed for VOCs, SVOCs, pesticides, PCBs, metals, PFAS and 1,4-dioxane. Contaminants that exceeded the NYSDEC Part 375 Restricted Residential SCOs (Figures 2A and 2B) are summarized as follows:

TCE (6 samples exceeded the 0.47 ppm Protection of Groundwater SCO; maximum detection 1,980 ppm); and
copper (1 sample exceeded the 270 ppm SCO; maximum detection 297 ppm).

No concentrations of SVOCs, pesticides, PCBs, PFAS or 1,4-dioxane exceeded the NYSDEC Part 375 Restricted Residential SCOs or guidance values in native soil at the site.

Groundwater:

Five overburden groundwater samples were collected from the site and adjacent properties during the Remedial Investigation. These samples were analyzed for VOCs, SVOCs, pesticides, PCBs, metals, PFAS and 1,4-dioxane. Contaminants that exceeded the Department's groundwater standards or screening levels (with the number of exceedances and highest concentrations) are summarized as follows (Figure 3):

acetone (3 samples exceeded the 50 parts per billion (ppb) Groundwater Standard; maximum detection 409 ppb);
TCE (3 samples exceeded the 5 ppb Groundwater Standard; maximum detection 7,370 ppb);
TCA (1 sample exceeded the 5 ppb Groundwater Standard; maximum detection 14.7 ppb);
DCA (1 sample exceeded the 5 ppb Groundwater Standard; maximum detection 57.0 ppb);
cis-1,2-DCE (1 sample exceeded the 5 ppb Groundwater Standard; maximum detection 55.4 ppb);
VC (1 sample exceeded the 2 ppb Groundwater Standard; maximum detection 35.3 ppb);
lead (1 sample exceeded the 25 ppb Groundwater Standard; maximum detection 42.7 ppb);
manganese (4 samples exceeded the 300 ppb Groundwater Standard; maximum detection 2,690 ppb);
selenium (3 samples exceeded the 10 ppb Groundwater Standard; maximum detection 18.3 ppb); and
1,4-dioxane (2 samples exceeded the 1 ppb Groundwater Screening Level; maximum detection 52.1 ppb).

No concentrations of SVOCs, pesticides, PCBs or PFAS exceeded NYSDEC groundwater standards or guidance values at the site.

Sub-Slab Soil Vapor:

Four sub-slab soil vapor samples below the on-site building slab were collected during the Remedial Investigation (Figure 4). VOCs detected in these samples (with the number of samples and highest concentrations) include the following:

acetone (4 samples; 110 micrograms per cubic meter (ug/m³));
TCE (4 samples; 19,000 ug/m³);
TCA (3 samples; 25 ug/m³);
DCA (1 sample; 1.3 ug/m³); and
cis-1,2-DCE (3 samples; 38 ug/m³).

Indoor air samples were not collected as the roof is partially collapsed and most of the windows in the building are missing.

6.4: Summary of Human Exposure Pathways

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

Access is limited due to fencing. However, people who enter may come into contact with contaminants in soil by walking on the site, digging or otherwise disturbing the soil. People are

not drinking the contaminated groundwater because the area is served by a public water supply that is not affected by this contamination.

Volatile organic compounds in the groundwater or soil may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. The site is vacant so inhalation of site contaminants in indoor air via vapor intrusion is not a current concern. However, the potential exists for inhalation of site contaminants due to soil vapor intrusion for any future on-site development/occupancy. In addition, the potential exists for off-site migration of soil vapor to off-site buildings and may impact indoor air quality.

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.
- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

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 Cover System, In-Situ Groundwater Treatment and Vapor Mitigation remedy.

The elements of the selected remedy, as shown in Figure 5, 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;
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development; and
- Additionally, to incorporate green remediation principles and techniques to the extent feasible in the future development at this site, any future on-site buildings will include, at a minimum, a 20-mil vapor barrier/waterproofing membrane on the foundation to improve energy efficiency as an element of construction.

2. Excavation: Excavation and off-site disposal of 3,000 tons of soil that exceed the restricted residential soil cleanup objectives (SCOs) to 1-foot depth in areas where asphalt paving and concrete will be installed, and 2-foot depth in areas where a clean soil cover will be installed. In

addition, TCE impacted soils that exceed the groundwater protection SCOs in (an area approximately 10 feet long by 10 feet wide by 12 feet deep) will be excavated and transported off-site for disposal. Lastly, surface soil with selenium impacted soils that exceed the groundwater protection SCOs in will be excavated and transported off-site for disposal. The site will be re-graded to accommodate the installation of a cover system described in Paragraph 3 below.

3. Cover System: 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 exceeds the applicable 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 will include, but are not necessarily limited to: pavement, concrete, paved surface parking areas, sidewalks, building foundations and building slabs.

