PROPOSED REMEDIAL ACTION PLAN

NYSEG - Seneca Falls MGP
State Superfund Project
Seneca Falls, Seneca County
Site No. 850010
February 2015

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

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SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

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

The New York State Inactive Hazardous Waste Disposal Site Remedial Program (also known as the State Superfund Program) is an enforcement program, the mission of which is to identify and characterize suspected inactive hazardous waste disposal sites and to investigate and remediate those sites found to pose a significant threat to public health and environment.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York; (6 NYCRR) Part 375. This document is a summary of the information that can be found in the site-related reports and documents in the document repository identified below.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all PRAPs. This is an opportunity for public participation in the remedy selection process. The public is encouraged to review the reports and documents, which are available at the following repository:

Seneca Falls Library
47 Cayuga Street
Seneca Falls, NY 13148
(315) 568-8265

A public comment period has been set from:

February 27, 2015

to

March 30, 2015

A public meeting is scheduled for the following date:

Wednesday, March 11, 2015
At 7:00 PM

Public meeting location:

Seneca Falls Library
47 Cayuga St.

At the meeting, the findings of the remedial investigation (RI) and the feasibility study (FS) will be presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period will be held, during which verbal or written comments may be submitted on the PRAP.

Written comments may also be sent through to:

Douglas MacNeal
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
douglas.macneal@dec.ny.gov

The Department may modify the proposed remedy or select another of the alternatives presented in this PRAP based on new information or public comments. Therefore, the public is encouraged to review and comment on the proposed remedy identified herein. Comments will be summarized and addressed in the responsiveness summary section of the Record of Decision (ROD). The ROD is the Department's final selection of the remedy for this site.

Receive Site Citizen Participation Information By Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and

Recovery Act Program. We encourage the public to sign up for one or more county listservs at http://www.dec.ny.gov/chemical/61092.html

SECTION 3: SITE DESCRIPTION AND HISTORY

Location: The site is located in an urban area of Seneca County at 187 Fall Street in the Village of Seneca Falls. The site is bounded by the Seneca Canal to the south, Fall Street to the north, a gas station to the west, and a single-family residence to the east.

Site Features: The site has two distinct topographic levels. The upland portion is the northern two-thirds of the site, adjacent to Fall Street. The lowland portion to the south borders the Seneca Canal and is roughly 20 feet lower in elevation. The main site feature of the upland portion is a building slab and parking lot. A commercial building had been on the property but was demolished in 2009. The lowland portion is vacant and wooded.

Current Zoning and Land Use: The site is zoned commercial but it is currently vacant. The surrounding parcels are a mixture of commercial and residential. The nearest residence is roughly 20 yards to the east.

Past Use of the Site: The site was used as manufactured gas plant from 1856-1903. After that, the site sat vacant as various parts of the plant were demolished from 1905 to 1944. The subsurface remnants of the gas holder appear to still be in place however. The commercial building was constructed in the 1960s or 1970s and was used for various retail establishments (e.g., office supply store and video rental).

Site Geology and Hydrogeology: The upland portion of the site is immediately underlain by 6 to 20 feet of fill, which is underlain by a 12-24 foot thick layer of glacial till. Beneath the till is bedrock. The lowland portion of the site has a thin layer of fill ranging from 4 to 11 feet in depth. The glacial till is present in a much thinner layer over much of the lowland portion of the site. However, in the southeast corner, the till is absent and the bedrock is immediately overlain by fill.

Groundwater at the site is roughly 10 feet below grade in the upland portion of the site and only a few feet below grade in the lowland portion. Groundwater generally flows from north to south towards the canal.

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 that restrict the use of the site to commercial use (which allows for industrial use) as described in Part 375-1.8(g) are being evaluated in addition to an alternative which would allow for unrestricted use of the site.

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

SECTION 5: ENFORCEMENT STATUS

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

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

New York State Electric & Gas Corporation (NYSEG)

The Department and NYSEG entered into a multi-site Consent Order on March 30, 1994. The Consent Order (D0-0002-9309) obligates NYSEG to implement a full remedial program for 33 former MGP sites across the State, including the Seneca Falls site. After the remedy is selected, NYSEG will be required to implement the selected remedy under the Order on Consent.

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
- sediment

- indoor air
- sub-slab vapor

6.1.1: Standards, Criteria, and Guidance (SCGs)

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

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. The tables found in Exhibit A list the applicable SCGs in the footnotes. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

6.1.2: RI Results

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

- Coal Tar
- Benzene, Toluene, Ethylbenzene And Xylenes (BTEX)
- Total Polycyclic Aromatic Hydrocarbons (PAHs)
- Cyanides(Soluble Cyanide Salts)

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

- groundwater
- soil
- sediment

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.

Nature and Extent of Contamination:

Soil: Soils at the site were sampled for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, PCBs, and pesticides. Soils on the site are contaminated with coal tar and its constituents, specifically polycyclic aromatic hydrocarbons (PAHs) and VOCs. Representative chemicals in these categories are the VOCs benzene, toluene, ethylbenzene and xylenes (BTEX) and the PAHs benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, pyrene, chrysene and naphthalene. Benzene is the only BTEX found extensively in the soil, at a maximum of 2.7 parts per million (ppm). Of the PAHs found in the soil, benzo(b)fluoranthene was the most prevalent with a maximum concentration of 400 ppm. Pyrene was the only other PAH found at a higher concentration (640 ppm) but is seen in far fewer samples. Tar is found in blebs and stringers in a limited area immediately around the gas holder in the upland portion of the site at depths from 8 feet below the ground to as deep as the bottom of the holder, roughly 22 feet deep. Tar is found between 2 and 4 feet deep across the lowland portion of the site in various locations. The tar is generally limited to the fill areas with some minor impacts in the glacial till immediately adjacent to the gas holder.

PAHs are found in the subsurface soils, mostly adjacent to the areas where the coal tar is found. PAHs in these areas exceed the commercial use SCOs, with individual constituents ranging from 57 to 640 ppm. PAHs are also found in the surface soils of the adjacent property, 185 Fall Street, at levels exceeding residential SCOs. This is likely due to filling operations using ash or other waste materials from the gas plant. Although PAHs found at 183 Fall Street exceed residential SCOs in some places, the levels are much lower than at 185 Fall Street, are consistent with levels found in general urban fill materials, and do not appear to be site-related.

Groundwater: Groundwater was sampled for VOCs, SVOCs, PCBs, metals, and pesticides. The groundwater at the site is contaminated with VOCs, PAHs and cyanide. The BTEX compounds have maximum concentrations ranging from 120 parts per billion (ppb), for ethylbenzene to 2300 ppb for benzene. The PAHs are found at much lower concentrations with naphthalene having the highest concentration at 900 ppb. Cyanide was found in the groundwater adjacent to source materials at a maximum concentration of 650 ppb. The source of this contamination appears to be the coal tar. Groundwater discharging to the canal may contain these contaminants, but at much lower levels.

Sediments: The sediments in the canal south of the site are impacted by the site. Coal tar has been found in an area along the bank of the river in front of the site extending roughly 40 to 50 feet out into the canal. Total PAHs have been found as high as 12,800 parts per million (ppm) in areas where the tar has been found.

Soil Vapor: Sub-slab soil vapor collected from the commercial building in 2008 contained several VOCs such as n-octane, n-butane, naphthalene, perchlorethylene, xylene, chloroform, 1,3,5-trimethylbenzene, and 1,1,1-trichloroethane. Most contaminant concentrations were in the 0.5 to 5 ug/m3 range, with a maximum concentration of 17 ug/m3 for n-butane. These contaminants were also found in the indoor air. While both MGP-related and non-MGP-related VOCs were found in these samples, the results did not indicate a need for further sampling or actions to address soil vapor intrusion. The building has since been demolished.

