PROPOSED REMEDIAL ACTION PLAN

NYSEG - Lyons MGP
State Superfund Project
Lyons, Wayne County
Site No. 859020
February 2015

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

PROPOSED REMEDIAL ACTION PLAN

NYSEG - Lyons MGP
Lyons, Wayne County
Site No. 859020
February 2015

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:

Lyons Public Library
122 Broad Street
Lyons, NY 14489
Phone: 315-946-9262

A public comment period has been set from:

2/27/2015 to 3/30/2015

A public meeting is scheduled for the following date:

3/5/2015 at 7:00 PM

Public meeting location:

Lyons Community Center

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 3/30/2015 to:

Kiera Thompson
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
kiera.thompson@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 approximately one acre former Manufactured Gas Plant (MGP) site is located in a

mixed commercial/residential area in the central business district of the Village of Lyons, Wayne County. The site is bordered by Water Street to the south, Geneva Street to the east, William Street to the west, a paved parking area owned by the Village of Lyons to the north with a Ford Dealership beyond. The Erie Canal is located about 225 feet southwest from the site. The nearest residence is directly across Geneva Street from the site.

Site Features: The site is currently used as a parking lot, leased to Wayne County by NYSEG. The lot is surrounded on all sides by grass-covered and landscaped areas. In the north/central area of the site is a NYSEG gas regulator station, a one story masonry building which contains regulating and metering equipment. There are no occupied structures on the site.

Current Zoning and Land Use: The site is zoned C-1, "Commercial District." All adjacent parcels to the north, west, and south are also C-1. The parcels to the east across Geneva Street/Route 14 are zoned R-1, "Low Density Residential."

Past Use of the Site: The Lyons MGP was constructed in 1859 by the Lyons Gas Light Company. The MGP was constructed and operated as a coal carbonization plant using coal as a feedstock. The annual gas production ranged from two million cubic feet in 1889, to eight million cubic feet in 1899. The MGP shut down operation in 1917.

A Preliminary Site Screening investigation (Phase I) was conducted in 1990. A Task II site investigation was performed in 1992 (Phase II). NYSEG entered into Multi-site Order on Consent with the NYSDEC in 1994, which includes this site.

Site Geology and Hydrogeology: The site is underlain by 3 to 18 feet of fill material, which sits atop a 2 - 11 foot thick silt and clay unit. Below the silt and clay is a sand and gravel unit which extends to shale bedrock. Bedrock ranges from 38 - 58 feet below ground surface. Depth to the groundwater table ranges from 17 - 25 feet below ground surface and groundwater flows generally southwest toward 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 (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) are/is being evaluated in addition to an alternative which would allow for unrestricted use of the site.

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

SECTION 5: ENFORCEMENT STATUS

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

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

New York State Electric and 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 Lyons 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:

- groundwater
- soil

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
Polycyclic Aromatic Hydrocarbons (PAHs), Total
BENZENE
TOLUENE
ETHYLBENZENE
XYLENE (MIXED)
ARSENIC
MERCURY
CYANIDES(SOLUBLE CYANIDE SALTS)

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.

Nature and Extent of Contamination: Surface soils, subsurface soils, and groundwater were sampled and analyzed for semi-volatile organic compounds (SVOCs) including polycyclic

aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), metals including cyanides, pesticides, and polychlorinated biphenyls (PCBs), during the RI. Based upon investigations conducted to date, the primary contaminants of concern are MGP-related residuals (coal tar and coal tar stained soils) which result in PAH, benzene, toluene, ethylbenzene, arsenic, mercury, and cyanide impacts to soil and groundwater.

Soil: PAHs and total cyanide were detected above the commercial use soil cleanup objectives (SCOs) in subsurface soils in two general areas of the site. One area is the western portion of the site around a gas holder foundation where hardened coal tar mixed with fill is present from 4-8 feet below ground surface (bgs) and coal tar coated and saturated soils, hardened tar and coal tar blebs were observed from 14-18 feet bgs. Here, the maximum total cyanide concentration was observed at 138 ppm at 9-10 feet bgs, and the maximum arsenic concentration was observed at 76 parts per million (ppm) from 42-43 feet bgs. The other impacted area is in the eastern portion of the site below the former MGP building foundation and in the footprint of the former coal, lime, and brick shed, where coal tar mixed in the soil matrix from 3-19 feet bgs was observed with coal tar blebs observed to depths of approximately 23 feet bgs. In this area, a maximum concentration of 4,106 ppm total PAHs was observed from 24-25 feet bgs. Benzene was observed at a maximum concentration of 9.3 ppm in the area of the former MGP building, which exceeded unrestricted SCOs but did not exceed commercial SCOs. Mercury was observed at a concentration of 4.5 ppm in this area as well, from 3-4 feet bgs. However, elemental mercury blebs, possibly from broken pressure gauges used in the former MGP or NYSEG service operations, were observed during test pitting in the central portion of the site. Out of twelve surface soil samples collected from 0-2 inches bgs, only two demonstrated low-levels exceeding the commercial use SCOs for individual PAHs, which is consistent with concentrations commonly found in urban areas. While MGP impacts are inferred to extend a short distance under Geneva Street/Route 14 beyond the eastern site boundary, soil contamination has not extensively migrated off-site.

Groundwater: Groundwater concentrations of VOCs exceeding the SCGs were not identified at the site. Two PAHs (benzo(a)anthracene and chrysene) were detected at low-levels, estimated concentrations slightly over the SCGs in one of two sampling events during the RI. Total cyanide was detected in one shallow zone well (17-28 feet bgs) during one of the two sampling rounds conducted, at a concentration of 496 ppb, greater than the SCG of 200 ppm. No MGP-related impacts were observed in any monitoring wells to the north and south of the site during the RI. Wells installed off-site to the east in the location of a former gasoline and automotive service station found BTEX, isopropyl benzene, o-Cresol, p-Cresol and naphthalene above SCGs. A spill reported for this location in September 2000 involved a tank pull and small dig out and was closed not meeting standards. The nature of these impacts and the location of the wells in relation to the groundwater flow direction (side gradient) indicate that these are attributable to activities from the former service station.

Special Resources Impacted/Threatened: The site is located in the center of the Town of Lyons. The NYS Barge Canal is located 225 feet to the south of the site. No impacts from the site have been observed reaching the canal.

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 the contaminated groundwater because the area is served by a public water supply that is not affected by this contamination. Persons who dig below the ground surface may come into contact with contaminants in subsurface soil.

6.5: Summary of the Remediation Objectives

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

The remedial action objectives for this site are:

Groundwater

RAOs for Public Health Protection

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

RAOs for Environmental Protection

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

Soil

RAOs for Public Health Protection

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

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.
- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

Soil Vapor

RAOs for Public Health Protection

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

SECTION 7: 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 In-situ Stabilization of MGP Source Materials, Soil Cover, and ICs remedy.

The estimated present worth cost to implement the remedy is $2,810,000. The cost to construct the remedy is estimated to be $2,480,000 and the estimated average annual cost is $32,000.