4. Enhanced Bioremediation: In-situ enhanced bioremediation will be employed to treat chlorinated VOCs in overburden groundwater at the rear of the property. The biological breakdown of contaminants through anaerobic reductive dechlorination will be enhanced by the installation of a Permeable Reactive Barrier (PRB) wall. The reactive media and depth of the PRB will be determined during remedial design.

In addition, in-situ enhanced bioremediation will be employed to treat chlorinated VOCs in overburden groundwater upgradient of the site. The biological breakdown of contaminants through anaerobic reductive dechlorination will be enhanced by the injection of a soluble organic carbon substrate containing zero valent iron or other similar product. The method and depth of injection will also be determined during remedial design.

5. Vapor Mitigation: Any occupied on-site buildings will be required to have sub-slab depressurization systems, or other acceptable measures, to mitigate the migration of vapors into the on-site buildings from soil and/or groundwater. The layout and specific components of these systems will be determined during the remedial design.

6. Institutional Controls: Imposition of an institutional control in the form of an Environmental Easement for the controlled property that:

- (a) 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);
- (b) Allows the use and development of the controlled property for restricted residential, commercial or industrial use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- (c) 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

(d) Requires compliance with the Department approved Site Management Plan.

7. 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 engineering controls remain in place and effective:

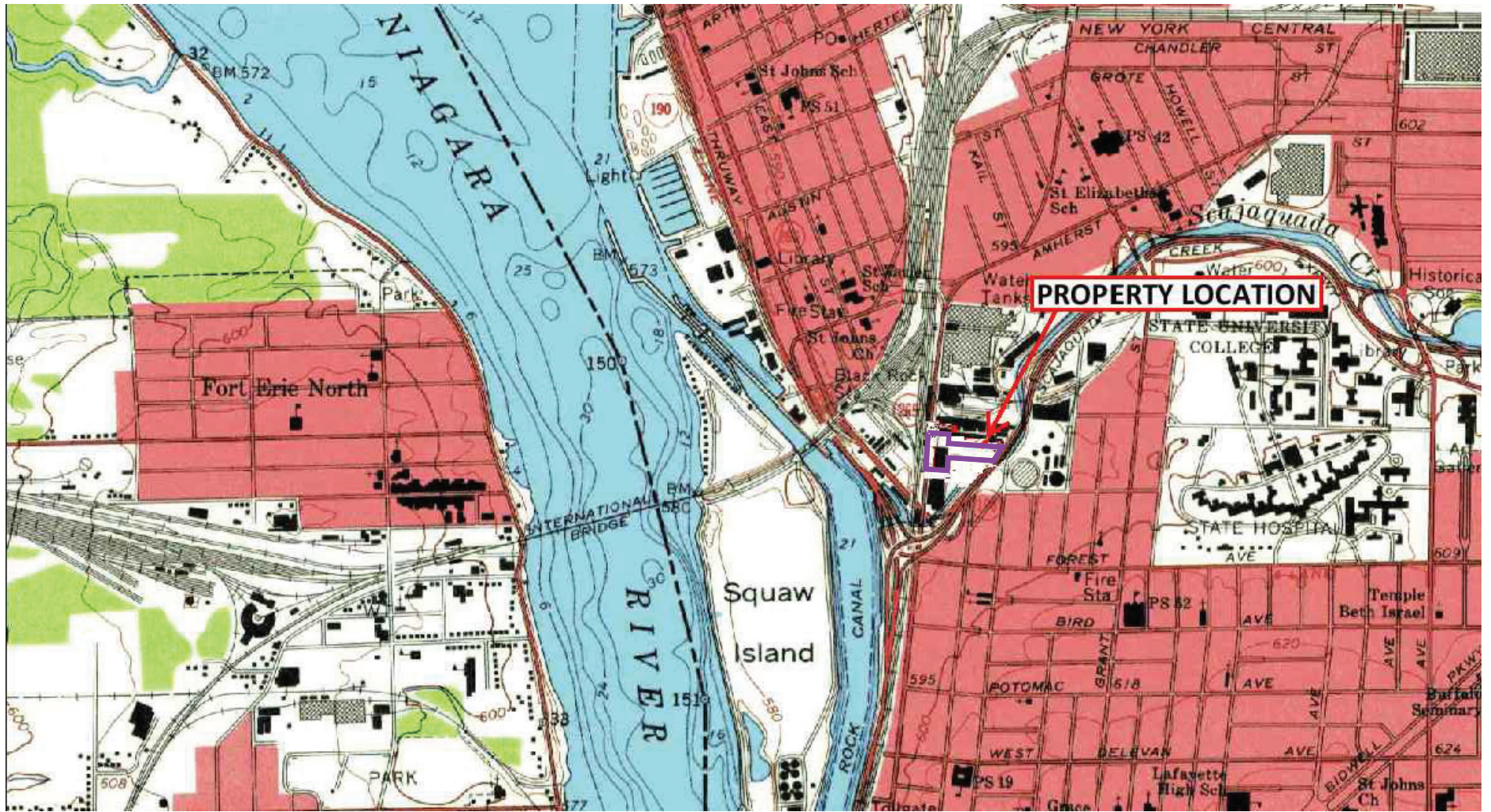
- Institutional Controls: The Environmental Easement discussed in Paragraph 6 above; and
- Engineering Controls: The site cover system discussed in Paragraph 3 above, and the sub-slab depressurization systems discussed in Paragraph 5 above.