6.4: Summary of Human Exposure Pathways

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

Access to the site is unrestricted and people may come in contact with contaminants by walking on the soil, digging or otherwise disturbing the soil. People may also contact site-related contamination in soil of adjacent properties. Contaminated groundwater at the site is not used for drinking or other purposes and the site is served by a public water supply that obtains water from a different source not affected by this contamination. People may also come in contact with contaminants present in the canal and river sediments during recreational activities.

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.

Sediment

RAOs for Public Health Protection

- Prevent direct contact with contaminated sediments.

RAOs for Environmental Protection

- Prevent impacts to biota from ingestion/direct contact with sediments causing toxicity or impacts from bioaccumulation through the marine or aquatic food chain.
- Restore sediments to pre-release/background conditions to the extent feasible.

Soil Vapor

RAOs for Public Health Protection

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

SECTION 7: SUMMARY OF THE PROPOSED REMEDY

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

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

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

The proposed remedy is referred to as the ISS of the Upland Area, Capping of the Lowland Area remedy.

The estimated present worth cost to implement the remedy is $4,120,000. The cost to construct the remedy is estimated to be $3,870,000 and the estimated average annual cost is $24,600.

The elements of the proposed remedy are as follows:

1. Remedial Design

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

Some excavation work will be required on the upland portion MGP site prior to the implementation of the ISS program, in order to remove subsurface structures such as building foundations, the gas holder foundation, and buried piping, which would otherwise interfere with the ISS mixing process.

On the adjacent residential property (185 Fall St), all soils which exceed residential SCOs, as defined by 6 NYCRR Part 375-6.8, will be excavated and transported off-site for disposal. If site-related contamination that exceeds the unrestricted SCOs is found further east, additional excavation may be necessary. Approximately 650 cubic yards of soil will be removed from the property. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil at 185 Fall St., and establish the designed grades at the site.

3. In-Situ Solidification

In-situ solidification (ISS) will be implemented over the upland portion of the MGP site, covering an area of approximately 0.5 acres, to depths from 6 feet to 23 feet below grade. ISS is a process that binds the soil particles in place creating a low permeability mass. The contaminated soil will be mixed in place together with solidifying agents (typically portland cement) or other binding agents using an excavator or augers. The soil and binding agents are mixed to produce a solidified mass resulting in a low permeability monolith. The resulting solid matrix reduces or eliminates mobility of contamination and reduces or eliminates the matrix as a source of groundwater contamination. The solidified mass will then be covered with a cover

system as described in element 4 to prevent direct exposure to the solidified mass and provide protection against weathering of the solidified mass.

4. Cover System

A site cover will be required to allow for commercial use of the site, and to protect the ISS component of the remedy. In the ISS area, the function of this cover will be to provide sufficient thermal protection of the solidified mass from seasonal freeze/thaw cycles, and to protect the ISS mass from deep root penetration while still allowing re-establishment of an appropriate vegetative cover. To provide this protection, a four foot soil cover will be established between the solidified matrix and the finished ground surface. The upper six inches of the soil will be of sufficient quality to maintain a vegetation layer. In the lowland area, a one-foot soil cover will be placed over areas of contaminated soil. This will include an area of contaminated soils to the west of the site boundary, on the adjacent commercial property. This soil cover will be placed over a demarcation 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).

5. Sediment Dredging

Sediments which contain source material, as defined by the presence of MGP tar and petroleum non aqueous phase liquids, will be removed from the canal and disposed of off-site, regardless of depth. This will prevent direct contact with contaminated sediments. Approximately 2,200 cubic yards of sediment will be removed. The sediments will be replaced with backfill which meets the chemical and gradation requirements of the Department and will, at a minimum, restore the benthic habitat.

6. Institutional Control

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

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

7. Site Management Plan

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

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

Institutional Controls:

- The Environmental Easement discussed in Element 5 above; and
- An agreement between NYSEG and the owner of the adjacent commercial property to the west for site access and any pertinent provisions to enable installation of the soil cover, management of remaining contamination, inspections, sampling and/or other requisite activities.

Engineering Controls:

- The ISS noted in Element 2, and
- The soil cover noted in Element 4 above.

This plan includes, but may not be limited to:

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

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

- monitoring of groundwater to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department; and
- monitoring for vapor intrusion for any buildings developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

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 three categories; volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and metals. 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 sediment.

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 including areas of coal tar. Coal tar is a dense non-aqueous phase liquid (DNAPL), which means that it sinks in water and will not dissolve readily. The coal tar on the site is found in three different areas. In the upland portion of the site, coal tar was found in and around the gas holder and around the old purifier area in the form of blebs and stringers. This tar collected in and migrated from these structures. In the lowland portion of the site, coal tar was found in a few discontinuous areas, most likely from filling and regrading operations. Finally, coal tar was also seen in the sediment adjacent to the site. This is also likely from disposal operations or possibly spills during loading of the tar onto transports. These areas are shown on Figures 2 and 3.

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

Groundwater

Groundwater samples were collected from overburden monitoring wells. The samples indicated that the coal tar is contributing to groundwater contamination on the site. The highest concentrations of contaminants are components of coal tar and found closest to the known coal tar deposits. Contamination in the overburden groundwater exceeds the SCGs for VOCs, SVOCs and cyanide. There are no local groundwater supply wells and the contaminated groundwater appears to discharge into the canal.

Table 1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
Benzene	ND-2300	1	9 of 19

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
Toluene	ND-1300	5	3 of 19
Ethylbenzene	ND-120	5	3 of 19
Xylene	ND-1000	5	3 of 19
SVOCs			
Benzo(a)anthracene	ND-3	0.002	4 of 19
Benzo(b)fluoranthene	ND-5	0.002	3 of 19
Bis(2-Ethylhexyl)phthalate	ND-540	5	3 of 19
Biphenyl	ND-21	5	3 of 19
Chrysene	ND-2	0.002	3 of 19
Indeno(1,2,3-cd)pyrene	ND-2	0.002	3 of 19
Napthalene	ND-900	10	4 of 19
Phenanthrene	ND-77	50	1 of 19
Phenol	ND-13	1	2 of 19
Inorganics			
Cyanide	ND- 650	200	9 of 19

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).

There were several other metals found in the groundwater samples (e.g., iron, magnesium, and sodium). However, those metals are found uniformly across the site and are not related to MGP operations.

Based on the findings of the RI, the presence of coal tar 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: cyanide, benzene, toluene, ethylbenzene, xylenes, and naphthalene.

Soil

Surface and subsurface soil samples were collected from the site and from adjacent off-site areas during the RI. Surface soil samples were collected from a depth of 0-2 inches to assess direct human exposure. Subsurface soil samples were collected from a depth of 2 feet to 30 feet to assess soil contamination impacts to groundwater. The results indicate that soils at the site exceed the unrestricted SCG for volatile and semi-volatile organics and metals. Soils in the upland area are more contaminated because of the larger amounts of coal tar source material found in that area.

Table 2 - Soil

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG[c] (ppm)	Frequency Exceeding Restricted SCG
VOCs					
Benzene	ND-2.7	0.06	6 of 95	0.06[d]	6 of 95
SVOCs					
Benzo(a)pyrene	ND-330	1	47 of 95	1	47 of 95
Benzo(a)anthracene	ND-420	1	48 of 95	1[d]	48 of 95
Benzo(b)fluoranthene	ND-400	1	49 of 95	1.7[d]	46 of 95
Benzo(k)fluoranthene	ND-120	0.8	31 of 95	1.7[d]	22 of 95
Dibenzo(a,h)anthracene	ND-57	0.33	39 of 95	0.56	31 of 95
Chrysene	ND-350	1	47 of 95	1[d]	47 of 95
Indeno(1,2,3-cd)pyrene	ND-170	0.5	45 of 95	5.6	17 of 95
Napthalene	ND-390	12	7 of 95	12[d]	7 of 95
Phenanthrene	ND-380	100	7 of 95	500	0 of 95
Pyrene	ND-640	100	5 of 95	500	1 of 95
Inorganics					
Cyanide	ND-16.2	27	0 of 95	27	0 of 95

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.

