RECORD OF DECISION

24 Seneca Avenue
Environmental Restoration Project
Rochester, Monroe County
Site No. E828132
March 2016

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

DECLARATION STATEMENT - RECORD OF DECISION

24 Seneca Avenue
Environmental Restoration Project
Rochester, Monroe County
Site No. E828132
March 2016

Statement of Purpose and Basis

This document presents the remedy for the 24 Seneca Avenue site, an environmental restoration 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 24 Seneca Avenue site and the public's input to the proposed remedy presented by the Department. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

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. Excavation

Excavation and off-site disposal of contaminant source areas, including:

- two USTs along with underground piping or other structures will be excavated and removed from the west side of the main building in the area of sample locations TP-05 and TP-06; and
- surface soils will be excavated to a depth of 1 foot in the area of surface soil sample locations SS-01, SS-02, and SS-03 to address SVOC and metals concentrations in soils which exceed the soil cleanup objectives (SCOs) for commercial use, as defined by 6 NYCRR Part 375-6.8, for those contaminants found in surface soils above standards; and
- removal of drainage structures DW-1, DW-2, DW-3, and DW-4 to address SVOC concentrations in soils which exceed the SCOs for commercial use, as defined by 6 NYCRR Part 375-6.8, for those contaminants found in surface soils above standards; and
- sub-surface soils will be excavated from the area of sample locations SB-03, SB-10, SB-11, SB-33, SB-43, and TP-03 to address VOC and SVOC contamination in soils which exceed the protection of groundwater SCOs, as defined by 6 NYCRR Part 375-6.8, for those contaminants found in site groundwater above standards. Excavation areas include areas from beneath the floor of the existing structure.

Approximately 2000 cubic yards of contaminated soil will be removed from the site. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the site. The site will be re-graded to accommodate installation of a cover system as described in remedy element #3.

3. Cover System

A site cover will be required to allow for commercial 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. Where the soil cover is required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for commercial use. The soil cover 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).

4. Enhanced Bioremediation

In-situ enhanced biodegradation will be employed to treat chlorinated volatile organic compounds (CVOCs) in groundwater in the area surrounding the source area located under southern end of the main building that includes sampling location SB-33, MW-7, MW-9, and MW-10. The treatment area is depicted on Figure 7. The biological breakdown of contaminants through anaerobic reductive dechlorination will be enhanced by the injection of a lactate, vegetable oil, and water solution into the subsurface to promote microbe growth via injection wells. The method and depth of injection will be determined during the remedial design.

5. Vapor Intrusion

Continued monitoring for vapor intrusion within the machine shop area at the southern end of the 24 Seneca Avenue property, as well as in the adjacent property to the north, 76 Seneca Avenue.

6. Institutional Controls

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

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

Site Management Plan

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

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

Institutional Controls: The Environmental Easement discussed above.

Engineering Controls: The cover system discussed above.

This plan includes, but may not be limited to:

- o an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- o provisions for the additional delineation of soil source area contamination if site structures are demolished;
- o descriptions of the provisions of the environmental easement including any land use and groundwater use restrictions;
- o a provision for evaluation of the potential for soil vapor intrusion in any reoccupied existing or future buildings developed on the site, or when site-related chemicals of concern are no longer in use in the on-site buildings, and/or when areas inside the existing buildings become more easily accessible, including provisions for implementing actions recommended to address exposures related to soil vapor intrusion;
- o provisions for the management and inspection of the identified engineering controls;
- o maintaining site access controls and Department notification; and
- o the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.
- o should the off-site residential property owners that previously declined soil vapor intrusion sampling request to have their properties sampled in the future, the NYSDEC, in consultation with the NYSDOH, shall determine if soil vapor intrusion sampling is still appropriate. If necessary, additional off-site groundwater and soil vapor sampling will be completed and actions to address exposures related to soil vapor intrusion will be implemented.

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

- o monitoring of groundwater, indoor air, sub-slab soil vapor, and/or soil vapor to

assess the performance and effectiveness of the remedy;

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

New York State Department of Health Acceptance

The New York State Department of Health (NYSDOH) concurs that the remedy for this site is protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

March 10, 2016

Date

Robert W. Schick, P.E., Director
Division of Environmental Remediation

RECORD OF DECISION

24 Seneca Avenue
Rochester, Monroe County
Site No. E828132
February 2016

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 remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This Record of Decision (ROD) identifies the selected remedy, summarizes the other alternatives considered, and discusses the reasons for selecting the remedy.

The 1996 Clean Water/ Clean Air Bond Act provides funding to municipalities for the investigation and cleanup of brownfields. Brownfields are abandoned, idled, or under-used properties where redevelopment is complicated by real or perceived environmental contamination. They typically are former industrial or commercial properties where operations may have resulted in environmental contamination. Brownfields often pose not only environmental, but legal and financial burdens on communities. Under the Environmental Restoration Program, the state provides grants to municipalities to reimburse up to 90 percent of eligible costs for site investigation and remediation activities. Once remediated, the property can then be reused.

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:

Rochester Public Library - Lincoln Branch
Attn: Jason Gogniat
851 Joseph Avenue
Rochester, NY 14621
Phone: 585-428-8210

Northeast Quadrant Neighborhood Service Center
Attn: Pamela Reese-Smith
500 Norton Street
Rochester, NY 14621
Phone: 585-428-7660

A public meeting was also conducted. At the meeting, the findings of the remedial investigation (RI) and the alternatives analyses (AA) were presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period was held, during which verbal or written comments were accepted on the proposed remedy.

Comments on the remedy received during the comment period are summarized and addressed in the responsiveness summary section of the ROD.

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:
This site is located at 24 Seneca Avenue, in a mixed-use urban area consisting of commercial, industrial, and residential properties in the City of Rochester, Monroe County. The property has an area of approximately 2.29 acres and is bordered to the west by Seneca Avenue, to the east by Bremen Street, and to the south by Norton Street.

Site Features:
The property includes one masonry and wood factory warehouse structure of approximately 87,131 square feet which covers most of the site property. The southern section of the property includes an open paved area.

Current Zoning and Land Use:
The site is currently zoned for manufacturing. The City of Rochester has obtained temporary incidents of ownership to access this property for the environmental investigation. The property is currently leased to several tenants and is used for a variety of commercial operations including machining, light manufacturing, and for the storage of commercial/industrial equipment and parts for resale. The southern end of the building is also used periodically for religious services.

Past Use of the Site:
The current building configuration was completed between 1920 and 1945. The site has been used for a variety of historical operations including lock, electric motor, and other metal parts manufacturing. Discharge to floor drains and the use of various degreasing chemicals appears to have led to the identified site contamination.

Site Geology and Hydrogeology:
Overburden geology at the site can generally be characterized as fine/medium grained silty sand alternating with dense clay/silty clay that contains some sand and gravel to 10 feet below ground surface (bgs). Bedrock was encountered at the site at depths of approximately 10 feet bgs. The dolomitic mudstone that was encountered was generally fractured. Several of these fractures exhibited evidence of water movement. Overburden water levels were measured between approximately 5 to 9.5 feet bgs. Overburden groundwater flows to the north/northwest, which mimics regional topography, which dips slightly to the west/northwest towards the Genesee River

Bedrock water levels were measured between 14 and 24 feet bgs. Bedrock groundwater at the site flows to the west and northwest; however, there is a component of flow to the south/southwest on the southern end of the Site. The bedrock was generally fractured, in various orientations, as observed throughout the length of core samples collected during the investigation. Groundwater flow in fractured bedrock is typically complicated and may have many components of local flow through these fractures, which may explain the bedrock groundwater flow observed at the site.

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 commercial use (which allows for 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 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 included in the Tables for the media being evaluated in Exhibit A.

SECTION 5: ENFORCEMENT STATUS

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

No PRPs have been documented to date.

Since no viable PRPs have been identified, there are currently no ongoing enforcement actions. However, legal action may be initiated at a future date by the state to recover state response costs should PRPs be identified. City of Rochester will assist the state in its efforts by providing all information to the state which identifies PRPs. City of Rochester will also not enter into any agreement regarding response costs without the approval of the Department.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

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

The following general activities are conducted during an RI:

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

The analytical data collected on this site includes data for:

- 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. The tables found in Exhibit A list the applicable SCGs in the footnotes. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

6.1.2: RI Results

The data have identified contaminants of concern. A "contaminant of concern" is a 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 in Exhibit A. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified at this site is/are:

trichloroethene (TCE)
cis-1,2-dichloroethene
vinyl chloride

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

- groundwater
- soil

6.2: Interim Remedial Measures

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

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

6.3: Summary of Environmental Assessment

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

Based upon the resources and pathways identified and the toxicity of the contaminants of ecological concern at this site, a Fish and Wildlife Resources Impact Analysis (FWRIA) was deemed not necessary for OU 01.

Nature and Extent of Contamination:

Based upon investigations conducted to date, the primary contaminants of concern at the site include the chlorinated volatile organic compounds (VOCs): trichloroethene (TCE), cis-dichloroethene (cis-DCE) and vinyl chloride (VC) in soil, groundwater, and indoor air. In addition, semi-volatile organic compounds (SVOCs), metals, PCBs and pesticides have been identified above standards in soil and groundwater. Groundwater and soil vapor contamination has been identified at off-site locations.

Soil
TCE and cis-DCE have been identified at the highest concentrations in soil under the on-site structure at depths of 4 to 12 feet below the ground surface. Elevated concentrations were identified in six soil borings located near the center of the structure. The highest concentrations identified were of TCE, at a concentration of 41.67 parts per million (ppm), which is less than the 6NYCRR Part 375 Soil Cleanup Objective (SCO) for commercial use of 200 ppm but greater than the SCO for the protection of groundwater at 0.47 ppm.

SVOCs were detected above standards in surface and sub-surface soils. In the courtyard area at the northeastern section of the site, pentachlorophenol was discovered in soil borings at a depth of 4-8 ft below ground. Soil concentrations of 1.9 and 2.3 ppm exceeded the unrestricted use SCO of 0.8 ppm but not the commercial use SCO. This contaminant was not detected in groundwater. SVOCs were also detected in three surface soil samples collected from around the perimeter of the site. Soil concentrations exceeded the protection of groundwater and unrestricted use SCO. Benzo(a)pyrene was detected in all three surface soil samples at concentrations above the commercial use SCOs. The highest detected concentration of benzo(a)pyrene was 5.8 ppm as compared to the commercial use SCO of 1 ppm. Benzo(b)fluoranthene was detected at one location at a concentration of 8.4ppm, above the commercial use SCO of 5.6 ppm.

Three SVOCs, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, were detected in two subsurface soil samples above the commercial use SCOs. These soil samples were collected from two locations in the open courtyard at the northeast corner of the site, and at one location in the open area to the south of the site. The highest concentration detected was of benzo(b)fluoranthene (15 ppm). These locations were associated with former commercial use related to petroleum which is the suspected source of the SVOCs.