This plan includes, but may not be limited to:

- An Excavation Plan that details the provisions for management of future excavations in areas of remaining contamination;
- A provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Paragraph 3 above will be placed in any areas where the upper two feet of exposed surface soil exceed the applicable soil cleanup objectives (SCOs);
- Descriptions of the provisions of the Environmental Easement including any land use and groundwater use restrictions;
- Provisions for the management and inspection of the identified engineering controls;
- Maintaining site access controls and Department notification; and
- The steps necessary for periodic reviews and certification of the institutional and 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 soil vapor, indoor air and/or sub-slab pressure testing to assess the performance and effectiveness of the sub-slab depressurization systems, and groundwater monitoring to assess the effectiveness of in-situ groundwater treatment. Enhancements to the sub-slab depressurization systems and additional groundwater injections will be completed as necessary;
- A schedule of monitoring and frequency of submittals to the Department;
- Monitoring for vapor intrusion for any future buildings constructed on the site, as may be required by the Institutional and Engineering Control Plan discussed above.



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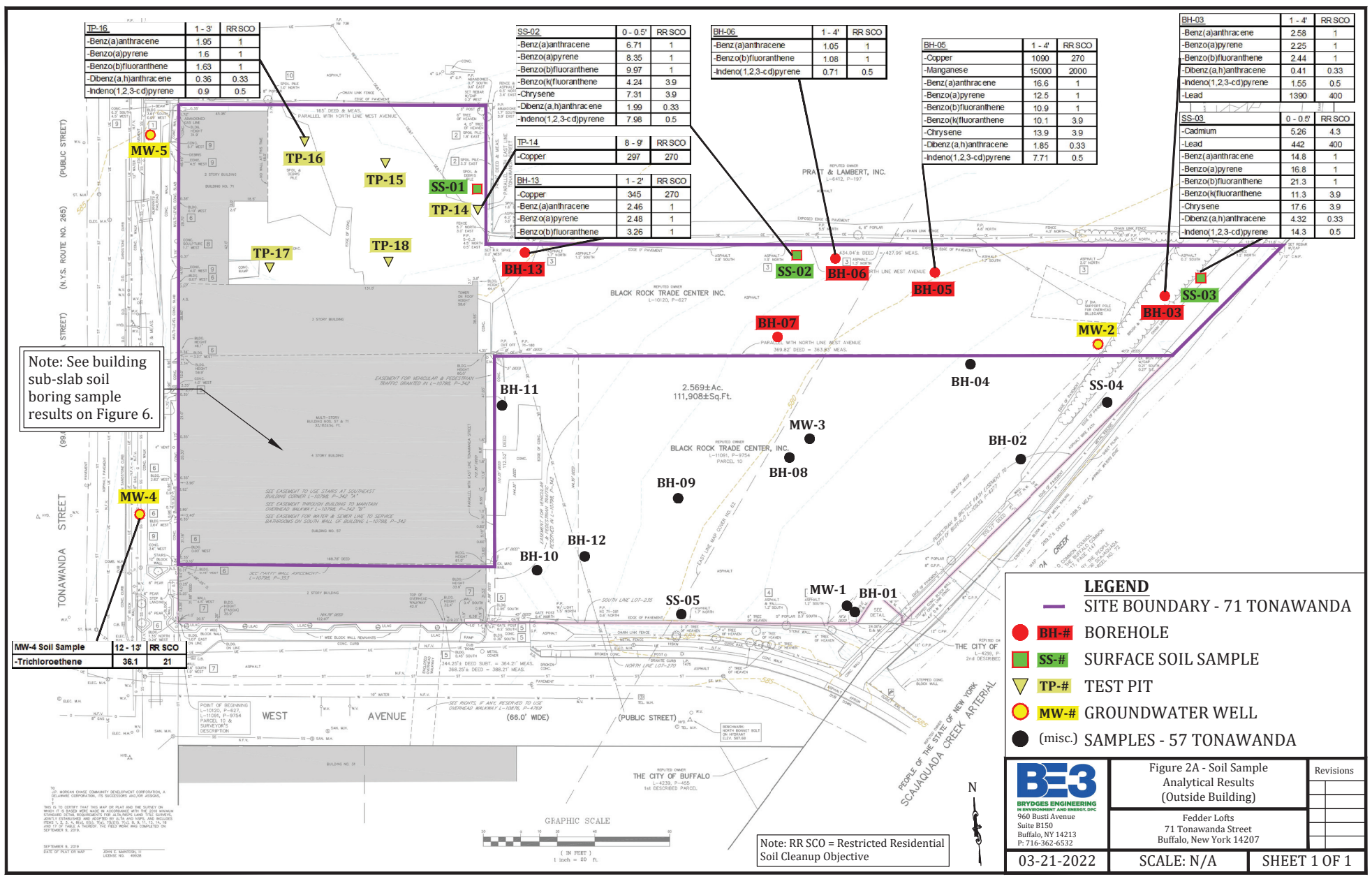
Figure 1
Property Location Map
71 Tonawanda St.