The primary soil contaminants are semi-volatile organic compounds (SVOCs) which are associated with the coal tar source areas on the site. While adjacent properties do show elevated levels of SVOCs in the surface soils, most of this is related to historic fill in the area. However, there are some areas immediately east of the site, at 185 Fall Street, which are impacted by the site's operations. These areas are shown on Figure 2.

Based on the findings of the Remedial Investigation, the presence of SVOCs 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, benzene, benzo(a)pyrene, benzo(a)anthracene, benzo(b)flouranthene, and chrysene.

Sediments

Sediment samples were collected from locations upstream, adjacent, and downstream of the site along the Seneca Canal. The samples were collected to assess the potential for impacts to the canal sediments from the site. The results indicate that the sediment exceeds the Department SCGs for sediments for SVOCs in sporadic areas upstream, adjacent to, and downstream of the site

Table 3 - Sediment

Detected Constituents	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)	Frequency Exceeding SCG
Total PAHs	0.12-12,844	4	6 of 44

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in sediment;
b - SCG: The Department's "Technical Guidance for Screening Contaminated Sediments."

Sediments immediately adjacent to the site are impacted with coal tar and PAHs from the site. Five sediment samples contained visible coal tar which originated at the MGP. PAH concentrations fall off rapidly with distance from these source materials. There is only one location where there are elevated levels of PAHs which do not correspond to visual evidence of source material, and that location is immediately adjacent to areas of source material. However, it should be noted that lower levels of PAHs were also found in samples both upstream and downstream of the site. There appear to be other sources of low-level sediment contamination in the canal which are not related to MGP operations. This is not unusual, since PAH contamination is quite common and can originate from other sources such as petroleum products or highway runoff.

Based on the findings of the Remedial Investigation, the presence of coal tar and PAHs has resulted in the contamination of sediment. The site contaminant that is considered to be the primary contaminant of concern which will drive the remediation of sediment to be addressed by the remedy selection process is coal tar and associated PAHs.

Soil Vapor

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

Sub-slab soil vapor samples were collected from 4 locations in the building that was present on the site prior to 2009. Indoor air samples were collected from 4 adjacent locations in the building. The samples were collected to assess the potential for soil vapor intrusion. The results showed several various VOCs, such as n-octane, n-butane, naphthalene, perchlorethylene, xylene, chloroform, 1,3,5-trimethylbenzene, and 1,1,1-trichloroethane, in the sub-slab and indoor air. Most contaminant concentrations were in the 0.5 to 5 µg/m3 range with a maximum concentration of 17 µg/m3 for n-butane. The VOCs are not all related to the former MGP operation, and are likely from non-MGP related sources. The building has since been demolished.

Based on the concentration detected, and in comparison with the State's Soil Vapor Intrusion Guidance (NYSDOH 2006), no site-related soil vapor contamination of concern was identified during the RI. Therefore, no remedial alternatives need to be evaluated for soil vapor.

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: Site Management

The Site Management Alternative involves placing a fence around the perimeter of the site, implementing institutional controls and periodic groundwater monitoring for the site. The institutional controls would be in the form of an environmental easement and a site management plan, necessary to protect public health and the environment from any contamination identified at the site.

Present Worth: *$442,000*
Capital Cost: *$186,000*
Annual Costs: *$20,600*

Alternative 3: Restoration to Unrestricted Conditions

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A and soil meets the unrestricted soil cleanup objectives listed in Part 375-6.8 (a). This alternative would include: Excavation and off-site disposal of all on-site and off-site soils which exceed unrestricted use SCOs, dredging and off-site disposal of all impacted sediments, and enhanced bioremediation of the groundwater. Approximately 13,000 cubic yards of impacted soil and 2,200 cubic yards of sediment would be removed for off-site thermal treatment. After the excavation, the enhanced bioremediation would comprise of a one-time application of an oxygen-releasing compound (ORC).

Capital Cost: *$7,720,000*

Alternative 4: Excavation and Off-site Disposal of Surface Soils, Dredging of Impacted Sediments

This alternative would include excavation and off-site disposal of surface soils which exceed the SCOs for commercial use on the site and soils with site-related contamination that exceeds the residential use SCGs on the adjacent residential property to the east. In addition, coal tar-impacted sediments would be removed from the canal. The excavated soils would be replaced with fill material brought to the site that will meet the requirements for commercial site use as set forth in 6 NYCRR Part 375-6.7(d) and the residential use of the adjacent property. The sediments will be replaced with backfill which meets the chemical and gradation requirements of the

Department and will, at a minimum, restore the benthic habitat. Institutional and Engineering controls would be used to ensure the long-term effectiveness of the remedy. The institutional control would be in the form of an environmental easement that will limit the future use of the property to commercial and industrial uses only, would prohibit the use of the groundwater, would require the property owner submit an annual certification to the Department, and would require adherence to a site management plan. The engineering controls would be in the form of the soil cover on the site and a site management plan would be necessary to insure the integrity of the soil cover.

Present Worth: *$3,360,000*
Capital Cost: *$3,010,000*
Annual Costs: *$28,600*

Alternative 5: Capping

This alternative would include, the placement of a cap over the site and the impacted surface soils on the adjacent residential property to the east. The cap on the site would consist of either the structures, such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where a 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 and the upper six inches of the soil will be 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). The cap on the adjacent residential property would consist of either the structures, such as buildings, pavement, sidewalks currently on the site or a soil cover in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). The cover on the adjacent properties would also require a third party agreement between the property owner and NYSEG. Where a soil cover is required it will be a minimum of two feet of soil meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for residential use. The soil cover will be placed over a demarcation layer and the upper six inches of the soil will be 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). The impacted sediments would also be capped with a geosynthetic clay layer and backfill which meets the chemical and gradation requirements of the Department and will, at a minimum, restore the benthic habitat. Institutional and Engineering controls would be used to ensure the long-term effectiveness of the remedy. The institutional control would be in the form of an environmental easement that will limit the future use of the property to commercial and industrial uses only, would prohibit the use of the groundwater, would require the property owner submit an annual certification to the Department, and would require adherence to a site management plan. The engineering controls would be in the form of the soil cover on the site and off-site properties and a site management plan would be developed to ensure the integrity of the soil cover.

Present Worth: *$2,230,000*
Capital Cost: *$1,510,000*
Annual Costs: *$58,200*

Alternative 6: ISS of Upland Area, Capping of the Lowland Area, Excavation of Soils on Adjacent Residential Property, Dredging of Impacted Sediments

This alternative would include in-situ solidification (ISS) to be implemented over the entire upland area of the MGP site, covering an area of approximately 0.5 acres, to depths from 6 feet to 23 feet below grade. ISS is a

process that binds the soil particles in place creating a low permeability mass. The contaminated soil will be mixed in place together with solidifying agents (typically portland cement) or other binding agents using an excavator or augers. The soil and binding agents are mixed to produce a solidified mass resulting in a low permeability monolith. Subsurface structures, pipes, and other large obstructions need to be excavated before the stabilization process can proceed.