Metals were detected above SCGs in both soil and groundwater. Copper was identified in one surface soil sample at a concentration (337 ppm) that exceeded the commercial use SCO (270 ppm). Copper was also detected in three subsurface soil samples at concentrations ranging from 1,730 to 3,660 ppm and a depth of 6 to 10 feet below ground. Other metals detected above standards (lead, mercury, zinc) were detected above unrestricted use SCOs but below the commercial use SCOs.

Polychorinated Biphenyls (PCBs) were detected above unrestricted use SCOs in surface and sub-surface soils but below the commercial use SCO of 1 ppm.

Pesticides were detected in two surface soil samples at concentrations that were above the unrestricted use SCOs but below the commercial use SCOs.

Groundwater

Contaminants of concern (VOCs) have been identified above groundwater standards in both overburden and bedrock groundwater monitoring wells on and off-site. TCE and cis-DCE have been identified at the highest concentrations in groundwater in bedrock monitoring wells to the south and east of the site. The highest cis-DCE concentrations were identified in two bedrock monitoring wells (MW-7 and 9)at concentrations ranging from 1,200 to 2,000 parts per billion (ppb) as compared to the groundwater standard of 5 ppb. The highest concentration of TCE was identified in a monitoring well within the southern portion of the site at a concentration of 17,720 ppb as compared to a groundwater standard of 5 ppb. Significantly elevated concentrations of TCE were also identified in two adjacent bedrock wells to the south and east at concentrations ranging from 1,000 to 3,800 ppb. The depth to water in these wells ranged from 15 to 25 feet below ground.

VOCs were also detected in overburden groundwater monitoring wells on the site. The highest concentrations of cis-DCE were detected in two monitoring wells (OW-101 and RIZ-4) at concentrations ranging from 290 to 560 ppb.

Detections of VOCs are assumed to be related to historic manufacturing and commercial operations that have occurred at the site where TCE was used as an industrial cleaner. The presence of cis-DCE and VC are assumed to be the result of the environmental breakdown of TCE.

SVOCs were detected in groundwater at concentrations exceeding state standards and guidance values. The highest concentration detected was of benzo(b)fluoranthene (22 ppb). The contaminant concentrations detected in groundwater varied over the three times that groundwater was sampled and analyzed from this site. Detections in groundwater are likely related to contaminated soils in the water sample as these contaminants are not readily soluble. The concentrations of benzo(b)fluoranthene in soil and groundwater referenced above were collected from adjacent locations. Groundwater standards for these compounds are typically 0.002 ppb.

Metals were also identified above SCGs in groundwater. These concentrations were detected during sampling in 2008, but were not detected during sampling in 2009.

Two pesticides, Aldrin and dieldrin, were detected above groundwater standards in two wells at concentrations of 0.02 ppb.

Building Interior

PCBs were also detected in samples collected from the interior surfaces of the building where the storage of PCB containing equipment was identified. Asbestos containing materials were identified within the existing structure.

Soil Vapor and Indoor Air

The evaluation of the potential for soil vapor intrusion resulting from the presence of site related groundwater contamination was performed by the sampling of soil vapor, sub-slab soil vapor under structures, and indoor air inside structures. Sub-slab and indoor air sampling was performed in

the southern extension of the main building and in six (6) off-site structures. TCE was the CVOC detected at the highest concentrations in the northern building at 0.27 – 0.48 µg/m3 in indoor air and at 230 – 490 µg/m3 in sub-slab vapor. TCE was detected in the southern building extension at 2.8 – 25 µg/m3 in indoor air, which exceeds both the NYSDOH air guideline for TCE in air (2 µg/m3 and the level at which immediate actions are recommended to reduce exposures (20 µg/m3). TCE was detected at 5.2 – 12 µg/m3 in sub-slab vapor samples from this same area. The results of the soil vapor and groundwater sampling to the south and east of the site warranted the evaluation of off-site properties in this area for the potential of soil vapor intrusion. SVI sampling was offered to property owners of ten off-site buildings in 2013. Of the ten properties, four accepted the State's offer to complete the SVI sampling. Following the sampling and review of the data, actions to address soil vapor intrusion were not needed at any of the four off-site residential properties.

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 drinking contaminated groundwater because the area is served by a public water supply that is not affected by site-related contamination. People may come into contact with contaminants in soils if they contact surface soils or dig below the surface. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. The potential exists for the inhalation of site contaminants due to soil vapor intrusion in the on-site building and in any buildings developed on-site in the future. Environmental sampling conducted to date indicates soil vapor intrusion concerns are limited to one off-site building; however, additional sampling may be necessary to evaluate other off-site structures in the event that access is granted.

6.5: Summary of the Remediation Objectives

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

The remedial action objectives for this site are:

Groundwater

RAOs for Public Health Protection

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

RAOs for Environmental Protection

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

Soil

RAOs for Public Health Protection

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

RAOs for Environmental Protection

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

Soil Vapor

RAOs for Public Health Protection

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

SECTION 7: SUMMARY OF THE SELECTED REMEDY

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

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

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

The selected remedy is referred to as the Excavation, Capping, In-Situ Groundwater Treatment and Site Management remedy.

The estimated present worth cost to implement the remedy is $2,282,000. The cost to construct the remedy is estimated to be $1,939,000 and the estimated average annual cost is $31,800.

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. Excavation

Excavation and off-site disposal of contaminant source areas, including:

- two USTs along with underground piping or other structures will be excavated and removed from the west side of the main building in the area of sample locations TP-05 and TP-06; and
- surface soils will be excavated to a depth of 1 foot in the area of surface soil sample locations SS-01, SS-02, and SS-03 to address SVOC and metals concentrations in soils which exceed the soil cleanup objectives (SCOs) for commercial use, as defined by 6 NYCRR Part 375-6.8, for those contaminants found in surface soils above standards; and
- removal of drainage structures DW-1, DW-2, DW-3, and DW-4 to address SVOC concentrations in soils which exceed the SCOs for commercial use, as defined by 6 NYCRR Part 375-6.8, for those contaminants found in surface soils above standards; and
- sub-surface soils will be excavated from the area of sample locations SB-03, SB-10, SB-11, SB-33, SB-43, and TP-03 to address VOC and SVOC contamination in soils which exceed the protection of groundwater SCOs, as defined by 6 NYCRR Part 375-6.8, for those contaminants found in site groundwater above standards. Excavation areas include areas from beneath the floor of the existing structure.

Approximately 2000 cubic yards of contaminated soil will be removed from the site. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the site. The site will be re-graded to accommodate installation of a cover system as described in remedy element #3.

3. Cover System

A site cover will be required to allow for commercial 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. Where the soil cover is required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for commercial use. The soil cover 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).

4. Enhanced Bioremediation

In-situ enhanced biodegradation will be employed to treat chlorinated volatile organic compounds (CVOCs) in groundwater in the area surrounding the source area located under southern end of the main building that includes sampling location SB-33, MW-7, MW-9, and MW-10. The treatment area is depicted on Figure 7. The biological breakdown of contaminants through anaerobic reductive dechlorination will be enhanced by the injection of a lactate, vegetable oil, and water solution into the subsurface to promote microbe growth via injection wells. The method and depth of injection will be determined during the remedial design.

5. Vapor Intrusion

Continued monitoring for vapor intrusion within the machine shop area at the southern end of the 24 Seneca Avenue property, as well as in the adjacent property to the north, 76 Seneca Avenue.

6. Institutional Controls

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

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

Site Management Plan

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

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

Institutional Controls: The Environmental Easement discussed above.

Engineering Controls: The cover system discussed above.

This plan includes, but may not be limited to:

- o an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- o provisions for the additional delineation of soil source area contamination if site structures are demolished;

- o descriptions of the provisions of the environmental easement including any land use and groundwater use restrictions;
- o a provision for evaluation of the potential for soil vapor intrusion in any reoccupied existing or future buildings developed on the site, or when site-related chemicals of concern are no longer in use in the on-site buildings, and/or when areas inside the existing buildings become more easily accessible, including provisions for implementing actions recommended to address exposures related to soil vapor intrusion;
- o provisions for the management and inspection of the identified engineering controls;
- o maintaining site access controls and Department notification; and
- o the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.
- o should the off-site residential property owners that previously declined soil vapor intrusion sampling request to have their properties sampled in the future, the NYSDEC, in consultation with the NYSDOH, shall determine if soil vapor intrusion sampling is still appropriate. If necessary, additional off-site groundwater and soil vapor sampling will be completed and actions to address exposures related to soil vapor intrusion will be implemented.

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

- o monitoring of groundwater, indoor air, sub-slab soil vapor, and/or soil vapor to assess the performance and effectiveness of the remedy;
- o a schedule of monitoring and frequency of submittals to the Department;

Exhibit A

Nature and Extent of Contamination

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

For each medium for which contamination was identified, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the media and compares the data with the applicable SCGs for the site. The contaminants are arranged into four categories; volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides/ polychlorinated biphenyls (PCBs), and inorganics (metals and cyanide). For comparison purposes, the SCGs are provided for each medium that allows for unrestricted use. For soil, if applicable, the Restricted Use SCGs identified in Section 4 and Section 6.1.1 are also presented.

Waste/Source Areas

As described in the RI report, waste/source materials were identified at the site and are impacting groundwater, soil, and soil vapor.

Wastes are defined in 6 NYCRR Part 375-1.2 (aw) and include solid, industrial and/or hazardous wastes. Source areas are defined in 6 NYCRR Part 375 (au). Source areas are areas of concern at a site were substantial quantities of contaminants are found which can migrate and release significant levels of contaminants to another environmental medium. Wastes and source areas were identified at the site include soil contamination areas identified under the south central portion of the main structure at soil boring sample location SB-33. This soil contamination location appears to be the source area for area groundwater contamination as a result of the historic use of chlorinated solvents in manufacturing processes. This location is shown on Figure 2A. The waste/source areas identified will be addressed in the remedy selection process.

Groundwater

The sampling of groundwater during the investigation of this site has identified the presence of chlorinated VOCs, SVOCs, and metals that exceed the New York State standards, criteria, and guidelines (SCGs). The primary contaminants of concern are VOCs, which are related to soil contamination in the area surrounding sampling location SB-33, which was located under the southern section of the site building. The highest concentrations of VOCs in groundwater were found in bedrock groundwater under the southern portion of the site building and to the south and east of the site. VOCs were also detected in overburden groundwater monitoring wells on the site. The highest concentrations were detected in two monitoring wells (OW-101 and RIZ-4) located at the north end of the site building. Overburden groundwater flow is general to the northwest, while bedrock groundwater flow is generally to the west but appears to move in multiple fracture pathway directions. The VOC contamination is associated with the operation of degreasing operations where manufacturing took place. Some petroleum-related VOCs were also detected in the southern area of the site above SCGs. These compounds are related to the historic storage and use of gasoline at the site. SVOCs and metals detected above SCGs in groundwater has been attributed to sample turbidity, however, the site history includes the machining of metals and the use of fill that may have been contaminated. See Table #1, Figure 3A and 3B.