Fedder Lofts
71 Tonawanda Street
Buffalo, New York 14207

SCALE: N/A

Revisions

SHEET 1 OF 1



Note: See building sub-slab soil boring sample results on Figure 6.

TP-16	1- 3'	RR SCO
-Benz(a)anthracene	1.95	1
-Benz(o)pyrene	1.6	1
-Benz(o)fluoranthene	1.63	1
-Dibenz(a,h)anthracene	0.36	0.33
-Indeno(1,2,3-cd)pyrene	0.9	0.5

SS-02	0 - 0.5'	RR SCO
-Benz(a)anthracene	6.71	1
-Benz(o)pyrene	8.35	1
-Benz(o)fluoranthene	9.97	1
-Benz(o)kfluoranthene	4.24	3.9
-Chrysene	7.31	3.9
-Dibenz(a,h)anthracene	1.99	0.33
-Indeno(1,2,3-cd)pyrene	7.98	0.5

BH-06	1- 4'	RR SCO
-Benz(a)anthracene	1.05	1
-Benz(o)fluoranthene	1.08	1
-Indeno(1,2,3-cd)pyrene	0.71	0.5

BH-05	1- 4'	RR SCO
-Copper	1090	270
-Manganese	15000	2000
-Benz(a)anthracene	16.6	1
-Benz(o)pyrene	12.5	1
-Benz(o)fluoranthene	10.9	1
-Benz(o)kfluoranthene	10.1	3.9
-Chrysene	13.9	3.9
-Dibenz(a,h)anthracene	1.85	0.33
-Indeno(1,2,3-cd)pyrene	7.71	0.5

BH-03	1- 4'	RR SCO
-Benz(a)anthracene	2.58	1
-Benz(o)pyrene	2.25	1
-Benz(o)fluoranthene	2.44	1
-Dibenz(a,h)anthracene	0.41	0.33
-Indeno(1,2,3-cd)pyrene	1.55	0.5
-Lead	1390	400

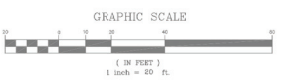
SS-03	0 - 0.5'	RR SCO
-Cadmium	5.26	4.3
-Lead	442	400
-Benz(a)anthracene	14.8	1
-Benz(o)pyrene	16.8	1
-Benz(o)fluoranthene	21.3	1
-Benz(o)kfluoranthene	11.3	3.9
-Chrysene	17.6	3.9
-Dibenz(a,h)anthracene	4.32	0.33
-Indeno(1,2,3-cd)pyrene	14.3	0.5