Additionally, the lowland area and portions of the adjacent lowland area at 193 Fall Street would receive a soil cover in areas where the upper one foot of exposed surface soil exceeds the applicable soil cleanup objectives (SCOs). Where a soil cover is required it will be a minimum of one foot, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for commercial use. The adjacent residential property would have all soil excavated and disposed off-site in areas that exceed the unrestricted soil cleanup objectives (SCOs). The soil will be replaced with fill material brought to the site that will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d). Finally, MGP-impacted sediments would be removed from the canal and disposed off-site. The sediments will be replaced with backfill which meets the chemical and gradation requirements of the Department and will, at a minimum, restore the benthic habitat. Institutional and Engineering controls would be used to ensure the long-term effectiveness of the remedy. The institutional control would be in the form of an environmental easement that will limit the future use of the property to commercial and industrial uses only, would prohibit the use of the groundwater, would require the property owner submit an annual certification to the Department, and would require adherence to a site management plan. The engineering controls would be in the form of the soil cover on the site and a site management plan would be necessary to insure the integrity of the soil cover.

Present Worth: *$4,120,000*
Capital Cost: *$3,870,000*
Annual Costs: *$24,600*

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
No Action	0	0	0
Alternative 2: Site Management	186,000	20,600	442,000
Alternative 3: Restoration to Unrestricted Conditions	7,720,000	0	7,720,00
Alternative 4: Excavation and Off-site Disposal of Surface Soils, Dredging of Impacted Sediments	3,010,000	28,600	3,360,000
Alternative 5: Capping	1,510,000	58,200	2,230,000
Alternative 6: ISS of Upland Area, Capping of the Lowland Area, Excavation of Soils on Adjacent Residential Property, Dredging of Impacted Sediments	3,870,000	24,600	4,120,000

Exhibit D

SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative 6: ISS of Upland Area, Capping of the Lowland Area, Excavation of Soils on Adjacent Residential Property, Dredging of Impacted Sediments as the remedy for this site. Alternative 6 would achieve the remediation goals for the site by solidifying the source materials in the upland area, capping the contaminated soils in the lowland areas, removing contaminated soils on the adjacent residential property, and by removing contaminated sediments in the canal. The elements of this remedy are described in Section 7. The proposed remedy is depicted in Figure 4.

Basis for Selection

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

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

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

The proposed remedy (Alternative 6*)* would satisfy this criterion by solidifying source materials and capping it, this will also address the groundwater contamination, by capping soils with lower levels of contamination and removing sediments from the canal.

Alternative 1 (No Action) does not provide any protection to public health and the environment and will not be evaluated further. Alternative 2 (site management) would provide public health protection through fencing and institutional controls but would not provide environmental protection from the contaminated sediments in the canal. It is also excluded from further consideration.

Alternatives 3, 4, 5, and 6 are considered protective, but to different degrees. Groundwater use restrictions would be required for all of these 4 alternatives, although it is anticipated that the total source removal in Alternative 3 would allow the restriction to be lifted in a few years.

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.

Alternatives 3, 4, 5, and 6 comply with SCGs to the extent practicable. Alternative 3 would remove all soils above unrestricted SCOs, and it is expected that with all contamination sources removed, the remaining contaminated groundwater would reach SCGs by natural decay processes in approximately three years. Alternatives 4 and 6 offer somewhat less aggressive degrees of source removal, which would require a longer time frame and associated restriction on groundwater use before SCGs are met. Alternative 5 would also require a long-term groundwater use restriction, since the source material would only be capped and would remain in contact with groundwater.

Sediment SCGs would be met by isolating the contaminated sediment under Alternative 5 or by sediment removal under Alternatives 3, 4, and 6.

Because Alternatives 3, 4, 5 and 6 satisfy the threshold criteria, the remaining criteria are particularly important in selecting a final remedy for the site.

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

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

Long-term effectiveness is best accomplished by those alternatives involving excavation of the contaminated overburden soils (Alternatives 3, 4, and 6). Since Alternative 3 results in removal of almost all of the chemical contamination at the site and removes the need for property use restrictions and long-term monitoring, it has the highest level of long-term effectiveness. Alternative 4 results in the removal of only the surface soil, to eliminate exposures during most uses of the site, and relies on an environmental easement and site management to be effective in the long term. The same long term management strategy would be required to maintain the cap called for in Alternative 5 and to prevent potential future exposures to underlying contamination. Neither Alternative 4 nor 5 will have any long-term effect on the groundwater contamination, and thus both rely on a groundwater use restriction to be effective. Alternative 6 provides for treatment of source areas by ISS, which will be effective in the long-term in reducing the groundwater contamination and will be more effective in maintaining a long-term control of remaining exposure risk than Alternatives 4 and 5. This strategy has been employed at numerous MGP sites in New York State and elsewhere. Although not as desirable as full removal, solidification has proven effective and is expected to remain effective indefinitely.

With respect to sediments, the effectiveness of the capping component of Alternative 5 is less certain than the removal called for under Alternatives 3, 4, and 6 due to the possibility of erosion during flooding events or penetration by passing boat traffic.

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.

The highest degree of mobility and volume reduction is offered by alternatives that permanently remove contamination from the site. Thus, the full excavation called for under Alternative 3 ranks highest for this criterion. Alternative 4 offers a lesser degree of volume reduction and Alternative 5 offers almost none. Alternative 6 employs a solidification technology which permanently reduces the toxicity and mobility of soil contamination. ISS is also effective in reducing the mobility of contamination in groundwater by greatly lowering the hydraulic conductivity of soil containing MGP tar. This prevents clean groundwater from coming into contact with impacted soil and tar. It should be noted, however, that ISS increases the overall volume of the treated soil to some degree, due to the injection of cement grout into the soil. This volume increase is considered inconsequential, and the solidified mass will be covered with clean soil. Natural attenuation would, in time, reduce the toxicity and mobility of contamination in the groundwater in areas outside the solidified material. It thus ranks behind Alternative 3 but ahead of Alternatives 4 and 5.

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 3, 4, 5, and 6 all involve the use of standard construction machinery, which will produce some degree of short term construction impacts. Varying levels of truck traffic, noise and potential odor impacts will be generated. Alternative 3 would produce the highest amount of traffic, noise and odor potential due to the large volume of excavation required. Much lower levels of traffic would be produced under Alternatives 4, 5, and 6 because less material would be transported off site. Some inbound traffic associated with delivery of materials for the cap or inbound loads of cement for solidification would be required under Alternatives 4, 5 and 6.

The potential for odors is much lower under Alternatives 4, 5, and 6 because source materials would be capped or treated in place. The length of time required to complete remediation would be the greatest under Alternative 3, with lesser and broadly similar lengths of time required for Alternatives 2, 4, 5, and 6.

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.

All of the retained alternatives employ readily available technologies and have been used at other sites. The larger soil volume required for Alternative 3 presents a greater engineering challenge, but similar excavations have been performed successfully elsewhere. Alternative 6 would require some pilot testing as part of the design process to develop the proper mixture for the ISS process.

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. With its large volume of soil to be handled, Alternative 3 (excavation and off-site disposal) has the highest present worth cost. Capping (Alternative 5) is much less expensive than Alternative 3, but it does not provide protection of the groundwater resource, and its protection of sediment quality is less certain than the alternatives that call for sediment removal. The costs of Alternatives 4 and 6 are similar to each other, although the ongoing annual cost for Alternative 4 is higher than that of Alternative 6.

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.