Based on the findings of the RI, the presence of VOCs, SVOCs, and metals has resulted in the contamination of groundwater. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of groundwater to be addressed by the remedy selection process are: VOCs and SVOCs.

Table #1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
Acetone	9 – 2,400	50	2 of 39
Benzene	0.24 – 290	1	7 of 39
cis-1,2-Dichloroethene	0.39 – 2,000	5	25 of 39
Ethylbenzene	0.11 – 10	5	4 of 39
2-Hexanone	50 – 300	50	2 of 39
Isopropylbenzene	2.12 – 19	5	4 of 39
MTBE (Methyl Tertiary Butyl Ether)	0.18 – 260	10	7 of 39
Toluene	0.14 – 14	5	1 of 39
Total Xylenes	0.62 – 9	5	3 of 39
trans-1,2-Dichloroethene	0.2 – 65.6	5	6 of 39
Tricloroethene	1.4 – 17,720	5	20 of 39
Vinyl Chloride	1.8 – 260	2	21 of 39
SVOCs			
Chrysene	0.3 – 14	0.002	7 of 38
Benzo(a)anthracene	0.2 - 10	0.002	7 of 38
Benzo(b)fluoranthene	0.2 – 22	0.002	6 of 38
Benzo(k)fluoranthene	0.3 – 7	0.002	4 of 38
Bis(2-ethylhexyl)phthalate	4 – 31	5	5 of 38
Ideno(1,2,3-cd)pyrene	0.2 – 14	0.002	11 of 38
M-Dichlorobenzene	0.4 - 9	3	2 of 38
1,2-Dichlorobenzene	0.4 - 9	3	2 of 38
1,4-Dichlorobenzene	0.4 - 9	3	1 of 38
Phenol	1.6 – 8.02	1	3 of 38
Inorganics			
Antimony	6 - 8	3	2 of 23
Arsenic	4 – 97.3	25	4 of 23
Beryllium	0.56 – 4.3	3	3 of 23
Cadmium	0.74 – 11.4	5	3 of 23
Chromium	1 - 212	50	5 of 23
Copper	2 – 2,300	200	6 of 23
Lead	6.5 - 911	25	7 of 23
Nickel	3 - 300	100	5 of 23
Thallium	0.43 – 0.52	0.5	2 of 23
Zinc	4 – 3,490	2,000	1 of 23

a - ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.
b- SCG: Standard Criteria or Guidance - Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).

Soil

Surface and subsurface soil samples were collected at the site during the RI. The contaminants of concern exceeding SCGs in soils are VOCs. SVOCs, and Metals.

Subsurface soil samples were collected from a depth of 2 to 20 feet below the ground surface to assess soil contamination impacts. VOCs were detected in soil samples collected from locations at the center of the site under the building structure in areas that were historically associated with the use of these chemicals as solvents in manufacturing processes. VOC concentrations exceeded the unrestricted and protection of groundwater SCOs but did not exceed the commercial use SCO. The VOC compounds detected are the same that were identified as the primary contaminants of concern in groundwater. SVOCs were identified above the unrestricted, commercial use, and protection of groundwater soil cleanup objectives (SCOs) at several sampling locations at a depth of 4 to 12 feet below the ground surface. The majority of detections were located at the southern end of the property in a location that has been historically a parking area and a gasoline service station. SVOCs were also detected as a contaminant of concern in groundwater. The primary metal contaminant identified was copper which was detected above the unrestricted, commercial use, and protection of groundwater SCOs. Copper was also detected in groundwater. The highest concentrations of copper were located to the west of the site in an area adjacent to a former petroleum underground storage tank. Polychlorinated biphenyls (PCBs) were detected above the unrestricted use SCOs at two locations but the concentrations did not exceed the restricted use SCOs for either commercial use or the protection of groundwater. See Table #2, Figure 2A and 2B.

Surface soil samples were collected from a depth of 0-2 inches to assess direct human exposure. Samples were collected from three locations of exposed surface soils around the perimeter of the site to the south and west. The sampling results indicate that surface soils at the site exceed the unrestricted and restricted use SCOs for SVOCs and metals. SVOCs were detected above the commercial use SCOs at all three surface locations. The primary metal of concern was copper which was detected above the commercial use SCO at one location to the west of the site. Pesticides were detected above the unrestricted use SCOs at two locations but the concentrations did not exceed the restricted use SCOs for either commercial use or the protection of groundwater. See Table #3, Figure 2A and 2B.

The primary soil contaminants are VOCs, SVOCs, and metals. VOCs include trichloroethene, cis-1,2-dichloroethene, and vinyl chloride associated with the historic use of solvents in manufacturing processes. SVOCs include benzo(a)pyrene and similar compounds associated with the use and combustion of petroleum products. Metals include copper which may be associated with the historic machining processes performed at the site.

Based on the findings of the Remedial Investigation, the presence of VOCs, SVOCs and metals has resulted in the contamination of soil. The site contaminants identified in soil which are considered to be the primary contaminants of concern, to be addressed by the remedy selection process are, trichloroethene, benzo(a)pyrene, and copper.

Table #2 – Sub-Surface Soil

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG[c] (ppm)	Frequency Exceeding Restricted SCG	Restricted Use SCG[d] (ppm)	Frequency Exceeding Restricted SCG
VOCs							
Acetone	0.006 – 6.1	0.05	3 of 49	500	0 of 49	0.05	3 of 49
cis-1,2-Dichloroethene	0.003 – 2.1	0.25	3 of 49	500	0 of 49	0.25	3 of 49
Trichloroethene	0.007 – 41.67	0.47	4 of 49	200	0 of 49	0.47	4 of 49
Vinyl Chloride	0.004 – 0.092	0.02	1 of 49	13	0 of 49	0.02	1 of 49
Xylenes	0.015 – 0.924	0.26	1 of 49	500	0 of 49	1.6	0 of 49
SVOCs							
Chrysene	0.012 – 7	1	5 of 44	56	0 of 44	1	5 of 44
Benzo(a)pyrene	0.017 – 10	1	5 of 44	1	5 of 44	22	0 of 44
Benzo(a)anthracene	0.017 – 6.8	1	5 of 44	5.6	1 of 44	1	5 of 44
Benzo(b)fluoranthene	0.016 – 15	1	5 of 44	5.6	1 of 44	1.7	5 of 44
Benzo(k)fluoranthene	0.015 – 5.4	0.8	4 of 44	56	0 of 44	1.7	4 of 44
Ideno(1,2,3-cd)pyrene	0.025 – 3.9	0.5	5 of 44	5.6	0 of 44	8.2	0 of 44
Pentachlorophenol	0.38 – 2.3	0.8	2 of 44	6.7	0 of 44	0.8	2 of 44
Inorganics							
Copper	0.2 – 3,660	50	12 of 43	270	5 of 43	1,720	3 of 43
Lead	2.1 – 149	63	6 of 43	1,000	0 of 43	450	0 of 43
Mercury	0.02 – 0.748	0.18	5 of 29	2.8	0 of 29	0.73	1 of 29
Zinc	20.4 – 562	109	10 of 29	10,000	0 of 29	2,480	0 of 29
Pesticides/PCBs							
PCB	0.149 – 0.44	0.1	2 of 31	1	0 of 31	3.2	0 of 31

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

Table #3 – Surface Soil

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG[c] (ppm)	Frequency Exceeding Restricted SCG	Restricted Use SCG[d] (ppm)	Frequency Exceeding Restricted SCG
SVOCs							
Benzo(a)pyrene	1.3 – 5.8	1	3 of 3	1	3 of 3	22	0 of 3
Benzo(a)anthracene	0.99 – 4.9	1	2 of 3	5.6	0 of 3	1	0 of 3
Benzo(b)fluoranthene	1.7 – 8.4	1	3 of 3	5.6	1 of 3	1.7	2 of 3
Benzo(k)fluoranthene	0.88 – 3.1	0.8	3 of 3	56	0 of 3	1.7	3 of 3
Ideno(1,2,3-cd)pyrene	0.52 – 2.0	0.5	3 of 3	5.6	0 of 3	8.2	0 of 3
Inorganics							
Copper	102 – 337	50	3 of 3	270	1 of 3	1,720	0 of 3
Lead	100 – 152	63	3 of 3	1,000	0 of 3	450	0 of 3
Mercury	0.075 – 0.24	0.18	1 of 3	2.8	0 of 3	0.73	0 of 3
Silver	1.1 – 4.2	2	2 of 3	1,500	0 of 3	8.3	0 of 3
Zinc	221 - 484	109	3 of 3	10,000	0 of 3	2,480	0 of 3
Pesticides/PCBs							
4,4-DDE	4.7 – 5.5	3.3	2 of 3	62	0 of 3	17	0 of 3
4,4-DDT	15 – 28	3.3	2 of 3	47	0 of 3	136	0 of 3

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

Soil Vapor

The evaluation of the potential for soil vapor intrusion resulting from the presence of site related groundwater contamination was performed by the sampling of soil vapor, sub-slab soil vapor under structures, and indoor air inside structures. Within the main structure on-site, the storage of materials inside the structure compromised the sampling for soil vapor intrusion such that sub-slab and indoor air samples were not collected during the investigation. The occupation of the structure is minimal, and the Department will evaluate vapor intrusion within the site structures should the use of the on-site building change, when site-related chemicals of concern are no longer present or in use and/or areas inside the building are more easily accessible, and for any future building(s) developed on the site. Sub-slab and indoor air sampling was performed in the southern extension of the main building and in six (6) off-site structures. Two off-site structures to the north and west and the southern end of the main building were evaluated for soil vapor intrusion initially. Chlorinated VOCs were detected in indoor air and sub-slab vapor at these locations but only the property to north and the southern building extension had detection levels which required further evaluation. Indoor air and sub-slab soil vapor were collected from these two properties one year later and contaminants of concern were detected again. TCE was the CVOC detected at the highest concentrations in the northern building at 0.27 – 0.48 $\mu g/m^3$ in indoor air and at 230 – 490 $\mu g/m^3$ in sub-slab vapor. TCE was detected in the southern building extension at 2.8 – 25 $\mu g/m^3$ in indoor air and at 5.2 – 12 $\mu g/m^3$ in sub-slab vapor. Soil vapor samples were collected from soils in the vacant property to the east of the site. CVOC contamination was detected in these samples. The results of the soil vapor and groundwater sampling to the south and east of the site warranted the evaluation of off-site properties in this area for the potential of soil vapor intrusion. SVI sampling was offered to property owners of ten off-site buildings in 2013. Of the ten properties, four accepted the State's offer to complete the SVI sampling. Following the sampling and review of the data, actions to address soil vapor intrusion were not needed at any of the four off-site residential properties.

Based on the findings of the Remedial Investigation, the presence of VOCs has resulted in the contamination of soil vapor. The site contaminants that are considered to be the primary contaminants of concern in soil vapor to be addressed by the remedy are tricholoethene (TCE), which is associated with former degreasing operations at the site, along with TCE degradation compounds (e.g., cis-1,2-dichloroethene). Based on the concentrations of contaminants detected in soil vapor and groundwater, and in comparison with the NYSDOH Soil Vapor Intrusion Guidance, both the southern building extension and the off-site property to the north warrant further sampling to evaluate for soil vapor intrusion. See Figure 4.