MW-4 Soil Sample	12- 13'	RR SCO
-Trichloroethene	36.1	21

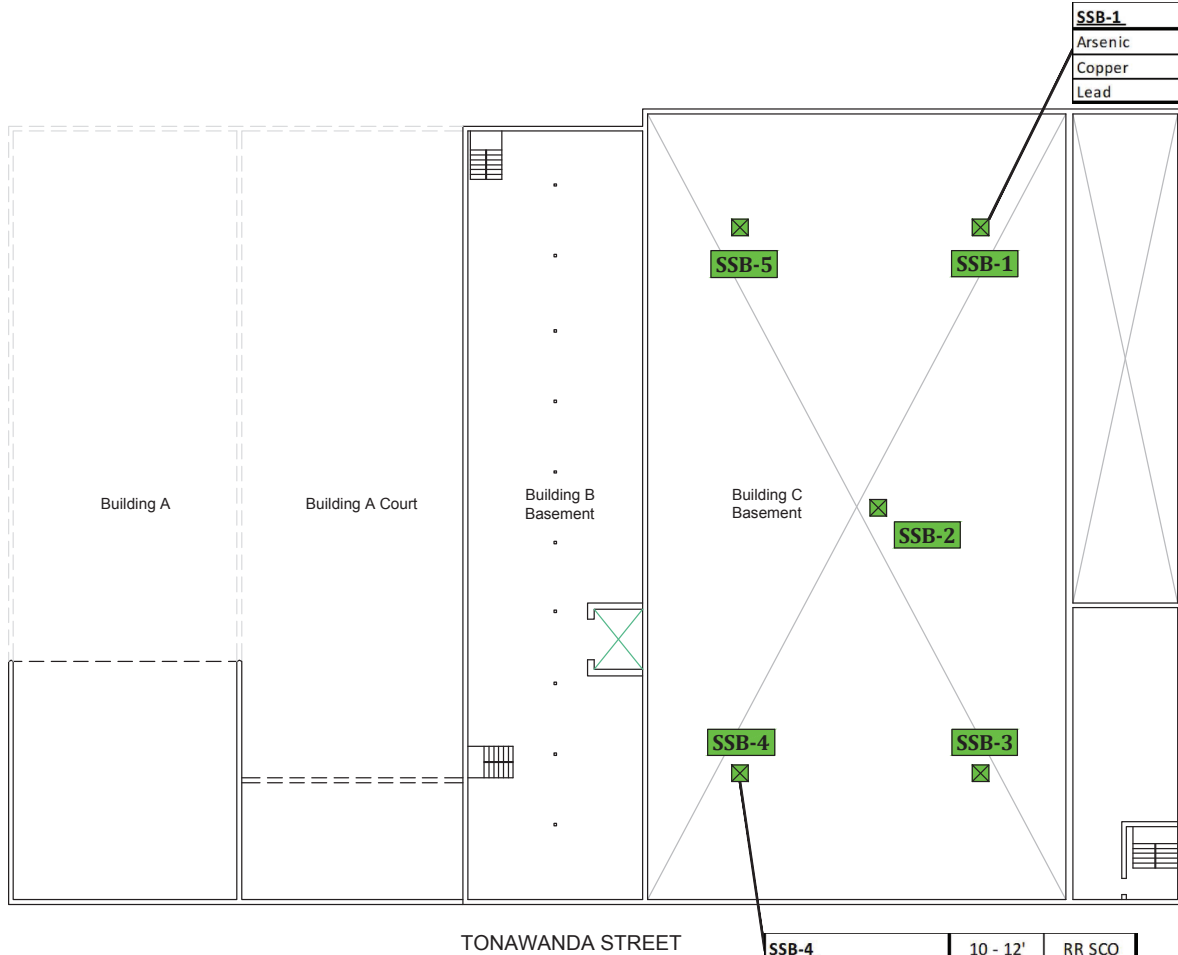
- LEGEND**
- SITE BOUNDARY - 71 TONAWANDA
 - BH-# BOREHOLE
 - SS-# SURFACE SOIL SAMPLE
 - ▼ TP-# TEST PIT
 - MW-# GROUNDWATER WELL
 - (misc.) SAMPLES - 57 TONAWANDA

 BRYDGES ENGINEERING AN ENVIRONMENTAL AND GEOTECHNICAL ENGINEERING FIRM 960 Busti Avenue Buffalo, NY 14213 P: 716-362-6532	Figure 2A - Soil Sample Analytical Results (Outside Building)	Revisions <table border="1" style="width: 100%; height: 40px;"> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table>				
03-21-2022	SCALE: N/A	SHEET 1 OF 1				

Note: RR SCO = Restricted Residential Soil Cleanup Objective



SEPTEMBER 8, 2019
 JOHN F. BARRON, LICENSE NO. 49928



EXISTING BASEMENT PLAN

SSB-1	0 - 4'	RR SCO
Arsenic	17.3	16
Copper	3390	270
Lead	2240	400

SSB-4	10 - 12'	RR SCO
Trichloroethene	1980	21

WEST AVENUE

TONAWANDA STREET

NOTE:
RR SCO = RESTRICTED RESIDENTIAL
SOIL CLEANUP OBJECTIVE

LEGEND
 SSB-#
 SUB-SLAB SOIL BORING SAMPLE
 LOCATION



 BRYDGES ENGINEERING AN ENVIRONMENTAL AND GEOTECHNICAL FIRM 960 Busti Avenue Suite B150 Buffalo, NY 14213 P: 716-362-6532	Figure 2B - Soil Sample Analytical Results (Inside Building)	Revisions <table border="1"> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table>								
03-21-2022	Fedder Lofts 71 Tonawanda Street Buffalo, New York 14207	SCALE: N/A SHEET 1 OF 1								

MW-05	Value	TOG GA
Manganese	321	300

MW-02 - GW EL. 575.27'	Value	TOG GA
Manganese	694	300
Selenium	15.4	10
Acetone	408	50
1,1,1-Trichloroethane	14.7	5
1,1-Dichloroethane	57	5
cis-1,2-Dichloroethane	55.4	5
1,4-Dioxane	52.1	1
Trichloroethene	22.5	5
Vinyl chloride	35.3	2