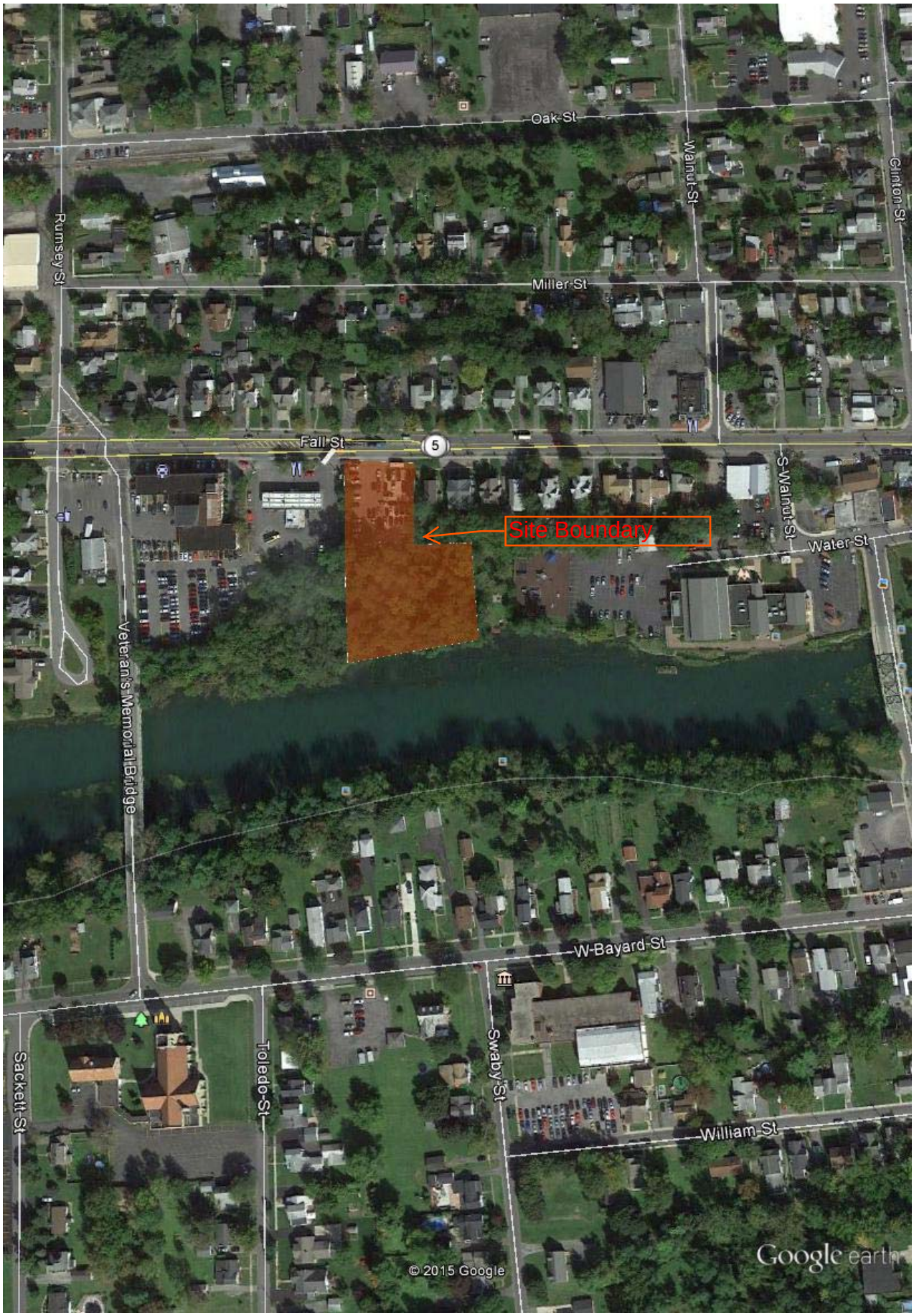
The reasonably anticipated future use of the site is commercial, and Alternatives 3 through 6 are consistent with that use. However, Alternatives 2, 4, and 5 require extensive long-term management and institutional controls which would make future construction at the site more challenging. Alternatives 2 and 5 also leave contaminated soils on the adjacent residential property which significantly complicates its future residential use. While Alternative 6 does require institutional controls and site management, the requirements are less extensive.

Alternative 6 also results in no restriction on the adjacent residential property, which is consistent with its use as a single family residence.

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 6 is being proposed because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criteria. It calls for removal of all contamination from the residential property, and removal of subsurface MGP structures. The remaining on-site contamination would be rendered immobile and largely inert by the solidification process. Contaminated sediment would be removed to levels consistent with background. Alternative 6 achieves the goals of the cleanup program while minimizing short term impacts to the surrounding neighborhood and long term monitoring and remediation requirements.



Google earth

feet 800

meters 200

PROPOSED REMEDIAL ACTION PLAN FIGURES
Seneca Fall MGP Site, Site No. 850010

Figure 1
February 2015

SS-07-01	11/16/2007 0 - 0.17 ft
Metals	
Arsenic	5.8
Barium	68.5 J
Copper	29.6
Lead	101 J
Mercury	0.188 J
Selenium	1.5
Zinc	141 J
PAHs	
Benzo(a)anthracene	3.3
Benzo(a)pyrene	3.2
Benzo(b)fluoranthene	3.9
Benzo(k)fluoranthene	1.6 J
Chrysene	2.6
Dibenzo(a,h)anthracene	0.44 J
Fluoranthene	5.4
Indeno(1,2,3-cd)pyrene	1.3 J

SB-07-20	11/15/2007 1 - 2 ft
Metals	
Arsenic	10.7
Barium	119 J
Copper	38.4
Lead	128 J
Mercury	0.752 J
Selenium	< 0.69
Zinc	140 J
PAHs	
Benzo(a)anthracene	14
Benzo(a)pyrene	14
Benzo(b)fluoranthene	18
Benzo(k)fluoranthene	6.6
Chrysene	13
Dibenzo(a,h)anthracene	2 J
Fluoranthene	20
Indeno(1,2,3-cd)pyrene	6.5

SS20201	11/26/2002 0 - 0.2 ft
Metals	
Arsenic	7.6 B/8.7 B
Barium	94.9/120
Copper	96.6/63.5
Lead	182/221
Mercury	0.49 B/0.73 B
Zinc	167/183
PAHs	
Benzo(a)anthracene	13/9
Benzo(a)pyrene	11/8.2
Benzo(b)fluoranthene	8.2/5.8
Benzo(k)fluoranthene	12/9.6
Chrysene	12/8.3
Dibenzo(a,h)anthracene	2.4 J/1.9 J
Fluoranthene	24/15
Indeno(1,2,3-cd)pyrene	6.1/5

SB-07-04	11/16/2007 4 - 5.5 ft	11/16/2007 26 - 26.8 ft
Metals		
Arsenic	7.9	2.1
Barium	80.6 J	121 J
Copper	26.9	9
Lead	58.8 J	4.7 J
Mercury	0.234 J	< 0.004 UJ
Selenium	1	< 0.63
Zinc	98.6 J	22.1 J
PAHs		
Benzo(a)anthracene	51	0.034 J
Benzo(a)pyrene	50	0.028 J
Benzo(b)fluoranthene	60	0.043 J
Benzo(k)fluoranthene	18	0.017 J
Chrysene	38	0.031 J
Dibenzo(a,h)anthracene	7	< 0.36
Fluoranthene	130	0.048 J
Indeno(1,2,3-cd)pyrene	22	0.015 J

SS20202	11/26/2002 0 - 0.2 ft
Metals	
Arsenic	15.4
Barium	107/0
Copper	67.9
Lead	215/0
Mercury	0.45 B
Zinc	165/0
PAHs	
Benzo(a)anthracene	5.6
Benzo(a)pyrene	5.1
Benzo(b)fluoranthene	4.6
Benzo(k)fluoranthene	5.1
Chrysene	5.1
Dibenzo(a,h)anthracene	1.2 J
Fluoranthene	8.4
Indeno(1,2,3-cd)pyrene	3