Exhibit B

Description of Remedial Alternatives

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

Alternative 1: No Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative leaves the site in its present condition and does not provide any additional protection to public health and the environment.

Alternative #2: Restoration to Pre-Disposal or Unrestricted Conditions

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A and soil meets the unrestricted soil clean objectives listed in Part 375-6.8 (a). This alternative would include: demolition of all structures on-site including the excavation and removal of underground storage tanks and drainage structures; excavation of all soil contamination above unrestricted use soil cleanup objectives; and the treatment and monitoring of groundwater contamination to achieve groundwater standards.

Capital Cost:.....$9,100,000

Alternative #3: Excavation, Capping, and Site Management

This alternative would include: the excavation of approximately 200 cubic yards of surface soils with SVOCs and metals concentrations exceeding the commercial use SCOs; replacement of the existing asphalt cover over the northeastern and southern portions of the site; the installation of 570 linear feet fencing as site access control; the excavation and removal of underground storage tanks and drainage structures; removal of 25 abandoned 55 gallon drums from within the structure; development of a Site Management Plan which will include: the monitoring of 16 existing bedrock and overburden groundwater wells for contaminants of concern; continued monitoring for soil vapor intrusion; and the implementation of an environmental easement. The environmental easement will restrict the site to commercial or industrial use and restrict the use of groundwater from the site.

Present Worth:.....$995,000
Capital Cost:.....$652,000
Annual Costs:.....$10,800

Alternative #4: Excavation, Capping, In-Situ Groundwater Treatment with Bioremediation, and Site Management

This alternative would include: All of the elements of the above Alternative #3; excavation and off-site disposal of approximately 2,000 cubic yards of soil from locations with VOCs and SVOCs identified as exceeding the protection of groundwater SCOs; the removal of two USTs; the cleaning and closure of drainage inlets; in-situ groundwater treatment for VOCs with enhanced anaerobic bioremediation including bioaugmentation and an iron additive.

Present Worth: *$2,280,000*
Capital Cost: *$1,940,000*
Annual Costs: *$10,800*

Alternative #5: Excavation, Capping, In-Situ Groundwater Treatment with Chemical Oxidation, and Site Management

This alternative would include: All of the elements of the above Alternative #3; excavation and off-site disposal of approximately 1,200 cubic yards of sub-surface soil from locations with SVOCs identified as exceeding the protection of groundwater SCOs; the removal of two USTs; the cleaning and closure of drainage inlets; in-situ groundwater treatment for VOCs with catalyzed hydrogen peroxide and zero valent iron.

Present Worth: *$5,120,000*
Capital Cost: *$4,780,000*
Annual Costs: *$10,800*

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
No Action	0	0	0
Alternative #2: Restoration to Pre-Disposal or Unrestricted Conditions	9,100,000	0	9,400,000
Alternative #3: Excavation, Capping, and Site Management	652,000	10,800	995,000
Alternative #4: Excavation, Capping, In-Situ Groundwater Treatment with Bioremediation, and Site Management	1,940,000	10,800	2,280,000
Alternative #5: Excavation, Capping, In-Situ Groundwater Treatment with Chemical Oxidation, and Site Management	4,780,000	10,800	5,120,000

Exhibit D

SUMMARY OF THE SELECTED REMEDY

The Department is selecting Alternative #4 as the remedy for this site. Alternative #4 would achieve the remediation goals for the site by: excavation of surface soils with SVOCs and metals concentrations exceeding the commercial use SCOs; the excavation and off-site disposal of approximately 2,000 cubic yards of sub-surface soil from locations with VOCs and SVOCs identified as exceeding the protection of groundwater SCOs; the removal of two USTs; the cleaning and closure of drainage inlets; in-situ groundwater treatment for VOCs with enhanced anaerobic bioremediation including bioaugmentation and an iron additive; replacement of the existing asphalt cover over the northeastern and southern portions of the site; the installation of 570 linear feet of fencing as site access control; removal of 25 abandoned 55 gallon drums from within the structure; development of a Site Management Plan which will include the monitoring of 16 existing bedrock and overburden groundwater wells for contaminants of concern, and continued monitoring for soil vapor intrusion; and the implementation of an environmental easement.. The elements of this remedy are described in Section 7. The proposed remedy is depicted in Figure 5.

Basis for Selection

The selected remedy is based on the results of the RI and the evaluation of alternatives. The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375. A detailed discussion of the evaluation criteria and comparative analysis is included in the AA report.

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

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

The proposed remedy Alternative #4 would satisfy this criterion by removing contaminated surface and sub-surface soils, and addresses the source of the groundwater contamination, which is the most significant threat to public health and the environment. Alternative 1 (No Action) does not provide any additional protection to public health and the environment and will not be evaluated further. Alternative 2 complies with this criterion but at a higher cost due to the extent of demolition, excavation, and groundwater treatment. Alternative 3, removes only surface soil contamination and addresses sub-surface contamination through capping. Groundwater treatment is not addressed under Alternative 3 and is only monitored for degradation over time. Alternative 5 satisfies this criterion by addressing contamination similar to Alternative 4, but with the treatment of VOC soil contamination in-situ. Alternatives 3, 4 and 5 rely on a restriction of groundwater use at the site to protect human health. Alternatives 4 and 5 will require a restriction on groundwater use; however, it is expected the restriction will be able to be removed as a result of the active groundwater treatment. Remedial actions completed under Alternatives 4 and 5 will result in the reduction of exposures to contaminants related to soil vapor intrusion. Soil vapor intrusion evaluations are required under Alternatives 3, 4, and 5 in order to protect human health.

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

Alternative 2 complies with this criterion but at a higher cost due to the extent of demolition, excavation, and groundwater treatment. Alternative 3 complies with this criterion for surface soil but not for sub-surface soil or for groundwater in an acceptable time frame. Alternative 3 will not be considered further. Alternatives 4 and 5 comply with SCGs by addressing source areas of contamination through excavation and groundwater treatment creating the conditions necessary to restore groundwater quality to the extent practicable. Because Alternatives 2, 4, and 5 satisfy the threshold criteria, the remaining criteria are particularly important in selecting a final remedy for the site. It is expected Alternatives 2, 4, and 5 will achieve groundwater SCGs in less than 5 years, while groundwater contamination above SCGs will remain on-site under Alternative 3 for many years. Remedial actions completed under Alternatives 2, 4, and 5 will result in the reduction of contaminants of concern to comply with soil vapor intrusion SCGs.

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

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

Long-term effectiveness is best accomplished by those alternatives involving excavation of the contaminated overburden soils (Alternatives 4 and 5). Alternative 4 removes of a significant portion of SVOC and VOC soil contamination exceeding the protection of groundwater SCOs. Alternative 5 removes SVOC contaminated soils while treating the VOC soil source area through chemical oxidation. Both Alternatives 4 and 5 treat groundwater contamination in-situ and are assumed to have similar periods of treatment. Both Alternatives will also require an environmental easement and long-term monitoring. Site management will monitor the effectiveness of the groundwater remedies. Remedial actions completed under Alternatives 2, 4, and 5 will result in the achievement of soil vapor intrusion SCGs in the long-term.

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

Alternatives 4 and 5 address SVOC and metals contamination in surface and sub-surface soil through excavation. Alternative 4 addresses VOC contamination in soils through excavation while Alternative 5 addresses the VOC source are in-situ. Alternative 4 requires the excavation of approximately 2,200 cubic yards of contaminated soil. Alternative 5 requires the excavation of approximately 1,400 cubic yards of contaminated soil. Both of these Alternatives will also require an environmental easement and long-term monitoring. Alternatives 3, 4, and 5 reduce the toxicity, mobility and volume of on-site waste by transferring the material to an approved off-site disposal facility. For Alternatives 4 and 5, site management will monitor the effectiveness of the groundwater remedies and are assumed to have similar periods of treatment. Remedial actions completed under Alternatives 2, 4, and 5 will result in the achievement of soil vapor intrusion SCGs in the long-term.

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

Alternatives 2, 4 and 5 all have short-term impacts which could be controlled, however, Alternative 2 would have the largest impact (e.g. considerable truck traffic). The time needed to achieve the remediation goals is the shortest for Alternative 2 while Alternatives 4 and 5 achieve remediation goals within a similar time frame.

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

Alternatives 4 and 5 can be implemented within similar time frames as they involve excavation and the installation of groundwater treatment networks. Alternative 2 would be the least implementable as a result of the significant amount of work generated through demolition of the site structures and the disposal of these materials.

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

The costs of the alternatives vary significantly. Alternative 2 has a high cost as a result of the capital cost of work necessary to achieve pre-disposal conditions. Alternative 4 will be less expensive than Alternative 5, yet will provide equal protection of the groundwater resource. Alternative 4 is more cost effective than Alternative 5 due the higher proposed cost of implementing the chemical oxidation remedy and the similar proposed effectiveness time frames of these Alternatives.

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

Since the anticipated use of the site is commercial, Alternatives 4, and 5 would remove or treat the contaminated soil permanently.

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

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

Alternative #4 is being selected because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.