MW-5

579

578

577

576

575

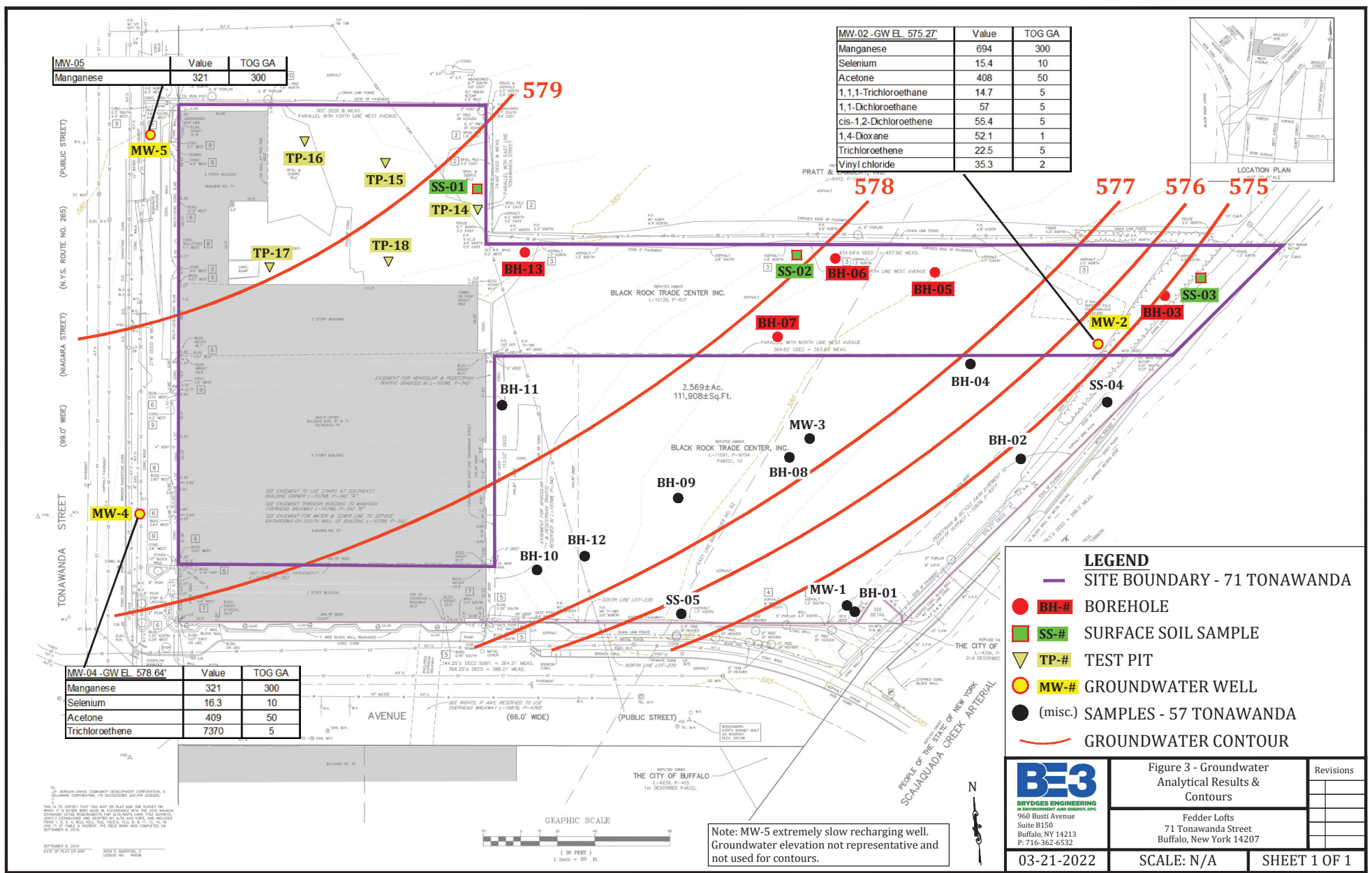
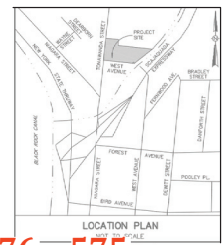
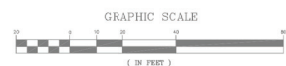
MW-4