SB-07-21	11/15/2007 1.5 - 2.5 ft
Metals	
Arsenic	9.7/13.7
Barium	104 J/127 J
Copper	40.8/42.6
Lead	176 J/198 J
Mercury	0.199 J/0.135 J
Selenium	1.3/1.7
Zinc	140 J/171 J
PAHs	
Benzo(a)anthracene	1.6 J/3.1
Benzo(a)pyrene	1.4 J/3
Benzo(b)fluoranthene	1.9 J/4
Benzo(k)fluoranthene	0.66 J/1.6 J
Chrysene	1.6 J/3.6
Dibenzo(a,h)anthracene	0.2 J/0.4 J
Fluoranthene	3.5/7.6
Indeno(1,2,3-cd)pyrene	0.57 J/1.2 J

SB-07-22	11/15/2007 0.4 - 2.3 ft
Metals	
Arsenic	5.2
Barium	142 J
Copper	227
Lead	140 J
Mercury	0.096 J
Selenium	1.6
Zinc	499 J
PAHs	
Benzo(a)anthracene	1.5 J
Benzo(a)pyrene	1.2 J
Benzo(b)fluoranthene	1.6 J
Benzo(k)fluoranthene	0.58 J
Chrysene	1.3 J
Dibenzo(a,h)anthracene	0.2 J
Fluoranthene	1.6 J
Indeno(1,2,3-cd)pyrene	0.46 J

HA-09-08	9/1/2009 0 - 0.17 ft
Metals	
Arsenic	6.1
Barium	123 J
Copper	36
Lead	187
Mercury	0.263 J
Selenium	< 0.7
Zinc	179
PAHs	
Benzo(a)anthracene	1.1 J
Benzo(a)pyrene	< 0.22
Benzo(b)fluoranthene	< 0.18
Benzo(k)fluoranthene	< 0.1
Chrysene	< 0.093
Dibenzo(a,h)anthracene	< 0.11
Fluoranthene	2.1 J
Indeno(1,2,3-cd)pyrene	< 0.26

SS-07-02	11/16/2007 0 - 0.17 ft
Metals	
Arsenic	30.5
Barium	279 J
Copper	96.8
Lead	871 J
Mercury	1.2 J
Selenium	3.6
Zinc	553 J
PAHs	
Benzo(a)anthracene	0.8 J
Benzo(a)pyrene	0.79 J
Benzo(b)fluoranthene	1.1 J
Benzo(k)fluoranthene	0.38 J
Chrysene	0.76 J
Dibenzo(a,h)anthracene	0.12 J
Fluoranthene	1.4 J
Indeno(1,2,3-cd)pyrene	0.38 J

SB-07-18	11/15/2007 2 - 4.4 ft
Metals	
Arsenic	19.9
Barium	378 J
Copper	35.1
Lead	1540 J
Mercury	0.643 J
Selenium	2.6
Zinc	1420 J
PAHs	
Benzo(a)anthracene	2.4
Benzo(a)pyrene	1.9 J
Benzo(b)fluoranthene	2.4
Benzo(k)fluoranthene	0.94 J
Chrysene	2
Dibenzo(a,h)anthracene	0.27 J
Fluoranthene	3.6
Indeno(1,2,3-cd)pyrene	0.73 J

SB-07-19	11/15/2007 0.4 - 3 ft
Metals	
Arsenic	14.9
Barium	156 J
Copper	73.7
Lead	143 J
Mercury	0.139 J
Selenium	1.7
Zinc	135 J
PAHs	
Benzo(a)anthracene	0.071 J
Benzo(a)pyrene	0.054 J
Benzo(b)fluoranthene	0.066 J
Benzo(k)fluoranthene	< 2.3
Chrysene	0.048 J
Dibenzo(a,h)anthracene	< 2.3
Fluoranthene	0.072 J
Indeno(1,2,3-cd)pyrene	< 2.3

SB-07-14	11/15/2007 2 - 5 ft
Metals	
Arsenic	20.9
Barium	169 J
Copper	36.1
Lead	183 J
Mercury	0.502 J
Selenium	12
Zinc	425 J
PAHs	
Benzo(a)anthracene	0.47 J
Benzo(a)pyrene	0.36 J
Benzo(b)fluoranthene	0.45 J
Benzo(k)fluoranthene	0.17 J
Chrysene	0.35 J
Dibenzo(a,h)anthracene	0.073 J
Fluoranthene	0.61 J
Indeno(1,2,3-cd)pyrene	0.19 J

HA-09-03	9/1/2009 0.17 - 0.33 ft
Metals	
Arsenic	3.5
Barium	44 J
Copper	13
Lead	21.7
Mercury	0.0697 J
Selenium	< 0.7
Zinc	42.9
PAHs	
Benzo(a)anthracene	< 0.17
Benzo(a)pyrene	< 0.23
Benzo(b)fluoranthene	< 0.19
Benzo(k)fluoranthene	< 0.11
Chrysene	< 0.096
Dibenzo(a,h)anthracene	< 0.11
Fluoranthene	< 0.14
Indeno(1,2,3-cd)pyrene	< 0.27

HA-09-02	9/1/2009 0.21 - 0.38 ft
Metals	
Arsenic	3.3
Barium	48.9 J
Copper	15.2
Lead	32.2
Mercury	0.0609 J
Selenium	< 0.7
Zinc	57.5
PAHs	
Benzo(a)anthracene	4.1 J
Benzo(a)pyrene	3.5 J
Benzo(b)fluoranthene	4.5 J
Benzo(k)fluoranthene	1.9 J
Chrysene	4.5 J
Dibenzo(a,h)anthracene	< 0.11
Fluoranthene	8.9 J
Indeno(1,2,3-cd)pyrene	1.7 J

HA-09-05	9/1/2009 0.04 - 0.21 ft
Metals	
Arsenic	4.3
Barium	71 J
Copper	40.4
Lead	66.7
Mercury	0.1 J
Selenium	< 0.6
Zinc	104
PAHs	
Benzo(a)anthracene	2.1 J
Benzo(a)pyrene	2.2 J
Benzo(b)fluoranthene	2.6 J
Benzo(k)fluoranthene	< 0.1
Chrysene	2.2 J
Dibenzo(a,h)anthracene	< 0.11
Fluoranthene	3 J
Indeno(1,2,3-cd)pyrene	< 0.25

SB-07-15	11/15/2007 1 - 3 ft
Metals	
Arsenic	8.6
Barium	151 J
Copper	97
Lead	259 J
Mercury	1.3 J
Selenium	0.74
Zinc	229 J
PAHs	
Benzo(a)anthracene	22
Benzo(a)pyrene	22
Benzo(b)fluoranthene	29
Benzo(k)fluoranthene	8.3
Chrysene	19
Dibenzo(a,h)anthracene	4
Fluoranthene	29
Indeno(1,2,3-cd)pyrene	10

SS20203	11/26/2002 0 - 0.2 ft
Metals	
Arsenic	8 B
Barium	114
Copper	74.1
Lead	41.1
Mercury	0.1 B
Zinc	53.9
PAHs	
Benzo(a)anthracene	0.049 J
Benzo(a)pyrene	0.049 J
Benzo(b)fluoranthene	< 0.54
Benzo(k)fluoranthene	< 0.54
Chrysene	0.056 J
Dibenzo(a,h)anthracene	< 0.54
Fluoranthene	0.095 J
Indeno(1,2,3-cd)pyrene	< 0.54

SB-07-11	11/15/2007 1 - 3 ft
Metals	
Arsenic	11.5
Barium	226 J
Copper	53.1
Lead	117 J
Mercury	0.185 J
Selenium	0.86
Zinc	86 J
PAHs	
Benzo(a)anthracene	5.9
Benzo(a)pyrene	5.6
Benzo(b)fluoranthene	6.9
Benzo(k)fluoranthene	2.1
Chrysene	4.7
Dibenzo(a,h)anthracene	1 J
Fluoranthene	9.6
Indeno(1,2,3-cd)pyrene	3.1