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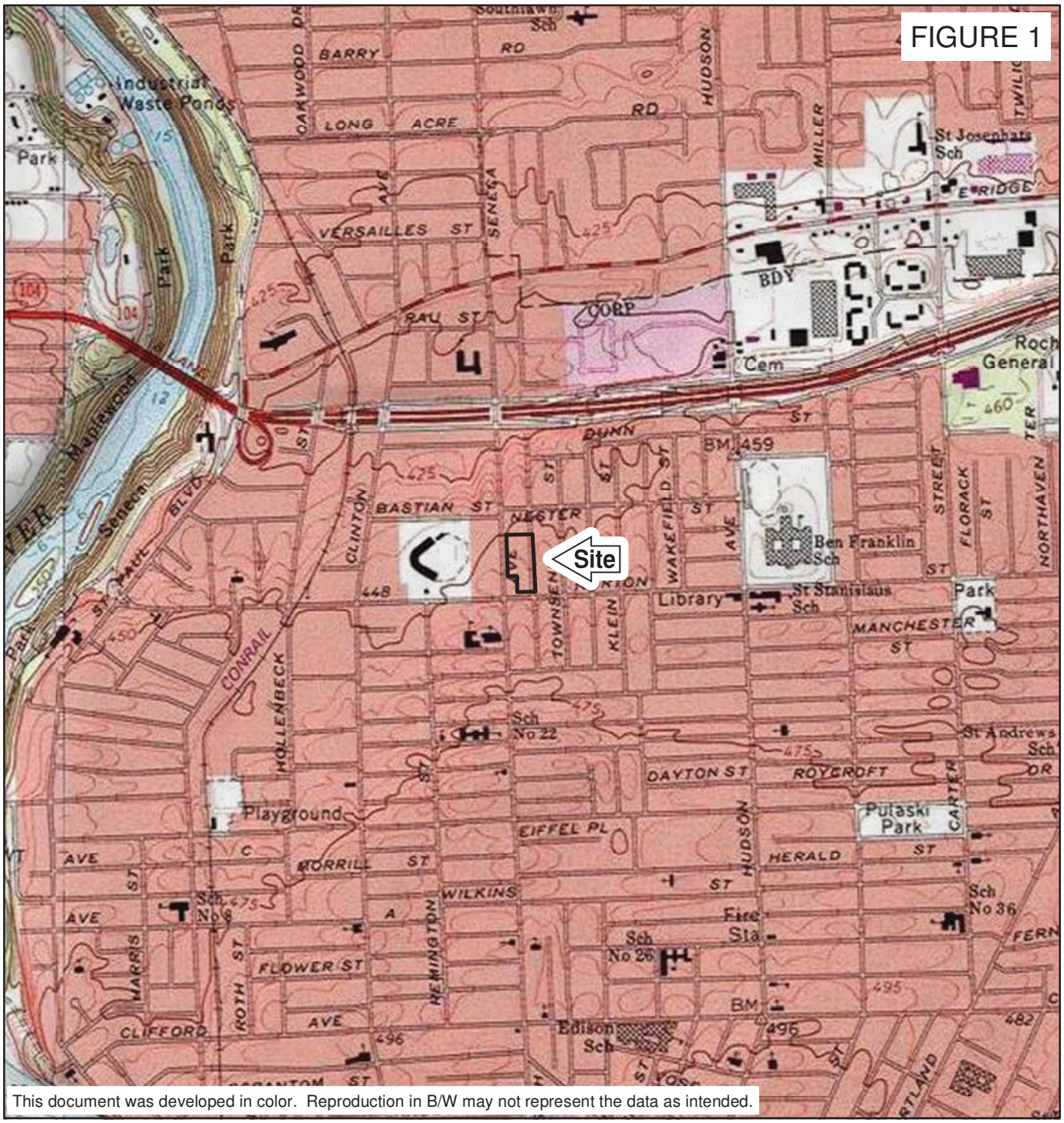
FIGURE 1



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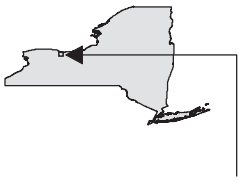
24 SENECA AVENUE
ROCHESTER, NEW YORK



MAP LOCATION

N

SITE LOCATION

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

Feet

FEBRUARY 2012
11862.47362

1:24,000

O'BRIEN & GERE

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FIGURE 2C

SB-30			Part 375 Restricted SCO			
Date	Depth	Analyte	Commercial Use	Protection of Groundwater	Result	Unit
8/3/2011	12 - 13.5 ft	cis-1,2-Dichloroethylene	500,000	250	317.53	µg/kg

SB-22			Part 375 Restricted SCO			
Date	Depth	Analyte	Commercial Use	Protection of Groundwater	Result	Unit
9/24/2008	10 - 12 ft	cis-1,2-Dichloroethene	500,000	250	290 D	µg/kg

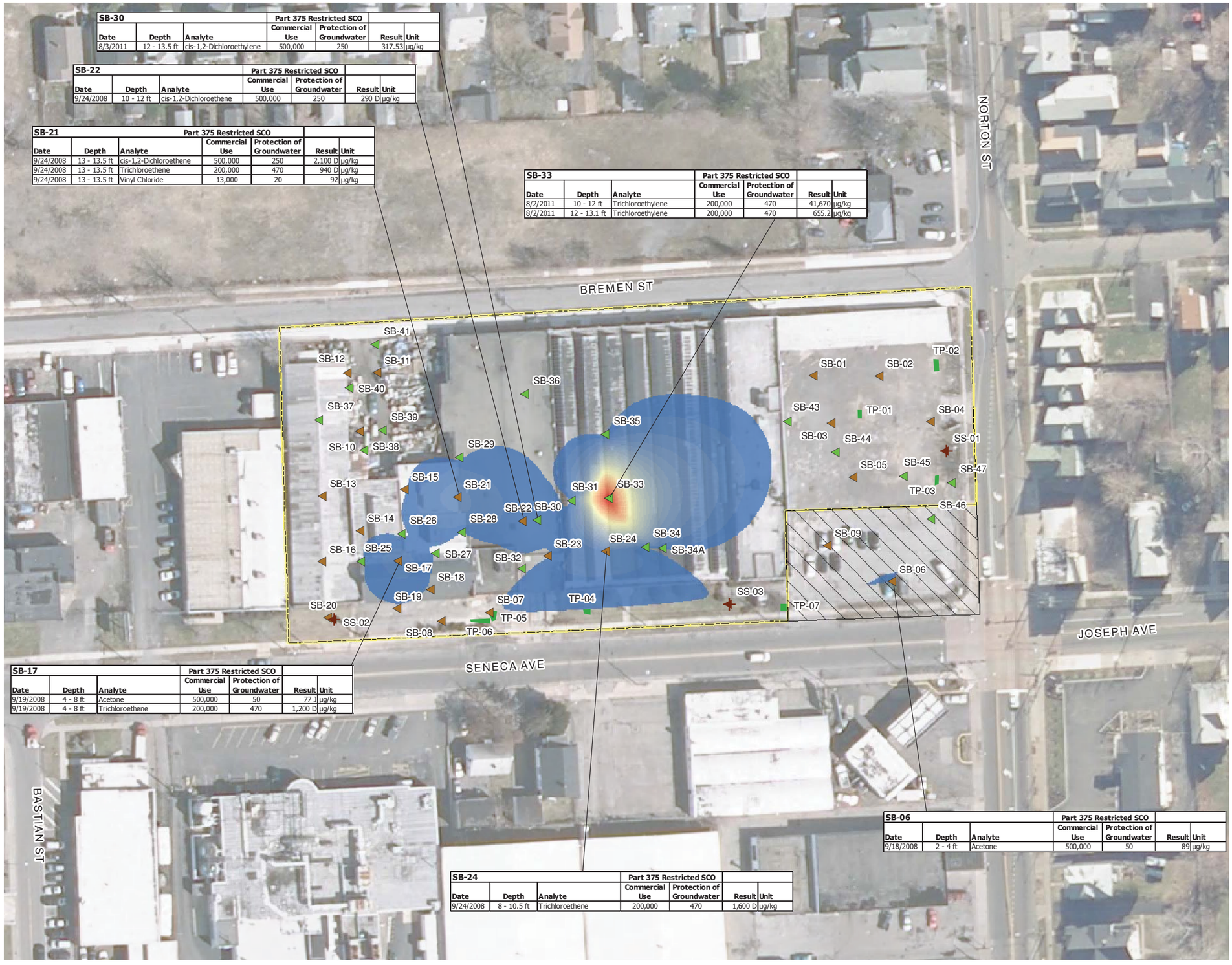
SB-21			Part 375 Restricted SCO			
Date	Depth	Analyte	Commercial Use	Protection of Groundwater	Result	Unit
9/24/2008	13 - 13.5 ft	cis-1,2-Dichloroethene	500,000	250	2,100 D	µg/kg
9/24/2008	13 - 13.5 ft	Trichloroethene	200,000	470	940 D	µg/kg
9/24/2008	13 - 13.5 ft	Vinyl Chloride	13,000	20	92	µg/kg

SB-33			Part 375 Restricted SCO			
Date	Depth	Analyte	Commercial Use	Protection of Groundwater	Result	Unit
8/2/2011	10 - 12 ft	Trichloroethylene	200,000	470	41,670	µg/kg
8/2/2011	12 - 13.1 ft	Trichloroethylene	200,000	470	655.2	µg/kg

SB-17			Part 375 Restricted SCO			
Date	Depth	Analyte	Commercial Use	Protection of Groundwater	Result	Unit
9/19/2008	4 - 8 ft	Acetone	500,000	50	77 J	µg/kg
9/19/2008	4 - 8 ft	Trichloroethene	200,000	470	1,200 D	µg/kg

SB-24			Part 375 Restricted SCO			
Date	Depth	Analyte	Commercial Use	Protection of Groundwater	Result	Unit
9/24/2008	8 - 10.5 ft	Trichloroethene	200,000	470	1,600 D	µg/kg

SB-06			Part 375 Restricted SCO			
Date	Depth	Analyte	Commercial Use	Protection of Groundwater	Result	Unit
9/18/2008	2 - 4 ft	Acetone	500,000	50	89	µg/kg



LEGEND

- AUGUST 2011 GEOPROBE® SOIL BORING
- SURFACE SOIL SAMPLE LOCATION
- SEPTEMBER 2008 GEOPROBE® SOIL BORING
- TEST PIT

TOTAL VOC RESULTS (ppb)

42000
30000
20000
10000
0

- 574 NORTON STREET PARCEL
- APPROXIMATE PROPERTY BOUNDARY

NOTES:

1. SCO: NYSDEC PART 375 RESTRICTED COMMERCIAL USE AND/OR PROTECTION OF GROUNDWATER
2. ONLY ANALYTICAL RESULTS EXCEEDING SCO WERE USED FOR INTERPOLATION; DATA USED FOR INTERPOLATION ARE SHOWN IN DATABOX.
3. ALL LOCATIONS ARE APPROXIMATE
4. 574 NORTON STREET PARCEL IS NOT PART OF THE 24 SENECA AVENUE PARCEL BUT IS INCLUDED IN THE RI.
5. AERIAL IMAGERY SOURCE: NYS GIS CLEARINGHOUSE, DATE APRIL 2009.