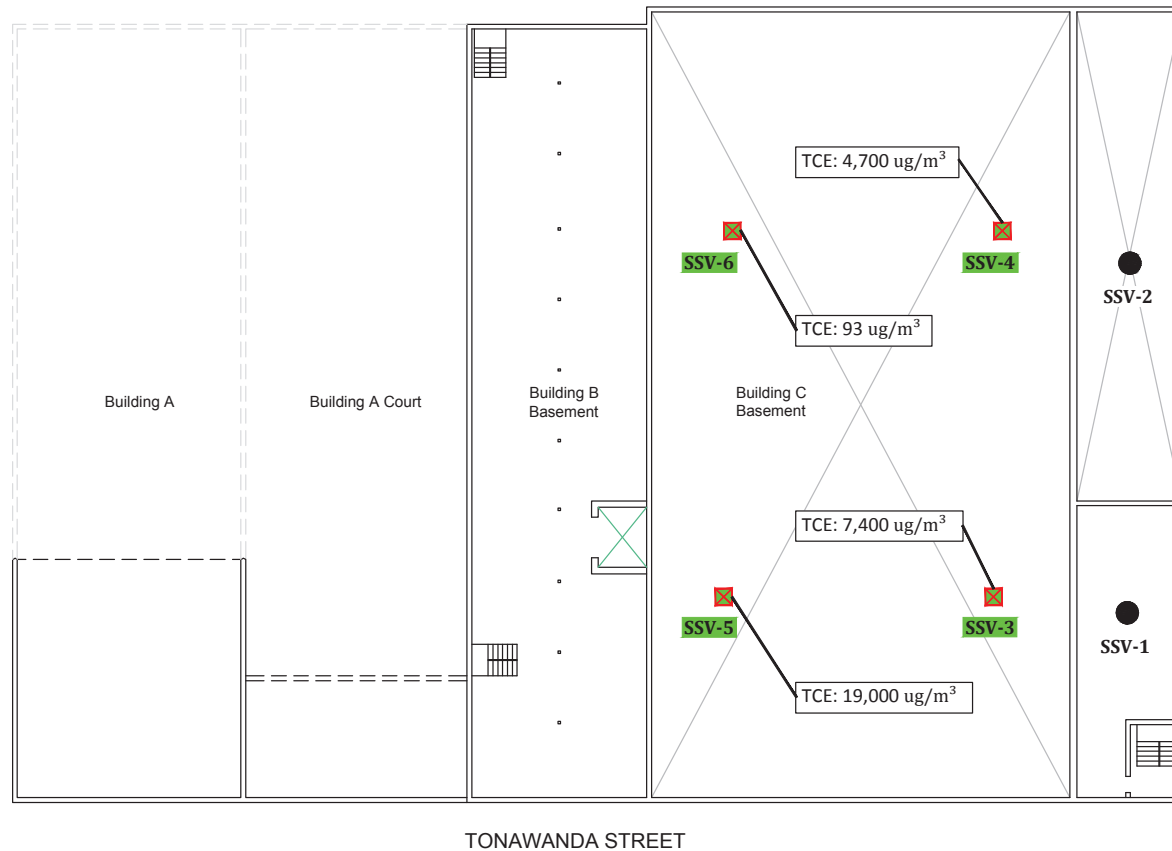
MW-04 - GW EL. 578.64'	Value	TOG GA
Manganese	321	300
Selenium	16.3	10
Acetone	409	50
Trichloroethene	7370	5

- LEGEND**
- SITE BOUNDARY - 71 TONAWANDA
 - BH-# BOREHOLE
 - SS-# SURFACE SOIL SAMPLE
 - ▽ TP-# TEST PIT
 - MW-# GROUNDWATER WELL
 - (misc.) SAMPLES - 57 TONAWANDA
 - GROUNDWATER CONTOUR

	Figure 3 - Groundwater Analytical Results & Contours	Revisions
	Fedder Lofts 71 Tonawanda Street Buffalo, New York 14207	
03-21-2022	SCALE: N/A	SHEET 1 OF 1

Note: MW-5 extremely slow recharging well. Groundwater elevation not representative and not used for contours.