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. In-Situ Solidification

In-situ solidification (ISS) will be implemented in two areas totaling 0.14 acre where total polycyclic aromatic hydrocarbon (PAHs) concentrations exceed 500 ppm. These areas include the northwest portion of the site containing a portion of the former Gas Holder B foundation, and the eastern portion of the site containing the footprint of the former MGP building and a portion of the former coal, lime, and brick shed. Approximately 3,550 cubic yards of soil will be solidified The treatment zone will extend from approximately 4 feet below present grade to 15 feet below present grade The ISS treatment zone will extend into soils containing any observed source material below 15 feet below the present grade. Jet or pressure grouting will be used to address impacted soil beneath or around major obstructions if necessary. 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.

3. Excavation

To facilitate implementation of ISS, the top four (4) feet of soil in the ISS area, plus additional soil to accommodate the volume expansion associated with ISS, along with any subsurface MGP-related structures, will be excavated. Approximately 3,460 cubic yards of soil and debris will be excavated and either stockpiled for re-use or disposed off-site. Soil which does not exceed SCOs for commercial use and the protection of groundwater may be stockpiled to backfill the on-site excavation or to construct the site cover, to the extent that a sufficient volume of on-site soil is available. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in as necessary to complete the backfilling of the excavation above the ISS mass 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 4.

4. Cover System

A site cover will be required to allow for commercial use and to protect the ISS component of the remedy. The cover will consist either of the structures such as buildings, pavement, sidewalks comprising the site development, or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is required, it will consist of 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. In the ISS treatment area, it will consist of a minimum of four feet of soil meeting the SCOs for commercial use, 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).

5. Institutional Control

Imposition of an institutional control in the form of 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.

6. 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 any off-site impacts, and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in Paragraph 5 above.
Engineering Controls: The solidified soil discussed in Paragraph 2 above, and the soil cover system as discussed in Paragraph 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 further investigation and remediation if MGP-related contamination is encountered in the subsurface beneath the road or within the utility corridor. The nature and extent of contamination in areas where access was previously limited or unavailable will be thoroughly investigated in a timely manner pursuant to a plan approved by the Department. A copy of the Site Management Plan will be provided to the relevant public agency for any site-related soil contamination remaining within public highway or utility corridors.
- 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 four categories; volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), other semi-volatile organic compounds (SVOCs), 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 soil. Groundwater impacts were found to be minimal.

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 where 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 in two general areas at the site as depicted in Figure 2: around Gas Holder B's foundation on the western portion of the site, and in the eastern area of the site, around the former MGP building foundation northward including the footprint of a former coal, lime, and brick shed. Soil impacts in this location are inferred to extend a short distance under Geneva Street/Route 14 beyond the eastern site boundary. The wastes/sources observed in the western portion of the site in the shallow zone (4 to 8 feet below ground surface (bgs)) consisted of hardened coal tar mixed with fill and in the deeper subsurface (14 to 18 feet bgs) saturated soil coated with coal tar, hardened coal tar, and coal tar blebs. In the eastern portion of the site, hardened tar was observed from 3-4 feet bgs, coal tar mixed in the soil matrix was observed from 6 to 19 feet bgs, with coal tar blebs observed to depths of approximately 23 feet bgs These wastes/source materials contain benzene, toluene, ethylbenzene, arsenic, mercury, total cyanide, and polycyclic aromatic hydrocarbons (PAHs)). The remedial investigation indicated that these source materials were not migrating or contributing to soil or groundwater contamination outside of the immediate areas in which impacts were observed.

During the RI, soil containing mercury blebs was encountered during excavation of Test Pit 3 which was located at the eastern portion of the site, extending from the MGP building west toward the center of the site. Approximately six cubic yards of mercury-impacted soil was segregated from the soil excavated from the other areas of the test pit. These segregated soils were containerized, sampled, and sent off-site for proper disposal. Sampling of soils and groundwater did not detect any additional sources of mercury at the site.

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

Groundwater

Groundwater samples were collected from overburden in two zones: shallow overburden which straddles the water table and ranges from 17-28 feet bgs at the site, and deep overburden/top of the bedrock about 31-62 feet bgs. Seven groundwater monitoring wells installed and sampled during a Phase 2 investigation in 1991 and 1992 were redeveloped and used in the 2011 remedial investigation. Fifteen additional wells were installed and sampled during the 2011 remedial investigation (RI). Monitoring well locations and the approximate extent of groundwater that exceeds SCGs are depicted on Figure 3 Only two on-site wells had detections exceeding the SCGs (NYSDEC ambient water quality standards and guidance values): a groundwater sample collected from the deep overburden zone at MWPZ5 which contained estimated concentrations of PAHs (benzo(a)anthracene and chrysene) in one of the two sampling events; and total cyanide detected in one shallow zone well (MW1S) in a concentration exceeding the SCGs for one of two sampling rounds during the RI.

Wells installed off-site to the southeast in the location of a former gasoline and automotive service station at 67 Geneva Street (MW10S and MW10D), also the location of a previously reported spill and tank pull which was closed not meeting standards, indicated the presence of BTEX, isopropyl benzene, 2-methylphenol (o-Cresol), 4-methylphenol (p-Cresol), and naphthalene above SCGs. The nature of these impacts and the location of the wells in relation to the groundwater flow direction (side gradient) indicate that these impacts are attributable to activities from the former service station.

Chloroform was detected in groundwater from four wells (MW1D, MW2D, MW3D, MW9D) during both RI sampling rounds. Chloroform is a common lab contaminant and not believed to be present in the groundwater at the site.

Aside from total cyanide which is an MGP-related contaminant, the inorganic compounds found in groundwater (chromium, copper, iron, magnesium, manganese, nickel, and sodium) are found site-wide including the upgradient wells, and are considered to represent site background conditions. Therefore, these inorganics are not considered to be site-specific contaminants of concern.

Table #1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG (ppb)[b]	Frequency Exceeding SCG
VOCs			
Benzene	ND - 11	1	2 of 48
Toluene	ND - 190	5	2 of 48
Ethylbenzene	ND - 71	5	2 of 48
Total Xylene	ND - 620	5	4 of 48
Chloroform	ND - 11	7	8 of 48
Isopropyl benzene	ND - 80	5	2 of 48
PAHs			
Benzo(a)anthracene	ND - 0.64	0.002	1 of 47
Chrysene	ND - 0.43	0.002	1 of 47
Naphthalene	ND - 18	10	2 of 47

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG (ppb)[b]	Frequency Exceeding SCG
Other SVOCs			
2-Methylphenol (o-Cresol)	ND - 4.4	1	1 of 47
4-Methylphenol (p-Cresol)	ND - 8	1	1 of 47
Metals			
Chromium	ND - 327	50	7 of 47
Copper	ND - 226	200	1 of 47
Iron	ND - 12000	300	22 of 47
Magnesium	25300 - 199000	35000	17 of 47
Manganese	ND - 1290	300	6 of 47
Nickel	ND - 1640	100	5 of 47
Sodium	135000 - 423000	20000	47 of 47
Cyanides			
Total Cyanide	ND - 496	200	1 of 48

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).