SB-07-12	11/15/2007 2 - 4 ft
Metals	
Arsenic	2.5
Barium	40.8 J
Copper	17.1
Lead	5.1 J
Mercury	0.01 J
Selenium	< 0.71
Zinc	25.2 J
PAHs	
Benzo(a)anthracene	0.034 J
Benzo(a)pyrene	0.029 J
Benzo(b)fluoranthene	0.031 J
Benzo(k)fluoranthene	0.018 J
Chrysene	0.025 J
Dibenzo(a,h)anthracene	0.009 J
Fluoranthene	0.023 J
Indeno(1,2,3-cd)pyrene	0.015 J

SB-07-16	11/15/2007 0 - 2 ft
Metals	
Arsenic	20
Barium	105 J
Copper	37.2
Lead	96 J
Mercury	0.098 J
Selenium	2.3
Zinc	219 J
PAHs	
Benzo(a)anthracene	4.4
Benzo(a)pyrene	3.5
Benzo(b)fluoranthene	4.3
Benzo(k)fluoranthene	1.9 J
Chrysene	3.4
Dibenzo(a,h)anthracene	0.44 J
Fluoranthene	7.8
Indeno(1,2,3-cd)pyrene	1.3 J

SB-07-13	11/15/2007 0.2 - 1.5 ft
Metals	
Arsenic	11.9
Barium	378 J
Copper	101
Lead	617 J
Mercury	0.088 J
Selenium	1.4
Zinc	583 J
PAHs	
Benzo(a)anthracene	0.1 J
Benzo(a)pyrene	0.091 J
Benzo(b)fluoranthene	0.12 J
Benzo(k)fluoranthene	0.044 J
Chrysene	0.083 J
Dibenzo(a,h)anthracene	0.02 J
Fluoranthene	0.15 J
Indeno(1,2,3-cd)pyrene	0.059 J

SB-07-17	11/15/2007 0 - 2.3 ft
Metals	
Arsenic	10.4
Barium	213 J
Copper	76.6
Lead	374 J
Mercury	0.311 J
Selenium	1.8
Zinc	240 J
PAHs	
Benzo(a)anthracene	1.8 J
Benzo(a)pyrene	2.1 J
Benzo(b)fluoranthene	2.8
Benzo(k)fluoranthene	0.99 J
Chrysene	1.5 J
Dibenzo(a,h)anthracene	0.33 J
Fluoranthene	2.3
Indeno(1,2,3-cd)pyrene	1 J

LEGEND:

- PROPERTY LINE
- MONITORING WELL
- SOIL BORING
- SURFACE SOIL SAMPLE
- TEST PIT
- STREAM GAUGE
- HAND AUGER LOCATION

- UPLAND PROPERTY - AREA OF MGP-IMPACTED SOILS
- RESIDENTIAL PROPERTY - AREA OF MGP-IMPACTED SOILS
- LOWLAND PROPERTY - AREA OF MGP-IMPACTED SOILS

NOTES:

1. SOIL DOT COLOR IS BASED ON COMPARISON WITH SOIL CLEANUP OBJECTIVES.
2. SEDIMENT EXPLORATION LOCATION SE-09-19 WAS NOT COMPLETED.
3. NA: NOT AVAILABLE
   NM: NOT MEASURED
   NP: NOT PENETRABLE
4. ALL LOCATIONS AND DIMENSIONS APPROXIMATE.

SOIL DOT COLOR LEGEND:
COMPARED TO SOIL CLEANUP OBJECTIVES FOR COMMERCIAL OR RESIDENTIAL

- NO SAMPLE COLLECTED
- SAMPLE COLLECTED, NO EXCEEDANCE
- SAMPLE COLLECTED, ONE OR MORE EXCEEDANCES

VISUAL/OLFACTORY OBSERVATIONS:

- NO OBSERVED IMPACTS
- ODOR OR STAINING
- MINOR TLM/OLM BLEBS
- TLM/OLM PRESENT

N W E S

0 50 100 150 200

SCALE IN FEET

HALEY & ALDRICH

SENECA FALLS FORMER MGP
187 FALL STREET
SENECA FALLS, NEW YORK

SITE PLAN - SOIL SUMMARY

SCALE: AS SHOWN
FEBRUARY 2015

Figure 2

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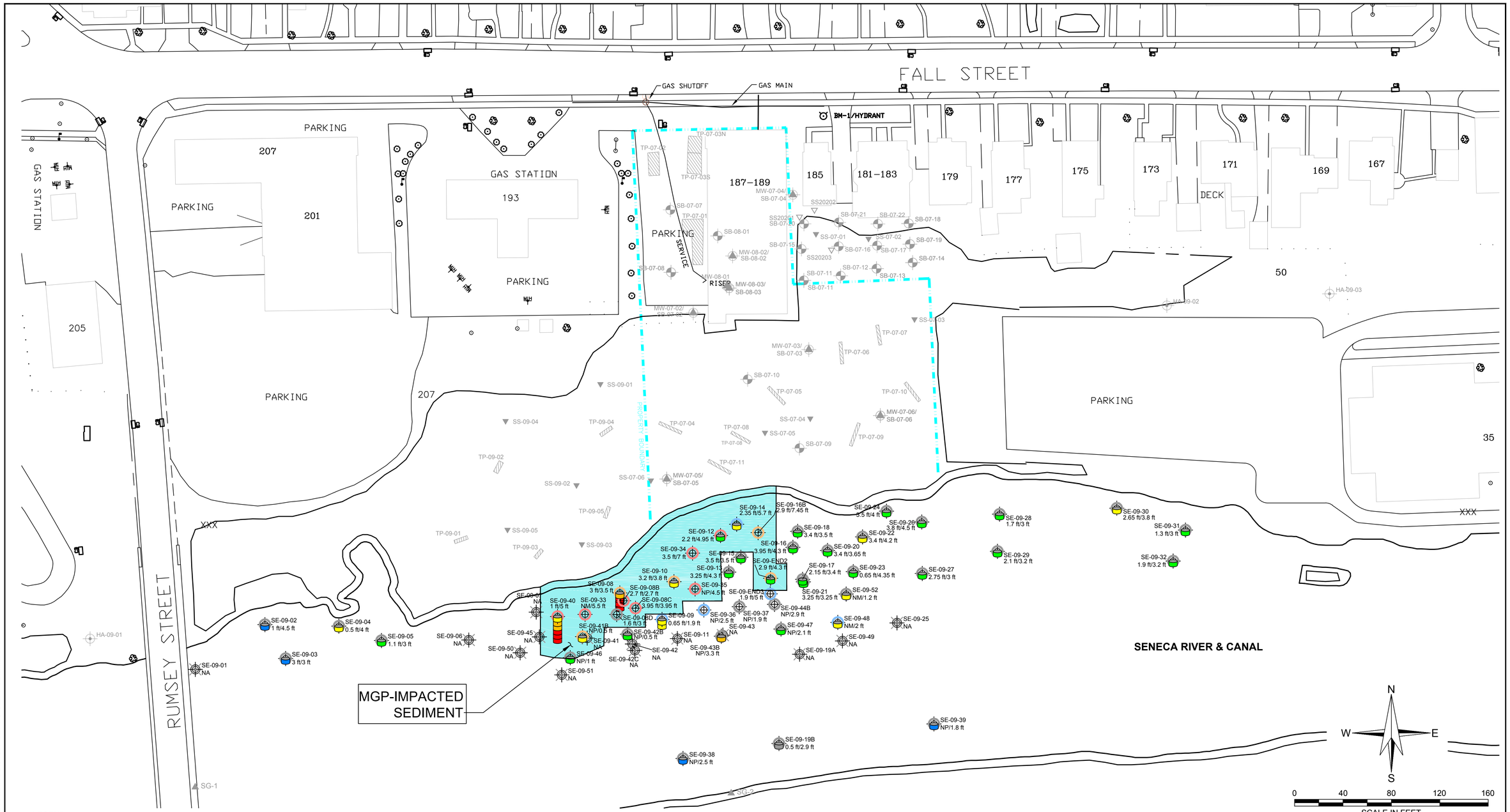
PROPOSED REMEDIAL ACTION PLAN FIGURES
Seneca Fall MGP Site, Site No. 850010