CITY OF ROCHESTER
SUPPLEMENTAL
RI REPORT
24 SENECA AVENUE
ROCHESTER, NEW YORK

GEOPROBE® SOIL BORING LOCATIONS AND SUBSURFACE SOIL SAMPLE VOLATILE ORGANIC COMPOUND ANALYTICAL EXCEEDANCES (PART 375 RESTRICTED USE)

0 40 80 160
Feet

MAY 2012
11862.47362

O'BRIEN & GERE

PLOT DATE: 05/01/12 10:16:55 AM ReidLS

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FIGURE 2D

SB-11

Date	Depth	Analyte	Part 375 Restricted SCO: Commercial Use	Part 375 Restricted SCO: Protection of Groundwater	Result	Unit
9/19/2008	8 - 9 ft	Pentachlorophenol	6,700	800	1,900 UJ1	µg/kg

SB-10

Date	Depth	Analyte	Part 375 Restricted SCO: Commercial Use	Part 375 Restricted SCO: Protection of Groundwater	Result	Unit
9/19/2008	4 - 8 ft	Pentachlorophenol	6,700	800	2,300 UJ1	µg/kg

SB-43

Date	Depth	Analyte	Part 375 Restricted SCO: Commercial Use	Part 375 Restricted SCO: Protection of Groundwater	Result	Unit
8/1/2011	0 - 2 ft	1,2-Benzphenanthracene	56,000	1,000	3,810	µg/kg
8/1/2011	0 - 2 ft	Benzo[a]anthracene	5,600	1,000	3,130	µg/kg
8/1/2011	0 - 2 ft	Benzo[a]pyrene	1,000	1,000	2,710	µg/kg
8/1/2011	0 - 2 ft	Benzo[b]fluoranthene	5,600	1,700	2,670	µg/kg
8/1/2011	0 - 2 ft	Benzo[k]fluoranthene	56,000	1,700	2,620	µg/kg

SB-03

Date	Depth	Analyte	Part 375 Restricted SCO: Commercial Use	Part 375 Restricted SCO: Protection of Groundwater	Result	Unit
9/18/2008	10.7 - 11 ft	1,2-Benzphenanthracene	56,000	1,000	7,000	µg/kg
9/18/2008	10.7 - 11 ft	Benzo[a]anthracene	5,600	1,000	6,800	µg/kg
9/18/2008	10.7 - 11 ft	Benzo[a]pyrene	1,000	1,000	10,000	µg/kg
9/18/2008	10.7 - 11 ft	Benzo[b]fluoranthene	5,600	1,000	15,000	µg/kg
9/18/2008	10.7 - 11 ft	Benzo[k]fluoranthene	56,000	800	5,400	µg/kg

SS-01

Date	Depth	Analyte	Part 375 Restricted SCO: Commercial Use	Part 375 Restricted SCO: Protection of Groundwater	Result	Unit
9/15/2008	0 - 2 in	Benzo[a]anthracene	5,600	1,000	1,400 J	µg/kg
9/15/2008	0 - 2 in	Benzo[a]pyrene	1,000	22,000	1,800 J	µg/kg
9/15/2008	0 - 2 in	Benzo[b]fluoranthene	5,600	1,700	2,600 J	µg/kg

SS-02

Date	Depth	Analyte	Part 375 Restricted SCO: Commercial Use	Part 375 Restricted SCO: Protection of Groundwater	Result	Unit
9/15/2008	0 - 2 in	Benzo[a]pyrene	1,000	22,000	1,300 J	µg/kg
9/15/2008	0 - 2 in	Benzo[b]fluoranthene	5,600	1,700	1,700 J	µg/kg

SS-03

Date	Depth	Analyte	Part 375 Restricted SCO: Commercial Use	Part 375 Restricted SCO: Protection of Groundwater	Result	Unit
9/15/2008	0 - 2 in	Benzo[a]anthracene	5,600	1,000	4,900	µg/kg
9/15/2008	0 - 2 in	Benzo[a]pyrene	1,000	1,000	5,800	µg/kg
9/15/2008	0 - 2 in	Benzo[b]fluoranthene	5,600	1,000	8,400	µg/kg
9/15/2008	0 - 2 in	Benzo[k]fluoranthene	56,000	1,700	3,100 J	µg/kg

TP-3

Date	Depth	Analyte	Part 375 Restricted SCO: Commercial Use	Part 375 Restricted SCO: Protection of Groundwater	Result	Unit
9/17/2008	4.5 ft	1,2-Benzphenanthracene	56,000	1,000	1,800 J	µg/kg
9/17/2008	4.5 ft	Benzo[a]anthracene	5,600	1,000	2,000 J	µg/kg
9/17/2008	4.5 ft	Benzo[a]pyrene	1,000	22,000	2,000 J	µg/kg
9/17/2008	4.5 ft	Benzo[b]fluoranthene	5,600	1,700	2,100 J	µg/kg

LEGEND

- AUGUST 2011 GEOPROBE® SOIL BORING
- SURFACE SOIL SAMPLE LOCATION
- SEPTEMBER 2008 GEOPROBE® SOIL BORING
- TEST PIT

TOTAL SVOC RESULTS (ppb)

48000
36000
24000
12000
0

- 574 NORTON STREET PARCEL
- APPROXIMATE PROPERTY BOUNDARY

NOTES:

1. SCO: NYSDEC PART 375 RESTRICTED COMMERCIAL USE AND/OR PROTECTION OF GROUNDWATER
2. ONLY ANALYTICAL RESULTS EXCEEDING SCO WERE USED FOR INTERPOLATION; DATA USED FOR INTERPOLATION ARE SHOWN IN DATABOX.
3. ALL LOCATIONS ARE APPROXIMATE
4. 574 NORTON STREET PARCEL IS NOT PART OF THE 24 SENECA AVENUE PARCEL BUT IS INCLUDED IN THE RI.
5. AERIAL IMAGERY SOURCE: NYS GIS CLEARINGHOUSE, DATE APRIL 2009.

CITY OF ROCHESTER
SUPPLEMENTAL
RI REPORT
24 SENECA AVENUE
ROCHESTER, NEW YORK

GEOPROBE® SOIL BORING LOCATIONS AND SUBSURFACE SOIL SAMPLE SEMI-VOLATILE ORGANIC COMPOUND ANALYTICAL EXCEEDANCES (PART 375 RESTRICTED USE)

0 40 80 160
Feet

MAY 2012
11862.47362

O'BRIEN & GERE

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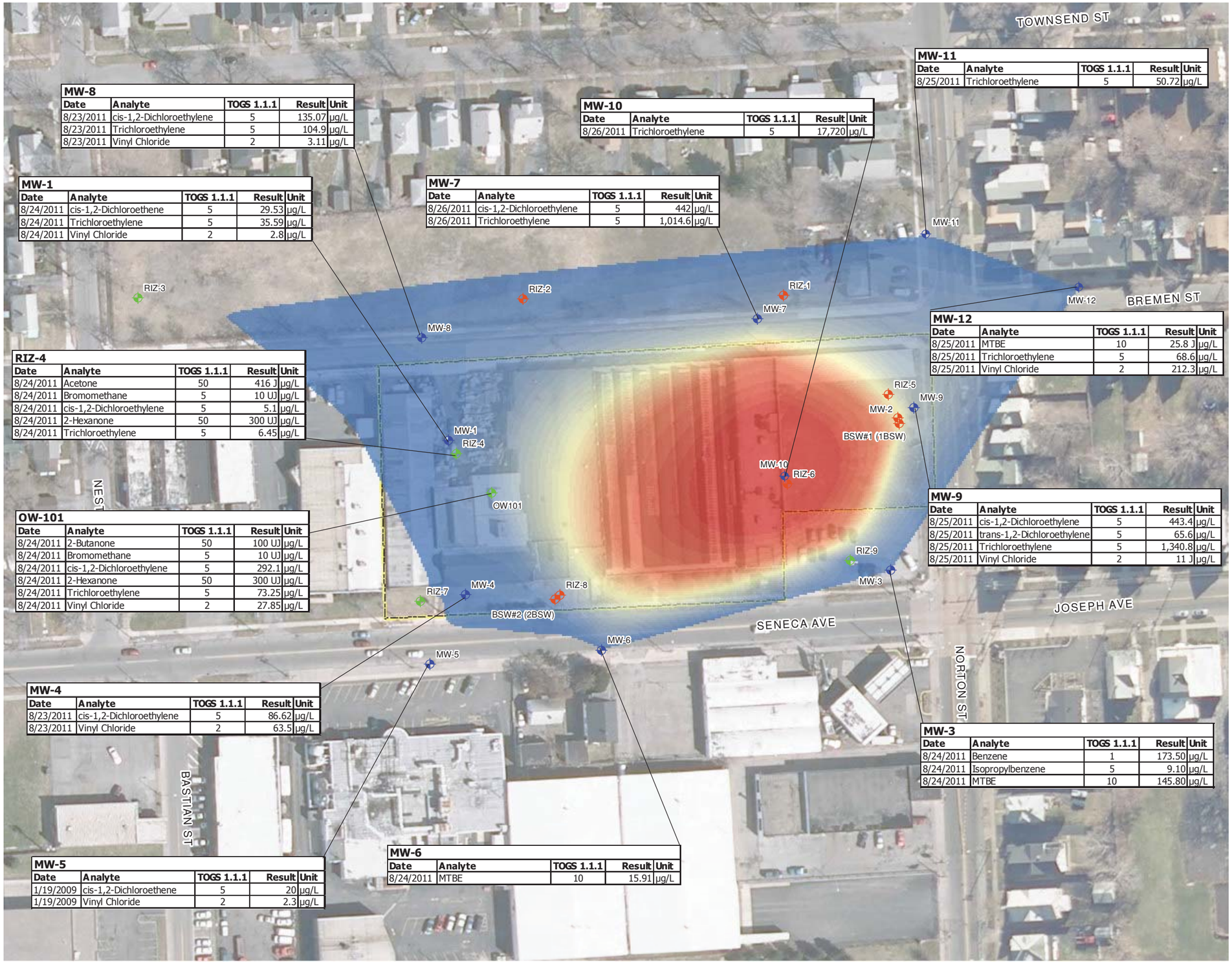
FIGURE 3E



MW-8

Date	Analyte	TOGS 1.1.1	Result	Unit
8/23/2011	cis-1,2-Dichloroethylene	5	135.07	µg/L
8/23/2011	Trichloroethylene	5	104.9	µg/L
8/23/2011	Vinyl Chloride	2	3.11	µg/L

MW-10

Date	Analyte	TOGS 1.1.1	Result	Unit
8/26/2011	Trichloroethylene	5	17,720	µg/L

MW-11

Date	Analyte	TOGS 1.1.1	Result	Unit
8/25/2011	Trichloroethylene	5	50.72	µg/L

MW-1

Date	Analyte	TOGS 1.1.1	Result	Unit
8/24/2011	cis-1,2-Dichloroethene	5	29.53	µg/L
8/24/2011	Trichloroethylene	5	35.59	µg/L
8/24/2011	Vinyl Chloride	2	2.8	µg/L

MW-7

Date	Analyte	TOGS 1.1.1	Result	Unit
8/26/2011	cis-1,2-Dichloroethylene	5	442	µg/L
8/26/2011	Trichloroethylene	5	1,014.6	µg/L

MW-12

Date	Analyte	TOGS 1.1.1	Result	Unit
8/25/2011	MTBE	10	25.8 J	µg/L
8/25/2011	Trichloroethylene	5	68.6	µg/L
8/25/2011	Vinyl Chloride	2	212.3	µg/L

RIZ-4

Date	Analyte	TOGS 1.1.1	Result	Unit
8/24/2011	Acetone	50	416 J	µg/L
8/24/2011	Bromomethane	5	10 UJ	µg/L
8/24/2011	cis-1,2-Dichloroethylene	5	5.1	µg/L
8/24/2011	2-Hexanone	50	300 UJ	µg/L
8/24/2011	Trichloroethylene	5	6.45	µg/L

MW-9

Date	Analyte	TOGS 1.1.1	Result	Unit
8/25/2011	cis-1,2-Dichloroethylene	5	443.4	µg/L
8/25/2011	trans-1,2-Dichloroethylene	5	65.6	µg/L
8/25/2011	Trichloroethylene	5	1,340.8	µg/L
8/25/2011	Vinyl Chloride	2	11 J	µg/L