EXISTING BASEMENT PLAN

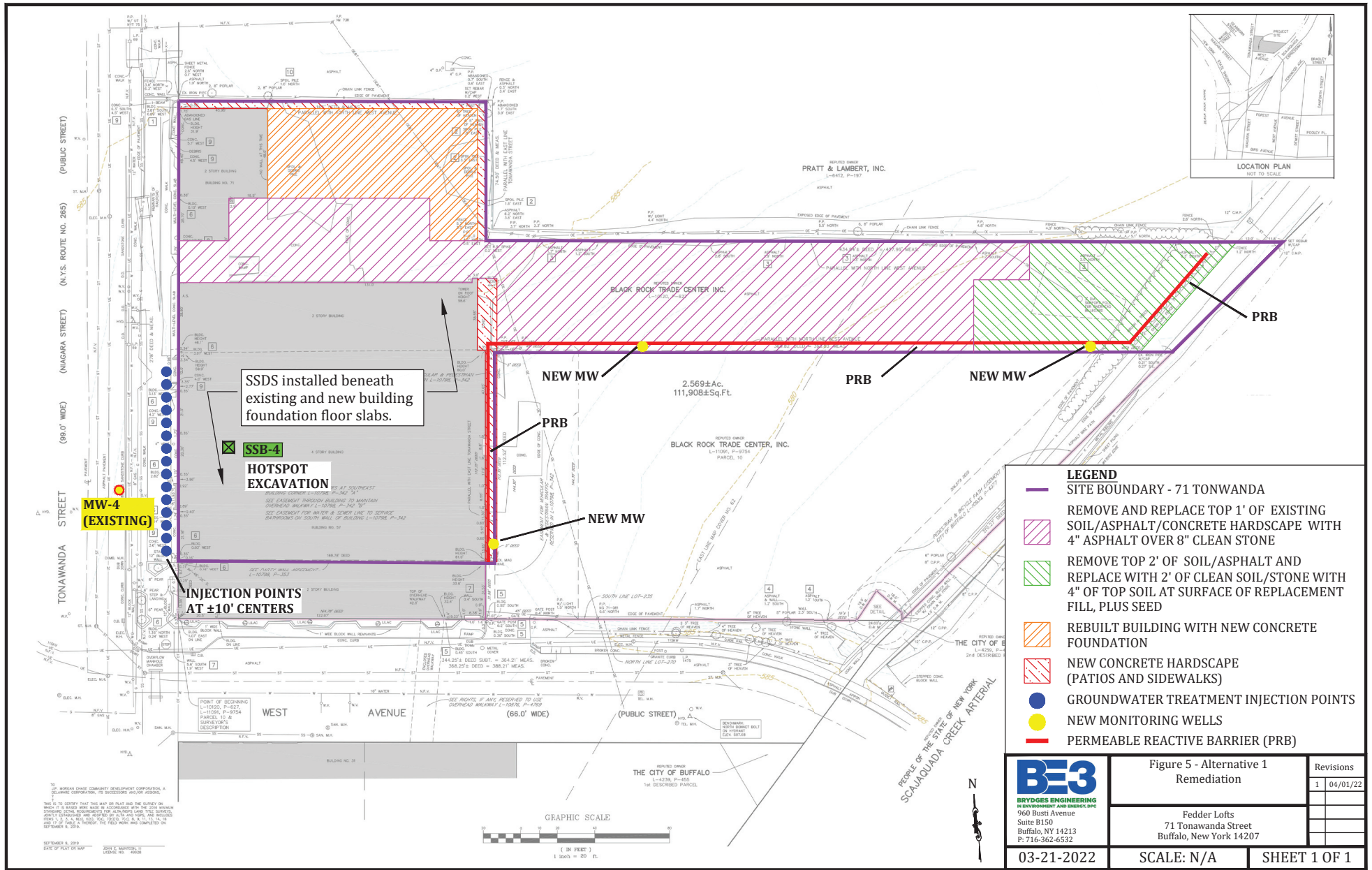
WEST AVENUE

NOTE: MINIMUM ACTION LEVEL REQUIRING MITIGATION IS 60 ug/m³ FOR SUB-SLAB VAPOR, REGARDLESS OF INDOOR AIR CONCENTRATION, AS PER NYSDOH SOIL VAPOR/INDOOR AIR MATRIX A FOR TCE.

	SSV-#	LEGEND
		SUB-SLAB VAPOR PROBE SAMPLE LOCATION
	SSV-#	SUB-SLAB VAPOR PROBE SAMPLE - 57 TONAWANDA
	TCE: # ug/m³	LAB ANALYTICS RESULT FROM TCE IN SAMPLE



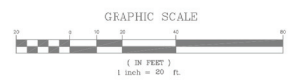
 BRYDGES ENGINEERING <small>AN ENVIRONMENTAL AND GEOTECHNICAL FIRM</small> 960 Busti Avenue Suite B150 Buffalo, NY 14213 P: 716-362-6532	Figure 4 - Sub-Slab Vapor Sample Analytical Results	Revisions
	Fedder Lofts 71 Tonawanda Street Buffalo, New York 14207	
03-21-2022	SCALE: N/A	SHEET 1 OF 1



- LEGEND**
- SITE BOUNDARY - 71 TONAWANDA
 - REMOVE AND REPLACE TOP 1' OF EXISTING SOIL/ASPHALT/CONCRETE HARDSCAPE WITH 4" ASPHALT OVER 8" CLEAN STONE
 - REMOVE TOP 2' OF SOIL/ASPHALT AND REPLACE WITH 2' OF CLEAN SOIL/STONE WITH 4" OF TOP SOIL AT SURFACE OF REPLACEMENT FILL, PLUS SEED
 - REBUILT BUILDING WITH NEW CONCRETE FOUNDATION
 - NEW CONCRETE HARDSCAPE (PATIOS AND SIDEWALKS)
 - GROUNDWATER TREATMENT INJECTION POINTS
 - NEW MONITORING WELLS
 - PERMEABLE REACTIVE BARRIER (PRB)

	Figure 5 - Alternative 1 Remediation	Revisions 1 04/01/22
	Fedder Lofts 71 Tonawanda Street Buffalo, New York 14207	
03-21-2022	SCALE: N/A	SHEET 1 OF 1

THIS IS TO CERTIFY THAT THIS MAP OR PLAN AND THE SURVEY OR MEASUREMENTS THEREON WERE MADE IN ACCORDANCE WITH THE STANDARD PRACTICES AND PROCEDURES FOR SURVEYING AND THAT THE SURVEYOR HAS BEEN LICENSED AND REGISTERED IN THE STATE OF NEW YORK. THE SURVEYOR'S NAME AND LICENSE NUMBER ARE: JOHN F. HARRISON, LICENSE NO. 49928.



PEOPLE OF THE STATE OF NEW YORK
 SCAJAJUADA CREEK ARTERIAL