The primary groundwater contaminants associated with the site are the PAHs (benz(a)anthracene and chrysene) and total cyanide. However, the PAH levels only slightly exceed the SCG and are below the method reporting limit, and were only observed in one of two groundwater monitoring rounds.

Based on the findings of the RI the site related contaminants consisting of PAHs and total cyanide has resulted in inconsistent detections of contaminant concentrations in groundwater. The low concentrations and inconsistent contravention of groundwater standards indicate that site-related groundwater contamination is minor and therefore no remedial alternatives need to be evaluated for groundwater.

Soil

Surface and subsurface soil samples were collected at the site during the RI. Surface soil samples were collected from a depth of 0-2 inches to assess direct human exposure. Subsurface samples were collected from several intervals to a depth of 61 feet bgs.

Surface Soils: There were no restricted commercial soil cleanup objectives (SCOs) exceeded for VOCs in surface soils. There were two contaminants which exceeded restricted commercial SCOs for PAHs in surface soils: dibenz[a,h]anthracene and benzo[a]pyrene. Benz[a]anthacene, benzo[b]fluoranthene, benzo[k]fluoranthene, and indeno[1,2,3-cd]pyrene were all detected in concentrations above unrestricted SCOs but not commercial SCOs. The SCO levels for surface soils are consistent with commonly measured urban background concentrations for PAHs.

There were no metals in surface soil above restricted commercial SCOs. However, there were two metals which exceeded unrestricted SCOs: lead (three occurrences), and mercury (three occurrences). These metals concentrations may be indicative of background soil or urban fill concentrations as they were also detected in similar levels in subsurface soils/fill.

Table #2 – Surface Soil

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use Commercial SCG[c] (ppm)	Frequency Exceeding Restricted Commercial SCG
PAHs					
Benzo(a)anthracene	0.11 -2.7	1	2 of 8	5.6	0 of 8
Benzo(b)fluoranthene	0.15 - 3.8	1	3 of 8	5.6	0 of 8
Benzo(k)fluoranthene	0.088 - 1.9	0.8	2 of 8	56	0 of 8
Benzo(a)pyrene	1.2 -3.5	1	3 of 8	1	3 of 8
Chrysene	ND - 2.5	1	3 of 8	56	0 of 8
Dibenz(a,h)anthracene	ND - 0.57	0.33	2 of 8	0.56	1 of 8
Indeno(1,2,3-cd)pyrene	0.074 - 1.5	0.5	3 of 8	5.6	0 of 8
Metals					
Lead	24.1 - 88.8	63	3 of 8	1000	0 of 8
Mercury	0.046 - 2	0.18	3 of 8	2.8	0 of 8

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.

Subsurface Soils: Subsurface soil samples were collected from test pits and soil borings at several intervals to a maximum depth of 61 feet bgs. Most occurrences of soil exceeding the commercial SCOs were in samples collected from 0-15 feet bgs, except for some metals which were also detected at depths over 30 feet bgs. No PCBs were detected above unrestricted SCO concentrations in this investigation.

No VOCs were observed to exceed commercial SCOs in subsurface soils. VOCs exceeded unrestricted SCOs for the four BTEX compounds at only two locations; in the footprint of the former MGP building on the eastern portion of the site, and off-site in the vicinity of the former gasoline and automotive service station. Benzene was observed at a maximum concentration of 9.3 ppm in the former MGP building area. Acetone was also detected above unrestricted SCOs in soils from the site, but it is a common lab contaminant.

PAHs were detected above unrestricted and commercial SCOs only in the western portion of the site outside of a gas holder, and the eastern portion of the site around the footprint of the former MGP building north to the former coal, lime, and brick shed. The following PAHs exceeded commercial SCOs: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a, h)anthracene, indeno(1,2,3-cd)pyrene, naphthalene, and phenanthrene. Acenapthene, acenaphthylene, anthracene, fluoranthene, fluorene, and pyrene exceeded unrestricted SCOs but did not exceed commercial SCOs. No commercial SCOs were exceeded by other SVOCs in subsurface soils. The only other SVOCs detected exceeding the unrestricted SCOs but not the

commercial SCOs were dibenzofuran, 2-methylphenol (o-Cresol), 4-methylphenol (p-Cresol), and phenol.

Cyanide, an MGP-related contaminant, was found exceeding unrestricted and commercial SCOs in one sample located in the western portion of the site outside the gas holder. Other metals exceeding unrestricted and commercial SCOs were arsenic, barium, copper, and mercury. Arsenic and mercury were found at 0-15 feet bgs and 30-60 feet bgs depths, but barium and copper were only found at depths ranging from 30-60 feet bgs. Lead, nickel, and zinc were also detected in the subsurface soils on-site, but only exceeding unrestricted SCOs.

Table #3 – Subsurface Soil

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use Commercial SCG[c] (ppm)	Frequency Exceeding Restricted Commercial SCG
VOCs					
Benzene	ND - 9.3	0.06	5 of 87	44	0 of 87
Toluene	ND - 150	0.7	7 of 87	500	0 of 87
Ethylbenzene	ND - 45	1	7 of 87	390	0 of 87
Total Xylene	ND - 470	0.26	10 of 87	500	0 of 87
Acetone	ND - 0.25	0.05	5 of 87	500	0 of 87
PAHs					
Acenaphthene	ND - 44	20	5 of 87	500	0 of 87
Acenaphthylene	ND - 270	100	4 of 87	500	0 of 87
Anthracene	ND - 260	100	7 of 87	500	0 of 87
Benzo(a)anthracene	ND - 200	1	12 of 87	5.6	12 of 87
Benzo(b)fluoranthene	ND - 110	1	12 of 87	5.6	12 of 87
Benzo(k)fluoranthene	ND - 79	0.8	11 of 87	56	1 of 87
Benzo(a)pyrene	ND - 130	1	12 of 87	1	12 of 87
Chrysene	ND - 160	1	12 of 87	56	5 of 87
Dibenz(a,h)anthracene	ND - 19	0.33	8 of 87	0.56	8 of 87
Fluoranthene	ND - 340	100	8 of 87	500	0 of 87
Fluorene	ND - 250	30	8 of 87	500	0 of 87
Indeno(1,2,3-cd)pyrene	ND - 40	0.5	12 of 87	5.6	11 of 87
Naphthalene	ND - 1400	12	10 of 87	500	5 of 87
Phenanthrene	ND - 660	100	9 of 87	500	2 of 87
Pyrene	ND - 320	100	8 of 87	500	0 of 87
Other SVOCs					
Dibenzofuran	ND - 220	7	9 of 87	350	0 of 87
2-Methylphenol (o-Cresol)	ND - 10	0.33	1 of 87	500	0 of 87
4-Methylphenol (p-Cresol)	ND - 23	0.33	4 of 87	500	0 of 87

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use Commercial SCG[c] (ppm)	Frequency Exceeding Restricted Commercial SCG
Phenol	ND - 15	0.33	3 of 87	500	0 of 87
Metals					
Arsenic	ND - 76.2	13	16 of 87	16	10 of 87
Barium	6.5 - 627	350	1 of 87	400	1 of 87
Copper	3.9 - 1130	50	15 of 87	270	2 of 87
Lead	2.9 - 832	63	6 of 87	1000	0 of 87
Mercury	ND - 4.5	0.18	6 of 87	2.8	1 of 87
Nickel	4.6 - 51.4	30	6 of 87	310	0 of 87
Zinc	13.1 - 176	109	1 of 87	10000	0 of 87
Cyanides					
Total Cyanide	ND - 138	27	1 of 87	27	1 of 87

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.