OW-101

Date	Analyte	TOGS 1.1.1	Result	Unit
8/24/2011	2-Butanone	50	100 UJ	µg/L
8/24/2011	Bromomethane	5	10 UJ	µg/L
8/24/2011	cis-1,2-Dichloroethylene	5	292.1	µg/L
8/24/2011	2-Hexanone	50	300 UJ	µg/L
8/24/2011	Trichloroethylene	5	73.25	µg/L
8/24/2011	Vinyl Chloride	2	27.85	µg/L

MW-4

Date	Analyte	TOGS 1.1.1	Result	Unit
8/23/2011	cis-1,2-Dichloroethylene	5	86.62	µg/L
8/23/2011	Vinyl Chloride	2	63.5	µg/L

MW-3

Date	Analyte	TOGS 1.1.1	Result	Unit
8/24/2011	Benzene	1	173.50	µg/L
8/24/2011	Isopropylbenzene	5	9.10	µg/L
8/24/2011	MTBE	10	145.80	µg/L

MW-5

Date	Analyte	TOGS 1.1.1	Result	Unit
1/19/2009	cis-1,2-Dichloroethene	5	20	µg/L
1/19/2009	Vinyl Chloride	2	2.3	µg/L

MW-6

Date	Analyte	TOGS 1.1.1	Result	Unit
8/24/2011	MTBE	10	15.91	µg/L

LEGEND

- BEDROCK MONITORING WELL
- OVERBURDEN MONITORING WELL
- MONITORING WELL DESTROYED

TOTAL VOC RESULTS (ppb)

- >5000 (Max. Conc. 17,700)
- 4000
- 3000
- 2000
- 1000
- 0

NOTES:

1. ALL LOCATIONS ARE APPROXIMATE
2. ONLY ANALYTICAL RESULTS EXCEEDING TOGS 1.1.1 WERE USED FOR INTERPOLATION; DATA USED FOR INTERPOLATION ARE SHOWN IN DATABOX FOR EACH LOCATION.
3. 574 NORTON STREET PARCEL IS NOT PART OF THE 24 SENECA AVENUE PARCEL BUT IS INCLUDED IN THE RI.
4. AERIAL IMAGERY SOURCE: NYS GIS CLEARINGHOUSE, DATE APRIL 2009.

CITY OF ROCHESTER
SUPPLEMENTAL
RI REPORT
24 SENECA AVENUE
ROCHESTER, NEW YORK

MONITORING WELL LOCATIONS AND GROUNDWATER SAMPLE VOLATILE ORGANIC COMPOUND ANALYTICAL EXCEEDANCES

2011

0 50 100 200
Feet

MAY 2012
11862.47362

O'BRIEN & GERE

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FIGURE 3F

RIZ-4				
Date	Analyte	TOGS 1.1.1	Result	Unit
8/24/2011	bis(2-Ethylhexyl)Phthalate	5	31	µg/L
8/24/2011	Phenol	1	4.9 J	µg/L

MW-3				
Date	Analyte	TOGS 1.1.1	Result	Unit
8/24/2011	Phenol	1	8.02	µg/L

RIZ-9				
Date	Analyte	TOGS 1.1.1	Result	Unit
8/23/2011	1,2-Benzphenanthracene	0.002	4.6	µg/L
8/23/2011	Benzo[a]anthracene	0.002	1.76 J	µg/L
8/23/2011	Benzo[b]fluoranthene	0.002	4.2	µg/L
8/23/2011	Benzo[k]fluoranthene	0.002	3.6	µg/L
8/23/2011	Indeno[1,2,3-cd]pyrene	0.002	2 J	µg/L

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PLOT DATE: 05/04/12 9:10:24 AM YoungAS

N

LEGEND

- BEDROCK MONITORING WELL
- OVERBURDEN MONITORING WELL
- MONITORING WELL DESTROYED

TOTAL SVOC RESULTS (ppb)

90
75
60
45
30
15
0

NOTES:

1. ALL LOCATIONS ARE APPROXIMATE
2. ONLY ANALYTICAL RESULTS EXCEEDING TOGS 1.1.1 WERE USED FOR INTERPOLATION; DATA USED FOR INTERPOLATION ARE SHOWN IN DATABOX FOR EACH LOCATION.
3. 574 NORTON STREET PARCEL IS NOT PART OF THE 24 SENECA AVENUE PARCEL BUT IS INCLUDED IN THE RI.
4. AERIAL IMAGERY SOURCE: NYS GIS CLEARINGHOUSE, DATE APRIL 2009.

CITY OF ROCHESTER
SUPPLEMENTAL
RI REPORT
24 SENECA AVENUE
ROCHESTER, NEW YORK

MONITORING WELL LOCATIONS AND GROUNDWATER SAMPLE SEMI-VOLATILE ORGANIC COMPOUND ANALYTICAL EXCEEDANCES

2011

0 50 100 200
Feet

MAY 2012
11862.47362

O'BRIEN & GERE

FIGURE

LEGEND

- SUB-SLAB VAPOR INTRUSION SAMPLING POINT
- INDOOR AIR SAMPLE POINT
- AMBIENT AIR SAMPLE POINT
- 574 NORTON STREET PARCEL (SEE NOTE 2 BELOW)
- BUILDING FOOTPRINT
- APPROXIMATE PROPERTY BOUNDARY
- APPROXIMATE LOCATION OF INTERIOR WALLS

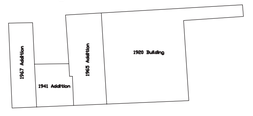
NOTES

1. All locations are approximate.
2. Hatched area (574 Norton Street) near southwest corner of Site is not part of the 24 Seneca Avenue parcel but was included in the Remedial Investigation.
3. Interior wall locations identified are based upon O'Brien & Gere field observations conducted on 12/18/07.
4. Map Source: NYSGIS Clearinghouse, 2005

30 0 60

1"=30'

Building Addition Detail



SOIL VAPOR INTRUSION SAMPLING LOCATIONS

24 SENECA AVENUE
CITY OF ROCHESTER
MONROE COUNTY, NEW YORK

FILE NO. 11862.41933
APRIL 2010

O'BRIEN & GERE

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NOTES:
1. HORIZONTAL CONTROL USING A TRIMBLE GEO-XH GLOBAL POSITIONING SYSTEM UNIT AND/OR LOCATED BY A LICENSED SURVEYOR AND REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM 1983 TRANSVERSE MERCATOR PROJECTION WESTERN ZONE. INTERIOR SAMPLE LOCATIONS ARE APPROXIMATE.
2. AERIAL IMAGERY SOURCE: NYS GIS CLEARINGHOUSE, SPRING 2012.
3. 574 NORTON STREET PARCEL IS NOT PART OF THE 24 SENECA AVENUE PARCEL, BUT IS INCLUDED IN THE RI.

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FIGURE 2

N

LEGEND

- REMOVE EXISTING SURFACE (8") & REPLACE WITH NEW ASPHALT CAP
- REPLACE OR REHABILITATE EXISTING CHAIN LINK FENCE
- REMOVE & REPLACE EXISTING TOPSOIL COVER (1')
- BEDROCK MONITORING WELL
- GROSSLY IMPACTED SOIL BORINGS (EXCAVATE)
- IMPACTED SURFACE SOIL SAMPLES (EXCAVATE)
- IMPACTED TEST PITS (EXCAVATE)
- APPROXIMATE LIMITS OF EXCAVATION
- APPROXIMATE *IN-SITU* TREATMENT AREA FOR VOC GROUNDWATER PLUME
- 574 NORTON STREET PARCEL

PROPOSED SAMPLE LOCATIONS
- PROPOSED AMBIENT AIR SAMPLE
- PROPOSED INDOOR AIR SAMPLE
- PROPOSED SUB-SLAB VAPOR SAMPLE

IMPACTED STORM DRAIN STRUCTURES
- TO BE REMOVED
- TO BE REHABILITATED OR REPLACED

UNDERGROUND FEATURES
- VAULT
- FORMER UST/ GAS STATION

UTILITIES
- ELECTRIC
- FIBER
- GAS
- OVERHEAD
- WATER AND SEWER

CITY OF ROCHESTER
ALTERNATIVES ANALYSIS REPORT
24 SENECA AVENUE
ROCHESTER, NEW YORK

SITE PLAN

DRAFT LOCATIONS OF PROPOSED REMEDIAL ACTIONS

0 40 80 160
Feet

NOVEMBER 2014
11862.49907

O'BRIEN & GERE

PLOT DATE: 11/10/14 8:11:53 AM DiNardAM

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

24 Seneca Avenue
Environmental Restoration Project
City of Rochester, Monroe County, New York
Site No. E828132

The Proposed Remedial Action Plan (PRAP) for the 24 Seneca Avenue site was prepared by the New York State Department of Environmental Conservation (the Department) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on November 16, 2015. The PRAP outlined the remedial measure proposed for the contaminated soil and groundwater at the 24 Seneca Avenue site.

The release of the PRAP was announced by sending a notice to the public contact list, informing the public of the opportunity to comment on the proposed remedy.

A public meeting was held on December 7, 2015 which included a presentation of the remedial investigation results and the alternative analysis (RI/AA) for the 24 Seneca Avenue site as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period for the PRAP ended on December 31, 2015.

This responsiveness summary responds to all questions and comments raised during the public comment period. The following are the comments received, with the Department's responses:

COMMENT 1: Is the city or county on board with the recommendations?
RESPONSE 1: The City of Rochester was the applicant to the Environmental Restoration Program for the 24 Seneca Avenue site and received funding from the Department to perform the environmental investigation and the alternatives analysis which served as the basis for the remedy proposed by the Proposed Remedial Action Plan (PRAP) and selected by the Record of Decision (ROD).

COMMENT 2: What is the other building on the side street parallel to Norton St.?
RESPONSE 2: The question refers to the building directly adjacent to the northern property line of 24 Seneca Avenue. This building's address is 76 Seneca Avenue and is currently occupied by the Van Hook Service Company.

COMMENT 3: You are in the process of doing all this. Is there a basic idea of what you're going to do?
RESPONSE 3: The PRAP included a summary of the investigation findings, the proposed alternatives for remediating the site, and the Department's chosen remedy. The remedy selected by the ROD, based on the Alternatives Analysis and the PRAP, calls for the excavation of source areas, enhanced bioremediation to address groundwater, installation of a cover system, long-term site management and the emplacement of an institutional control in the form of an environmental easement.

COMMENT 4: Ecology and Environment, do they work around here? I think they are out of Lancaster.
RESPONSE 4: The question was related to the choice of contractor by the City of Rochester during the investigation, whether they were local businesses. The City hired contractors in accordance with their State Assistance Contract with NYSDEC. Those contractors were located in Rochester area.

COMMENT 5: Is that a new program? (in reference to the city hiring local consulting firms, esp. minority firms)
RESPONSE 5: See Response 4.

COMMENT 6: If it is Brownfield, how can it be a business?
RESPONSE 6: Properties in the Environmental Restoration Program (a Brownfield Cleanup Program) can include active businesses, however, the property must be municipally owned.