LEGEND:

- PROPERTY LINE
- MONITORING WELL
- SOIL BORING
- SURFACE SOIL SAMPLE
- TEST PIT
- STREAM GAUGE
- HAND AUGER LOCATION
- SE-09-04 0.5 ft/4 ft — SEDIMENT LOCATION WITH THICKNESS OF SOFT SEDIMENT/DEPTH TO REFUSAL
- RIVER - AREA OF MGP-IMPACTED SEDIMENTS

SEDIMENT TOWER LEGEND:

- TOP OF SEDIMENT
- 0 TO 0.5FOOT BGS
- 0.5 TO 1 FEET BGS
- 1 TO 1.5 FEET BGS
- 1.5 TO 2 FEET BGS
- 2 TO 2.5 FEET BGS
- 2.5 TO 3 FEET BGS

SEDIMENT TOWER COLOR LEGEND:

TOTAL PAHs

- NON-DETECT TO 0.1 MG/KG
- 0.1 TO 1 MG/KG
- 1 TO 10 MG/KG
- 10 TO 100 MG/KG
- 100 TO 1000 MG/KG
- >1000 MG/KG

VISUAL/OLFACTORY OBSERVATIONS:

- NO OBSERVED IMPACTS
- ODOR OR STAINING
- MINOR TLM/OLM BLEBS
- TLM/OLM PRESENT
- REFUSAL - NO SEDIMENT PRESENT

NOTES:

1. SEDIMENT DOT COLOR IS BASED ON MAXIMUM TOTAL PAHs PER SAMPLE LOCATION.
2. SEDIMENT EXPLORATION LOCATION SE-09-19 WAS NOT COMPLETED.
3. NA: NOT AVAILABLE
   NM: NOT MEASURED
   NP: NOT PENETRABLE
4. ALL LOCATIONS AND DIMENSIONS APPROXIMATE.

HALEY & ALDRICH

SENECA FALLS FORMER MGP
187 FALL STREET
SENECA FALLS, NEW YORK

SITE PLAN - SEDIMENT SUMMARY

SCALE: AS SHOWN
FEBRUARY 2015

Figure 3

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PROPOSED REMEDIAL ACTION PLAN FIGURES
Seneca Fall MGP Site, Site No. 850010

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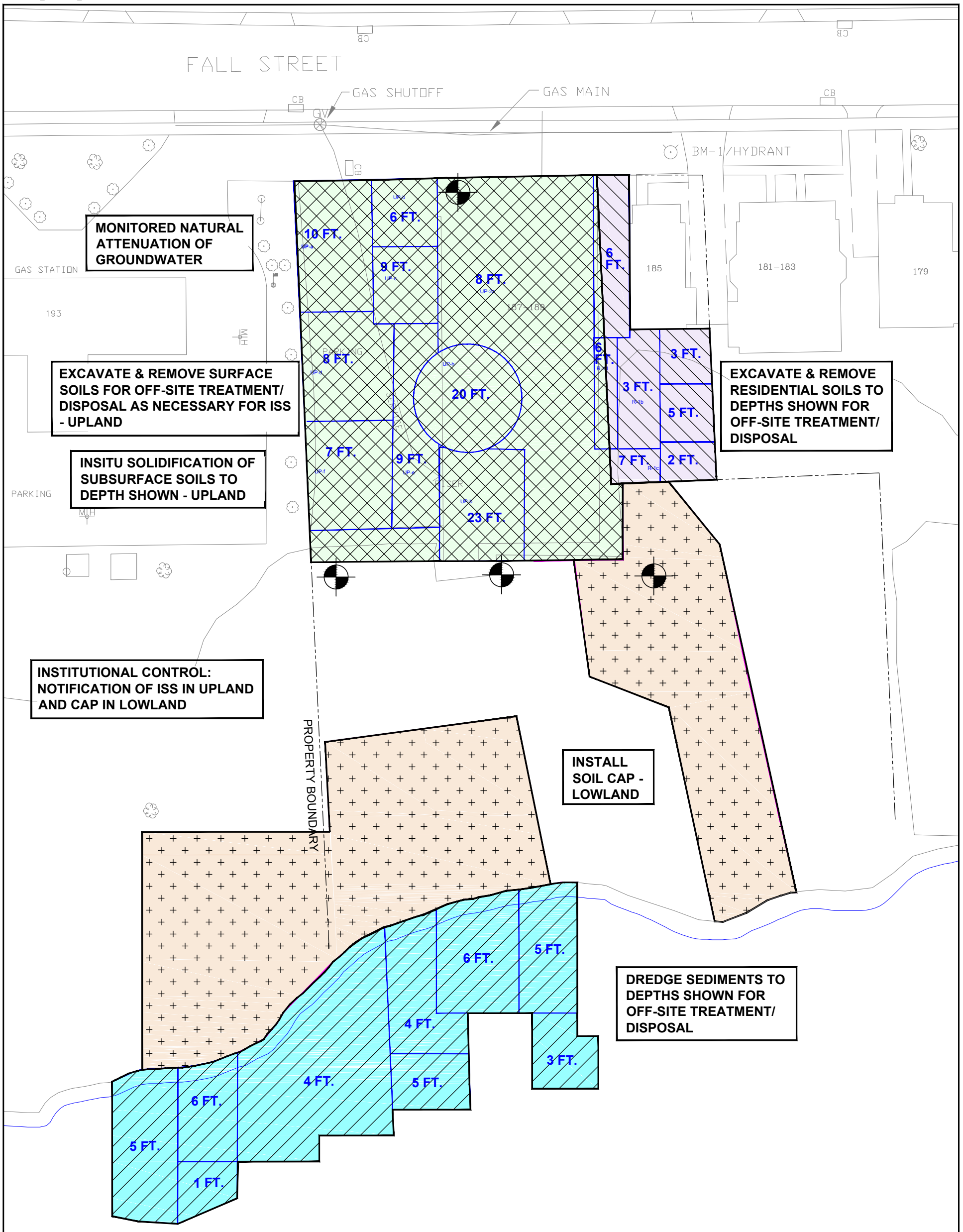

LEGEND:

- UPLAND PROPERTY - AREA OF MGP-IMPACTED SOILS
- RESIDENTIAL PROPERTY - AREA OF MGP-IMPACTED SOILS
- LOWLAND PROPERTY - AREA OF MGP-IMPACTED SOILS
- RIVER - AREA OF MGP-IMPACTED SEDIMENTS
- ISS OPTION
- SEDIMENT DREDGING OPTION
- SOIL CAP
- SHALLOW SOIL EXCAVATION
- POST-REMEDIATION MONITORING WELLS

N W E S

0 40 80

SCALE IN FEET

NOTES:

1. ALL LOCATIONS AND DIMENSIONS APPROXIMATE.

HALEY & ALDRICH

SENECA FALLS FORMER MGP
187 FALL STREET
SENECA FALLS, NEW YORK

Proposed Remedy

February 2015

Figure 4

PROPOSED REMEDIAL ACTION PLAN FIGURES
Seneca Fall MGP Site, Site No. 850010