The primary soil contaminants are PAHs, benzene, and total cyanide associated with residues from the operation of the former MGP. As noted on Figure 2, the primary soil contamination is associated with former MGP structures: the former MGP building on the eastern portion of the site, and the area outside a former gas holder on the western portion of the site; both areas are to be addressed by the proposed remedy.

Some contamination found above the unrestricted SCOs is associated with historic fill activities at the site. Disposal of ash, clinker, and coal has resulted in some inorganic soil contamination above the unrestricted SCOs. However, concentrations for some inorganic constituents are also consistent to the metals concentrations present in samples taken in visually unimpacted native soils at depths up to 60 feet bgs. Benzene only exceeded unrestricted SCOs in one sample collected from the former MGP building area. BTEX compounds were also observed off-site in the vicinity of the former automotive gas and service station which is associated with a former spill and historic service station activities.

Based on the findings of the Remedial Investigation, the presence of MGP-related impacts 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, PAHs and total cyanide.

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. There are no costs associated with this alternative.

Alternative 2: Institutional Controls and Soil Cover

This alternative includes a 1 foot site-wide cover meeting restricted commercial requirements as set forth in 6 NYCRR Part 375-6.7(d). This alternative requires that an institutional control in the form of an environmental easement be placed on the property to limit the site use to commercial use. The easement will also require compliance with a site management plan (SMP) and restricts the use of groundwater. The SMP will include a groundwater monitoring program to determine the effectiveness of the remedy.

Capital Cost:……..$134,000
Annual Costs:……..…….$32,000
Total Present Worth:…….…….$460,000

Alternative 3: In-situ Stabilization of MGP Source Materials, Soil Cover, and Institutional Controls

This alternative calls for the in-situ solidification (ISS) of MGP source materials. A conceptual plan of Alternative 3 is depicted on Figure 5. This includes the relocation of overhead and subsurface utilities, the excavation and removal of the MGP building foundations, a portion of the Gas Holder B foundation, as well as all known MGP piping, soil and fill associated with these features, and excavation of soil to accommodate the ISS. Approximately 3,550 cubic yards of soil will be solidified. ISS treatment will be implemented from approximately 4 – 15 feet bgs, and will extend beyond the 15 foot depth if source material is observed. The soil is mixed in place with cement and/or other hardening materials to form an impermeable, solid mass which prevents migration of MGP related contaminants. The method of ISS mixing will be determined during Remedial Design. Solidified soils are then covered by a sufficient layer of soil to protect them from freeze-thaw cycles. The top foot of this cover will be soil that meets the restricted commercial requirements for cover material set forth in 6 NYCRR Part 375-6.8(d), and is placed over a demarcation layer.

The alternative includes all the remedial elements in Alternative 2 above, which include EC/ICs, a site cover system, and groundwater monitoring to determine the effectiveness of the remedy.

The projected costs for this alternative are as follows:

Capital Cost:……$2,480,000
Annual Costs:……..…….$32,000
Total Present Worth:…….…..$2,810,000

Alternative 4: Excavation of Source Materials, Soil Cover, and Institutional Controls

This alternative includes excavation and off-site disposal of MGP source material and soils exceeding 500 parts per million of total PAHs from ground surface to 15 feet below ground surface. A conceptual plan of Alternative 4 is depicted in Figure 6. This alternative includes the relocation of overhead and subsurface utilities, the excavation and removal of the MGP building foundation, and the excavation and removal of a portion of the Gas Holder B foundation, as well as all known MGP piping, and soil and fill associated with these features. Where source materials are observed below 15 foot depths additional excavation will be required. Approximately 5,210 cubic yards of excavated soils and debris will be transported and disposed off-site at an approved facility. Soils meeting restricted commercial requirements as set forth in Part 375-6.8(d) will be used to backfill the excavated areas over a demarcation layer. The areas on the site at which soils will be excavated are: the eastern portion of the site in the footprint of the former MGP building and the coal, lime, and brick shed, and the western portion of the site around a portion of Gas Holder B.

This alternative includes all the elements of Alternative 3 except that soils to be treated via ISS will instead be excavated and disposed off-site. This alternative also includes all the elements of Alternative 2, which consists of an environmental easement, a 1-foot thick site-wide cover system meeting restricted commercial requirements as set forth in Part 375-6.8(d), and groundwater monitoring to determine the effectiveness of the remedy.

The projected costs for this alternative are as follows:

Capital Cost:……$3,590,000
Annual Costs:……..…….$32,000
Total Present Worth:…….……..$3,920,000

Alternative 5: 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 cleanup objectives listed in Part 375-6.8 (a). A conceptual plan for Alternative 5 is depicted in Figure 7. This alternative would include: the removal and off-site disposal of all MGP foundations, the natural gas regulator station, and a portion of the Route 14/Geneva Street right-of-way, followed by the removal and off-site disposal of all soils exceeding the unrestricted use SCOs. Approximately 30,560 cubic yards of soil/waste material will be removed to an average depth of 30 feet bgs. Soils meeting unrestricted requirements as set forth in Part 375-6.8(d) will be used to backfill the excavated areas. Post excavation groundwater monitoring is planned for 5 years and is incorporated into the capital costs for the remedy.

Capital Cost:..... 10,955,800

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
Alternative 1 - No Action	0	0	0
Alternative 2: Institutional Controls and Soil Cover	134,000	32,000	460,000
Alternative 3: ISS of Source MGP Materials, Soil Cover, and Institutional Controls	2,480,000	32,000	2,810,000
Alternative 4: Excavation of Source Materials, Soil Cover, and Institutional Controls	3,590,000	32,000	3,920,000
Alternative 5 - Restoration to Pre-Disposal or Unrestricted Conditions			10,955,000

Exhibit D

SUMMARY OF THE PROPOSEDREMEDY

The Department is proposing Alternative 3, In-situ Stabilization of MGP Source Materials, Soil Cover, and Institutional Controls as the remedy for this site. Alternative 3 would achieve the remediation goals for the site by implementing ISS in two impacted soils areas on site and the establishment and implementation of institutional and engineering controls which include a site cover system and groundwater monitoring to determine the effectiveness of the remedy. The elements of this remedy are described in Section 7. The proposed remedy is depicted in Figure 5.