COMMENT 7: Now it's zoned for manufacturing, can it go into mixed uses?
RESPONSE 7: The remedy selected includes a use restriction for commercial/industrial land use, although the actual land use is governed by local zoning. The proposal is to remediate this site to targeted levels appropriate for these typed of use, which does not include housing.

COMMENT 8: DuPont on Seneca Ave., are they interested in the building?
RESPONSE 8: The Department is not aware that DuPont has expressed any interest in the 24 Seneca Avenue property.

COMMENT 9: Are they still producing trichloroethene (TCE)?
RESPONSE 9: Historic manufacturing operations at the 24 Seneca Avenue site used TCE for the cleaning and degreasing of metal. Those operations are no longer present at the site and TCE is no longer used by operations currently at the site.

COMMENT 10: What is the least toxic? Petroleum?
RESPONSE 10: The toxicity of a compound is the degree to which a compound can cause health effects. The health effects produced are based on a variety of factors including the route, duration and dose of exposure. Any compound can be considered toxic in excess but is considered dose dependent. To state which site-related compounds are the least toxic, is again, dose dependent. You have to have exposure to a compound in order to have the potential for a health effect to occur. Hence, no exposure - no health effect expected - no health risk.

COMMENT 11: Does gasoline break down? Like the leaded gasoline?
RESPONSE 11: Petroleum-related chemicals released to the environment do evaporate and are also degraded by natural processes over time when present in soil. The historic presence of lead in gasoline does still persist in the environment.

COMMENT 12: So the gas station isn't so bad?
RESPONSE 12: The historic presence of a gasoline station at the southern end of the property is identified as the potential source of petroleum-related chemicals identified during the investigation. These contaminants will be addressed as a part of the selected remedy.

COMMENT 13: Is that a normal range (referencing the depth to bedrock)? What is the average distance to bedrock?
RESPONSE 13: Soil and groundwater investigations identified the depth to bedrock at the site within a range of eight (8) to twelve (12) feet below the ground surface. These depths are within the expected range for this area.

COMMENT 14: Is it better if bedrock is lower?
RESPONSE 14: Generally, a greater depth of soil over bedrock results in potential opportunities for contamination to be contained within shallower soils, typically making removal or treatment more effective. In areas with more porous soils and shallow bedrock contamination is more likely to reach greater depths and tends to travel and spread through fractures in bedrock. The result is a more costly and intensive remediation to reach deeper and more widespread contamination.

COMMENT 15: Do those standards stay the same over the years?
RESPONSE 15: The soil and groundwater cleanup standards may be revised when new scientific data becomes available that warrants it.

COMMENT 16: What about people living in the area?
RESPONSE 16: Residential properties are located primarily to the south and east of the site. The Environmental Restoration Program includes a Citizen Participation Plan that requires that public notices be provided and a public meeting held to notify the public of the status and results of the investigation during the course of the project. Residential properties were also contacted along Bremen and Norton Streets when soil vapor intrusion sampling was proposed for properties in these areas during the investigation.

COMMENT 17: Why wouldn't people want to take advantage of the having their property sampled?
RESPONSE 17: People have the right to refuse sampling in their homes for whatever reason they wish.

COMMENT 18: It's probably expensive to have it sampled.
RESPONSE 18: This question referred to the cost of performing soil vapor intrusion sampling by residential property owners. Yes, it could be costly for a home owner to undertake soil vapor intrusion sampling on their own.

COMMENT 19: Will the State remedy it?
RESPONSE 19: The ROD identifies the remedy that will be implemented. If the City of Rochester chooses not to implement the ROD-selected remedy, or a private entity does not step forward (e.g., the Brownfield Cleanup Program), the site will be may be referred for action through the State Superfund program. If no other parties are willing to proceed with the remediation, potentially responsible parties (PRPs) will be pursued by the Department. If no PRPs are identified or, should the PRPs be unwilling or unable to fund the cleanup, then the site would be referred to the State Superfund program. The State Superfund program would use State funds to hire a contractor and implement the remedy.

COMMENT 20: What are the health risks?
RESPONSE 20: The risks to public health are identified in the PRAP and ROD. Health risks are based on the particular contaminant, route of exposure, and duration of exposure. The purpose of the remedy is to remove the potential for public exposure to contaminants. The identified risks at this site are potential exposures to contaminated soil, groundwater, and soil vapor.

COMMENT 21: It almost looks like demolition is the best alternative.
RESPONSE 21: Demolition of the site buildings were evaluated as a part of one of the remedial alternatives. This alternative was not chosen to be implemented. While removal of the structure would allow for unimpeded access to the site to implement the remedy, it is not necessary at this time.

COMMENT 22: Can it ever be used as a green space? A park?
RESPONSE 22: The proposed future use of the site is for commercial or industrial activities and the cleanup standards are based on this use. If site use/zoning was to change in the future to include public uses, the Department and NYSDOH would have to re-evaluate the remedy to ensure that it was protective.

COMMENT 23: Is that part of the process, to see the end results?
RESPONSE 23: The question referred to whether the redevelopment of the property was part of the NYSDEC's process. The PRAP describes the actions identified to remedy the contamination and control public exposure to contaminants associated with the site. With the issuance of this ROD, the implementation of the selected remedy will proceed. The remedy may include aspects that are associated with the redevelopment of the site.

COMMENT 24: Would alternative #4 save some of the building?
RESPONSE 24: Remedial Alternative #4, as identified and described in the ROD does not include demolition of the site structures.

COMMENT 25: Was that (having stuff in the buildings) considered in the costs?
RESPONSE 25: The ROD includes conservative cost estimates for the implementation of the evaluated remedies. While the presence of existing operations with the site building were not explicitly identified, the costs include contingencies to address these factors.

COMMENT 26: Will this be done?
RESPONSE 26: The Department's intention is to proceed with the implementation of the selected remedy either in partnership with the City or Rochester, a private entity, or through State funding.

COMMENT 27: Will people still be able to work there?
RESPONSE 27: During the planning for the implementation of the remedial actions the impact to ongoing operations will be considered. Efforts will be made to disrupt operations to the least extent possible.

COMMENT 28: What about safety issues? It's like removing asbestos.
RESPONSE 28: A Health and Safety plan is developed as a part of remedial design. This plan will include provisions protecting those using the building from exposure and include provisions for the safety of the site personnel and the public.

COMMENT 29: Is that (bio-remediation) a new process?
RESPONSE 29: The ROD includes, as a remedial element, in-situ biological remediation. This process will involve the injection of a sugar, oil and water solution that facilitates that growth of naturally occurring bacteria present in the soil that will also consume and decompose the chlorinated solvents and petroleum compounds identified in groundwater. This technology is not new, but has become more commonly used as its effectiveness has been improved and costs of implementation have been reduced.

COMMENT 30: Has the cost gone down with technology?
RESPONSE 30: While the cost of implementing this remedial technology is high, the processes have become more efficient and cost effective.

COMMENT 31: It is more green-friendly?
RESPONSE 31: Bioremediation, by utilizing the presence of existing bacteria to breakdown contaminants may be considered more "green" than chemical methods of remediating contaminants.

COMMENT 32: Who has the final say on this?
RESPONSE 32: The Department, with concurrence from the New York State Department of Health, provide the final approval of the remedial action plan by the issuance of this ROD.

COMMENT 33: Will it include stakeholders input?
RESPONSE 33: Yes, the State accepted comments on the PRAP during the public comment period which ran through December 31, 2015. A Public Meeting to present the proposed remedy and accept comment was held on December 7, 2015. This Responsiveness Summary responds to all comments received, and considered, prior to issuance of the ROD.

COMMENT 34: Will the State subsidize this or work together with the city?
RESPONSE 34: See Response 19.

COMMENT 35: Is the state liable for this?
RESPONSE 35: See Response 19.

COMMENT 36: The State should supersede what the city wants for safety concerns.
RESPONSE 36: Through the ERP, the City screened and evaluated various remedies. Based on that evaluation, the Department has selected a remedy, which has been memorialized by the ROD. The ROD selected remedy has been deemed protective of public health and the environment.

COMMENT 37: Where does this fall in terms of severity?
RESPONSE 37: The State has determined that the nature and extent of contamination is sufficient to pursue funding for the remedial actions through the State Superfund should no other parties proceed with remediation of the site.

COMMENT 38: If it was a high risk level, would EPA get involved with it?
RESPONSE 38: The USEPA does become involved, at the State's request, in the remediation of sites that are significant enough to become a National priority.

COMMENT 39: Do you try to get EPA involved?
RESPONSE 39: See Response 38. The Department has requested assistance from USEPA on other sites in the past, depending on the severity and complexity of the site contamination.

COMMENT 40: Could funding be more direct?
RESPONSE 40: The funding of projects is direct. During the investigation, the City of Rochester was reimbursed directly for a percentage of invoiced costs provided to the Department. Should the City pursue ERP funds for remedial action, due to recent program reforms, they will have the option to request that the State perform the work, and the City contribute toward the cleanup (in lieu of a reimbursement program). Under this scenario, the Department would complete the remedial design and procure the remedial contractor/consultant. Also see Response 19.

APPENDIX B

Administrative Record

Administrative Record

24 Seneca Avenue
Environmental Restoration Project
City of Rochester, Monroe County, New York
Site No. E828132

1. *Proposed Remedial Action Plan for the 24 Seneca Avenue site,* dated November 2015, prepared by the Department.

2. The Department and the City of Rochester entered into a State Assistance Contract, Contract No. C303145, November 6, 2006.

3. *Citizen Participation Plan*, dated January 2008, prepared by the City of Rochester.

4. *Remedial Investigation Work Plan*, dated April 2008, prepared by O'Brien & Gere Engineers.

5. *Remedial Investigation Work Plan Addendum*, dated January 2010, prepared by O'Brien & Gere Engineers.

6. *Supplemental Remedial Investigation Work Plan*, dated July 2010, prepared by O'Brien & Gere Engineers.

7. *Soil Vapor Intrusion Report*, dated October 2010, prepared by O'Brien & Gere Engineers.

8. *Remedial Investigation Report*, dated February 2011, prepared by O'Brien & Gere Engineers.

9. Letter dated March, 10, 2011 from the City of Rochester. Soil Vapor Intrusion Sampling

10. *Supplemental Remedial Investigation Work Plan*, dated April 2011, prepared by O'Brien & Gere Engineers.

11. *Soil Vapor Intrusion Report*, dated September 2011, prepared by O'Brien & Gere Engineers.

12. *Supplemental Remedial Investigation Report*, dated May 2012, prepared by O'Brien & Gere Engineers.

13. *Supplemental Soil and Vapor Intrusion Sampling Work Plan*, dated March 2013, prepared by O'Brien & Gere Engineers.

14. *Supplemental Soil and Vapor Intrusion Sampling Report*, dated December 2013, prepared by O'Brien & Gere Engineers.

15. *Alternatives Analysis*, dated November 2014, prepared by O'Brien & Gere Engineers.