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 would satisfy this criterion by eliminating the potential for direct contact with contaminated surface soil and immobilizing source material and contaminants of concern by solidification of the subsurface soils, thereby eliminating the potential ongoing release of contaminants into groundwater. Impacts to groundwater are presently minor and are addressed by restricting groundwater use via institutional controls, in combination with groundwater monitoring to verify the effectiveness of the remedy. Alternative 1 (No Action) does not address site contamination and does not provide any protection to public health and the environment and will not be evaluated further. Alternative 2 (Institutional Controls and Soil Cover System) eliminates direct contact with contaminated surface soils, but poses a continued concern for the presence of coal tar in the soil matrix which could result in construction or utility workers coming in direct contact with contamination. Coal tar present in the soil matrix also creates the potential for ongoing release of contaminants into groundwater. Alternative 4 (Excavation of Source Materials, Soil Cover, and Institutional Controls) satisfies this criterion by eliminating direct contact with contaminated surface and subsurface soils through removal. Alternatives 3 and 4 rely on a restriction of groundwater use at the site via institutional controls to protect human health until the treatment or removal of the contaminant source results in compliance with groundwater quality standards. Alternative 2 would require this restriction in the long term. Alternative 5, (Restoration to Pre-Disposal or Unrestricted Conditions**)** meets this threshold criterion by removal of all contaminated soils and short-term groundwater monitoring to confirm ongoing release from coal tar in the soil matrix has halted any ongoing release of contaminants into groundwater.

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 3 complies with SGCs to the extent practicable. It addresses source areas of contamination to the groundwater and cachieves the commercial use soil cleanup objectives at the surface through construction of a soil cover. It also creates the conditions necessary to restore groundwater quality to the extent practicable by solidifying contaminants in subsurface soils and preventing their migration and release into groundwater. Alternative 2 does not comply with SGCs for subsurface soils and may contribute to the ongoing release of contaminants into groundwater. Since Alternative 2 does not meet this threshold criterion, it will not be discussed further. Alternatives 4 and 5 comply with SGCs through removal or treatment of soils with total PAHs over 500 ppm. Contamination observed in groundwater which is attributable to MGP activities is minor and near non-detect levels. The timeframe in which Alternatives 3, 4, and 5 will achieve SCGs for groundwater are not anticipated to be different. Because Alternatives 3, 4, and 5 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 surface and subsurface soils (Alternatives 4 and 5). Since Alternative 4 would remove soils above commercial SCGs but not to unrestricted conditions, institutional controls such as groundwater and land use restrictions and monitoring will address any remaining contamination. Since Alternative 3 solidifies the impacted subsurface soils rather than removing them, some level of long-term management of coal tar and contaminants of concern in the in-situ stabilized mass will be necessary. However, the potential for direct contact and the leaching of contaminants in the in-situ stabilized mass to groundwater will be greatly reduced. The contaminants remaining in the in-situ stabilized mass will be addressed by institutional controls such as groundwater and land use restrictions and groundwater monitoring. The institutional controls required for Alternatives 3 and 4 are effective methods of control 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.

Alternative 3 will directly reduce the mobility coal-tar and contaminants of concern in soils by the physical solidification of the soil through in-situ stabilization. The volume of contamination will be partially reduced by excavation for the ISS expansion, however much of the volume of contamination will remain in the solidified mass. Alternatives 4 and 5 will reduce the volume of contaminants of concern present at the site by the removal of impacted soil and source material. This soil and source removal under Alternatives 4 and 5 also reduces the mobility of contaminants. Groundwater monitoring required by institutional controls and site management as required for Alternatives, 3, and 4 will reduce the volume of already low-level groundwater contamination at the site in the two areas on the site. Alternative 5 provides the greatest reduction in mobility and volume of contamination.

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

Alternatives 3 and 4 have similar short-term impacts resulting from the relocation of overhead and underground utilities, implementation of ISS and/or removal of the building and holder foundations and associated debris, and excavation and restoration of soils. The methods available to control these impacts are available and reliable. Alternative 5 will involve the greatest excavation quantities and depths, resulting in the greatest negative short-term impacts with a high level of disruption due to the removal and replacement of the existing natural gas regulator station and roadway. A larger truck traffic volume will also be required for Alternative 5. The time needed to achieve the remediation goals will be shortest with Alternative 5. Remediation goals will be achieved in the same timeframes for Alternatives 3 and 4.

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.

Alternative 3 is the most implementable because ISS poses a lower level of difficulty for implementation in the area adjacent to the high-use roadway to the east of the site (Geneva Street/Route 14). Alternative 4 would be less implementable because deep excavation would require greater structural controls and water management. Finally, Alternative 5 would be least implementable due to the removal of the natural gas regulator station and portions of Geneva Street/Route 14 right-of-way. Decommissioning and construction of a new gas regulator station would require a high level of cost, staging, and coordination.

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 4 and Alternative 5 cost the most. Alternative 3 is the most cost effective option as it provides for the current and future land use, addresses potential exposure issues for surface soil, addresses source areas and possible future groundwater impacts via source material solidification with a relatively moderate cost. Alternative 4 is the next most cost-effective option as it provides for all the same protections as Alternative 3 but with a slightly higher cost. Alternative 5 is the least cost effective as its high cost will not lead to a comparatively higher value in added environmental protection or increase in actual land use in addition to the current and future planned land use.

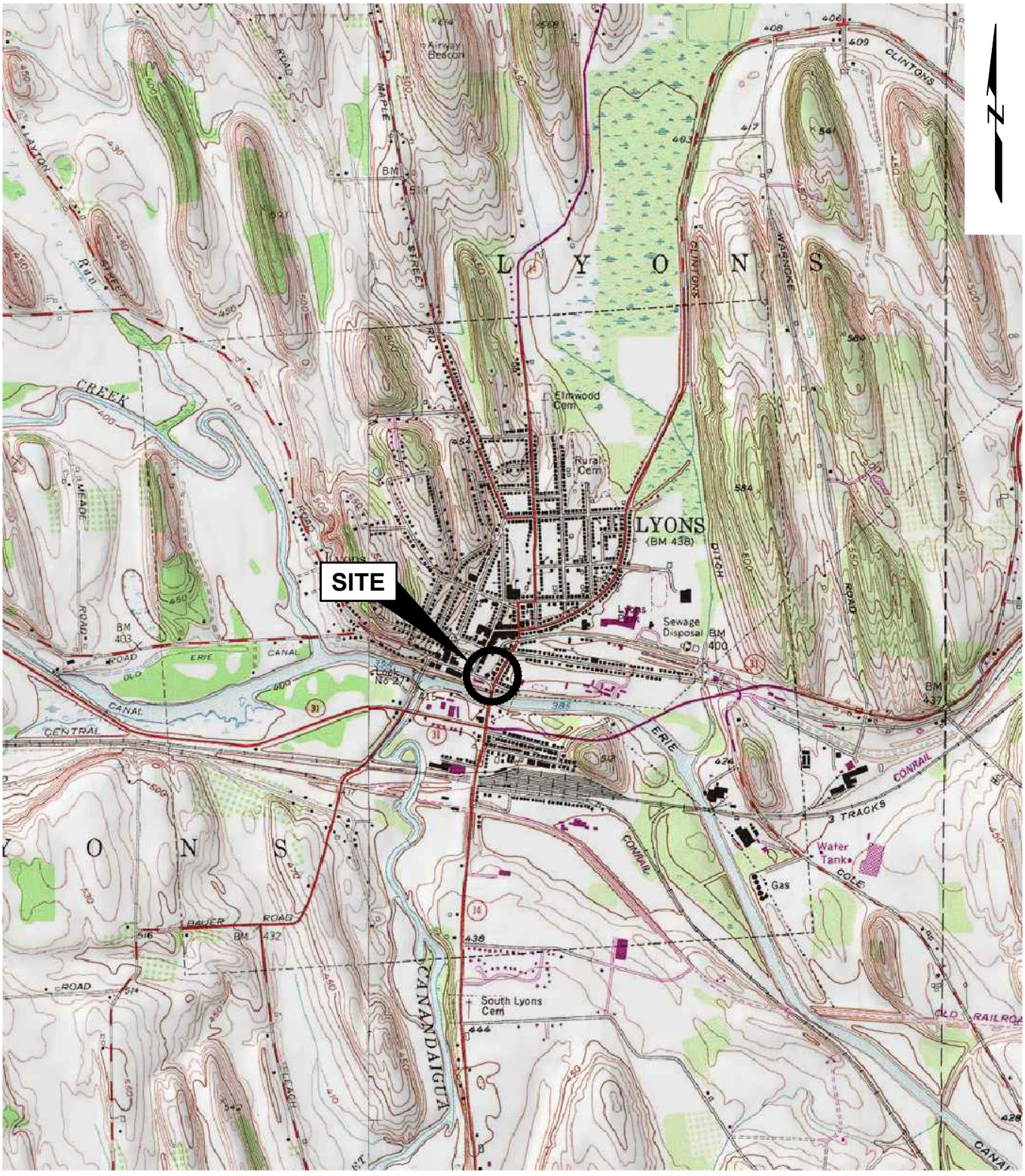
8. Land Use. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

Alternatives 3, 4 and 5 are all consistent with the reasonably-anticipated commercial land use of the site. Alternative 4 will allow for the removal of contaminants of concern while allowing for current and planned land use. Alternative 3 will allow for the current and future planned land use with some level of concern remaining following the implementation of the remedy due to contaminants remaining in the solidified mass. Finally, Alternative 5 would allow for any future land use, however the implementation of this alternative would substantially disrupt natural gas distribution to the Village of Lyons and surrounding areas, parking in the village, and the use of the Route 14/Geneva Street right-of-way.

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



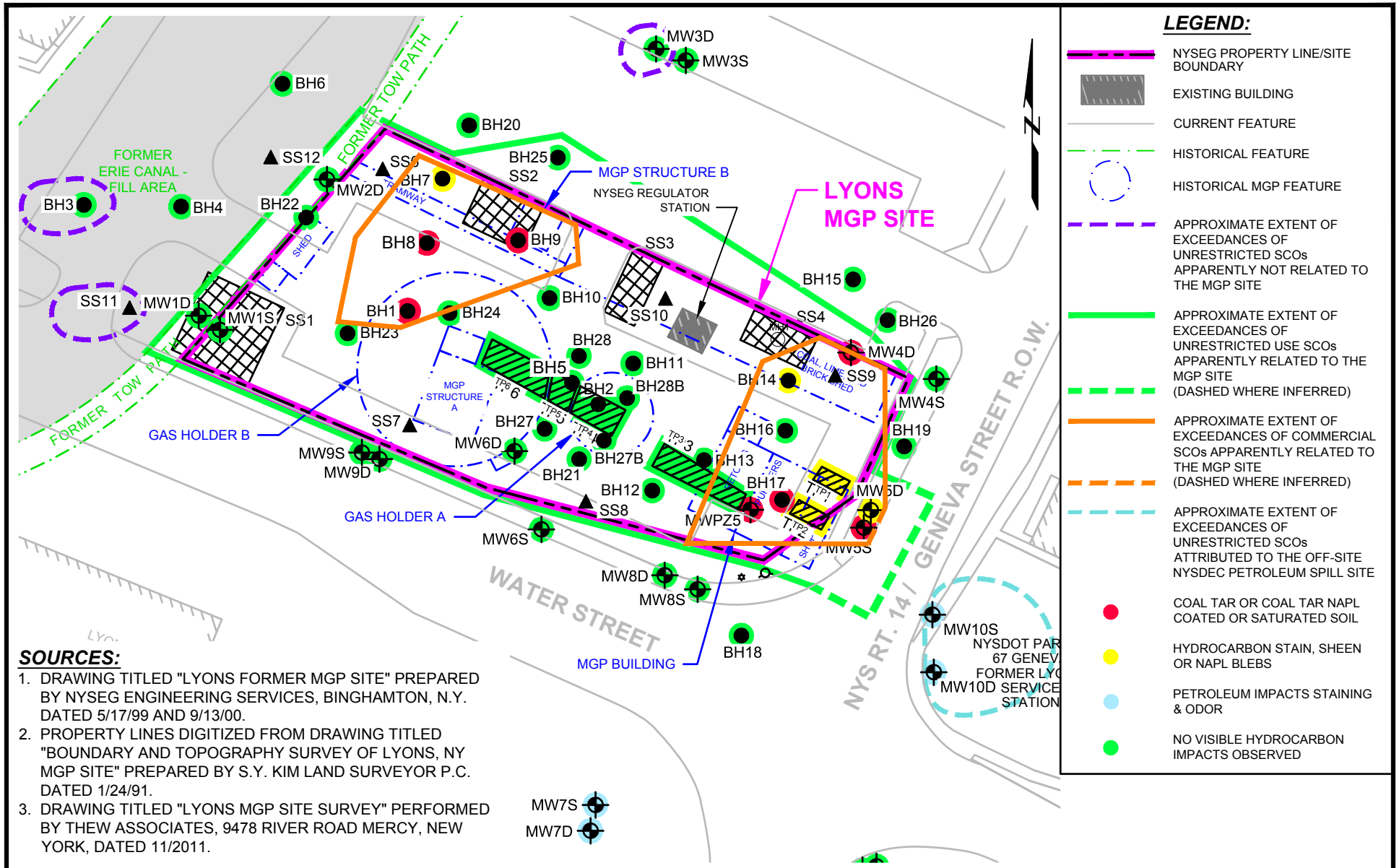
SOURCE:
U.S.G.S. TOPOGRAPHIC MAP CREATED WITH TOPO! ® ©2004
NATIONAL GEOGRAPHIC (www.nationalgeographic.com/topo)

0 1000 2000 4000

SCALE: 1" = 2000'

Feasibility Study Report Lyons MGP Site Village of Lyons, New York	GEI Consultants	SITE LOCATION MAP
NYSEG Binghamton, New York	Project 112830	March 2015 Fig. 1

\\gtb1v-fs01\ I:\Project\NYSEG\LYONS\Drawings\Figures\FS\Lyons-FSR - SLM.dwg - 2/26/2015



LEGEND:

- NYSEG PROPERTY LINE/SITE BOUNDARY
- EXISTING BUILDING
- CURRENT FEATURE
- HISTORICAL FEATURE
- HISTORICAL MGP FEATURE
- APPROXIMATE EXTENT OF EXCEEDANCES OF UNRESTRICTED SCOs APPARENTLY NOT RELATED TO THE MGP SITE
- APPROXIMATE EXTENT OF EXCEEDANCES OF UNRESTRICTED USE SCOs APPARENTLY RELATED TO THE MGP SITE (DASHED WHERE INFERRED)
- APPROXIMATE EXTENT OF EXCEEDANCES OF COMMERCIAL SCOs APPARENTLY RELATED TO THE MGP SITE (DASHED WHERE INFERRED)
- APPROXIMATE EXTENT OF EXCEEDANCES OF UNRESTRICTED SCOs ATTRIBUTED TO THE OFF-SITE NYSDEC PETROLEUM SPILL SITE
- COAL TAR OR COAL TAR NAPL COATED OR SATURATED SOIL
- HYDROCARBON STAIN, SHEEN OR NAPL BLEBS
- PETROLEUM IMPACTS STAINING & ODOR
- NO VISIBLE HYDROCARBON IMPACTS OBSERVED

SOURCES:

1. DRAWING TITLED "LYONS FORMER MGP SITE" PREPARED BY NYSEG ENGINEERING SERVICES, BINGHAMTON, N.Y. DATED 5/17/99 AND 9/13/00.
2. PROPERTY LINES DIGITIZED FROM DRAWING TITLED "BOUNDARY AND TOPOGRAPHY SURVEY OF LYONS, NY MGP SITE" PREPARED BY S.Y. KIM LAND SURVEYOR P.C. DATED 1/24/91.
3. DRAWING TITLED "LYONS MGP SITE SURVEY" PERFORMED BY THEW ASSOCIATES, 9478 RIVER ROAD MERCY, NEW YORK, DATED 11/2011.

0 50 100

SCALE: 1" = 50'

FEASIBILITY STUDY REPORT
LYONS MGP SITE
VILLAGE OF LYONS, NEW YORK

NYSEG
BINGHAMTON, NEW YORK

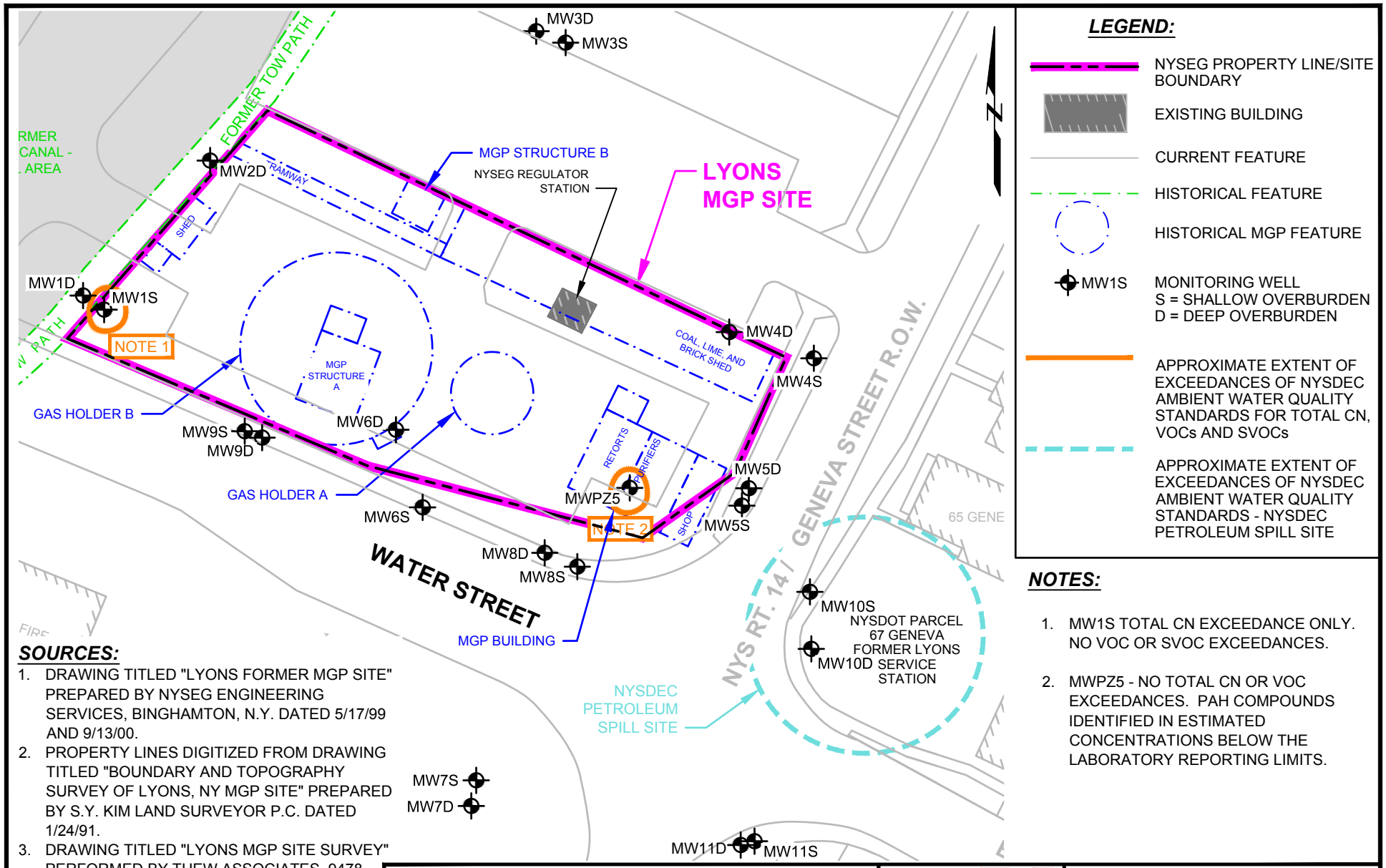
GEI Consultants

Project 112830

APPROXIMATE EXTENT OF SOIL EXCEEDANCES FOR UNRESTRICTED AND COMMERCIAL USE SCOs

March 2015 Figure 2

\\gtb1v-fs01\ I:\Project\NYSEG\LYONS\Drawings\Figures\FS\Lyons-FSR - Figures.dwg - 2/26/2015



LEGEND:

- NYSEG PROPERTY LINE/SITE BOUNDARY
- EXISTING BUILDING
- CURRENT FEATURE
- HISTORICAL FEATURE
- HISTORICAL MGP FEATURE
- MW1S — MONITORING WELL S = SHALLOW OVERBURDEN D = DEEP OVERBURDEN
- APPROXIMATE EXTENT OF EXCEEDANCES OF NYSDEC AMBIENT WATER QUALITY STANDARDS FOR TOTAL CN, VOCs AND SVOCs
- APPROXIMATE EXTENT OF EXCEEDANCES OF NYSDEC AMBIENT WATER QUALITY STANDARDS - NYSDEC PETROLEUM SPILL SITE

NOTES:

1. MW1S TOTAL CN EXCEEDANCE ONLY. NO VOC OR SVOC EXCEEDANCES.
2. MWPZ5 - NO TOTAL CN OR VOC EXCEEDANCES. PAH COMPOUNDS IDENTIFIED IN ESTIMATED CONCENTRATIONS BELOW THE LABORATORY REPORTING LIMITS.

SOURCES:

1. DRAWING TITLED "LYONS FORMER MGP SITE" PREPARED BY NYSEG ENGINEERING SERVICES, BINGHAMTON, N.Y. DATED 5/17/99 AND 9/13/00.
2. PROPERTY LINES DIGITIZED FROM DRAWING TITLED "BOUNDARY AND TOPOGRAPHY SURVEY OF LYONS, NY MGP SITE" PREPARED BY S.Y. KIM LAND SURVEYOR P.C. DATED 1/24/91.
3. DRAWING TITLED "LYONS MGP SITE SURVEY" PERFORMED BY THEW ASSOCIATES, 9478 RIVER ROAD MERCY, NEW YORK, DATED 11/2011.

0 50 100

SCALE: 1" = 50'

FEASIBILITY STUDY REPORT
LYONS MGP SITE
VILLAGE OF LYONS, NEW YORK

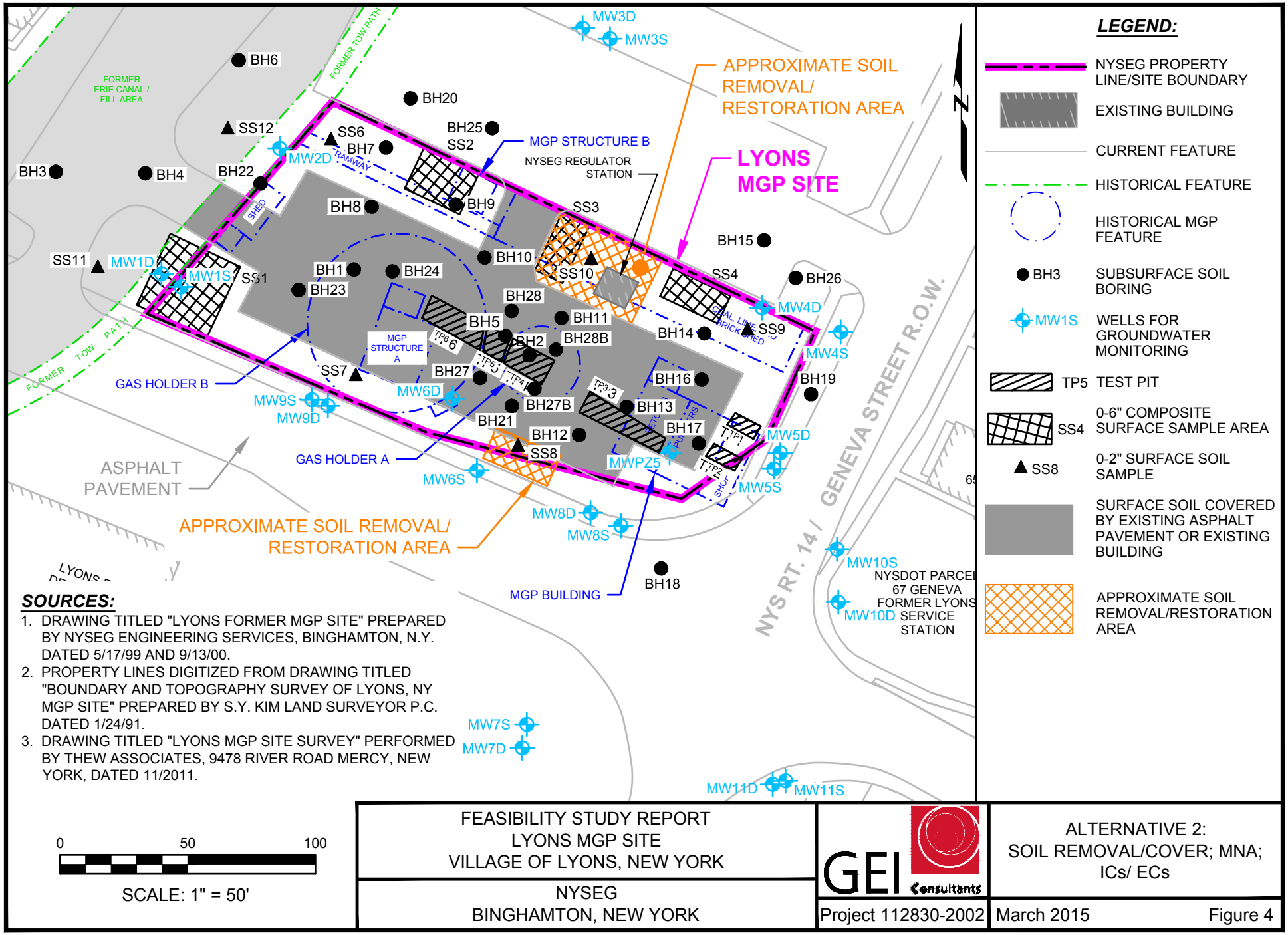
NYSEG
BINGHAMTON, NEW YORK

GEI Consultants

APPROXIMATE EXTENT OF NYSDEC AMBIENT WATER QUALITY STANDARDS EXCEEDANCES

Project 112830-2002 | March 2015 | Figure 3

\\gtb1v-fs01\ I:\Project\NYSEG\LYONS\Drawings\Figures\FS\Lyons-FSR - Figures.dwg - 2/26/2015



SOURCES:

1. DRAWING TITLED "LYONS FORMER MGP SITE" PREPARED BY NYSEG ENGINEERING SERVICES, BINGHAMTON, N.Y. DATED 5/17/99 AND 9/13/00.
2. PROPERTY LINES DIGITIZED FROM DRAWING TITLED "BOUNDARY AND TOPOGRAPHY SURVEY OF LYONS, NY MGP SITE" PREPARED BY S.Y. KIM LAND SURVEYOR P.C. DATED 1/24/91.
3. DRAWING TITLED "LYONS MGP SITE SURVEY" PERFORMED BY THEW ASSOCIATES, 9478 RIVER ROAD MERCY, NEW YORK, DATED 11/2011.

LEGEND:

- NYSEG PROPERTY LINE/SITE BOUNDARY
- EXISTING BUILDING
- CURRENT FEATURE
- HISTORICAL FEATURE
- HISTORICAL MGP FEATURE
- BH3 — SUBSURFACE SOIL BORING
- MW1S — WELLS FOR GROUNDWATER MONITORING
- TP5 — TEST PIT
- SS4 — 0-6" COMPOSITE SURFACE SAMPLE AREA
- SS8 — 0-2" SURFACE SOIL SAMPLE
- SURFACE SOIL COVERED BY EXISTING ASPHALT PAVEMENT OR EXISTING BUILDING
- APPROXIMATE SOIL REMOVAL/RESTORATION AREA

0 50 100

SCALE: 1" = 50'

FEASIBILITY STUDY REPORT
LYONS MGP SITE
VILLAGE OF LYONS, NEW YORK

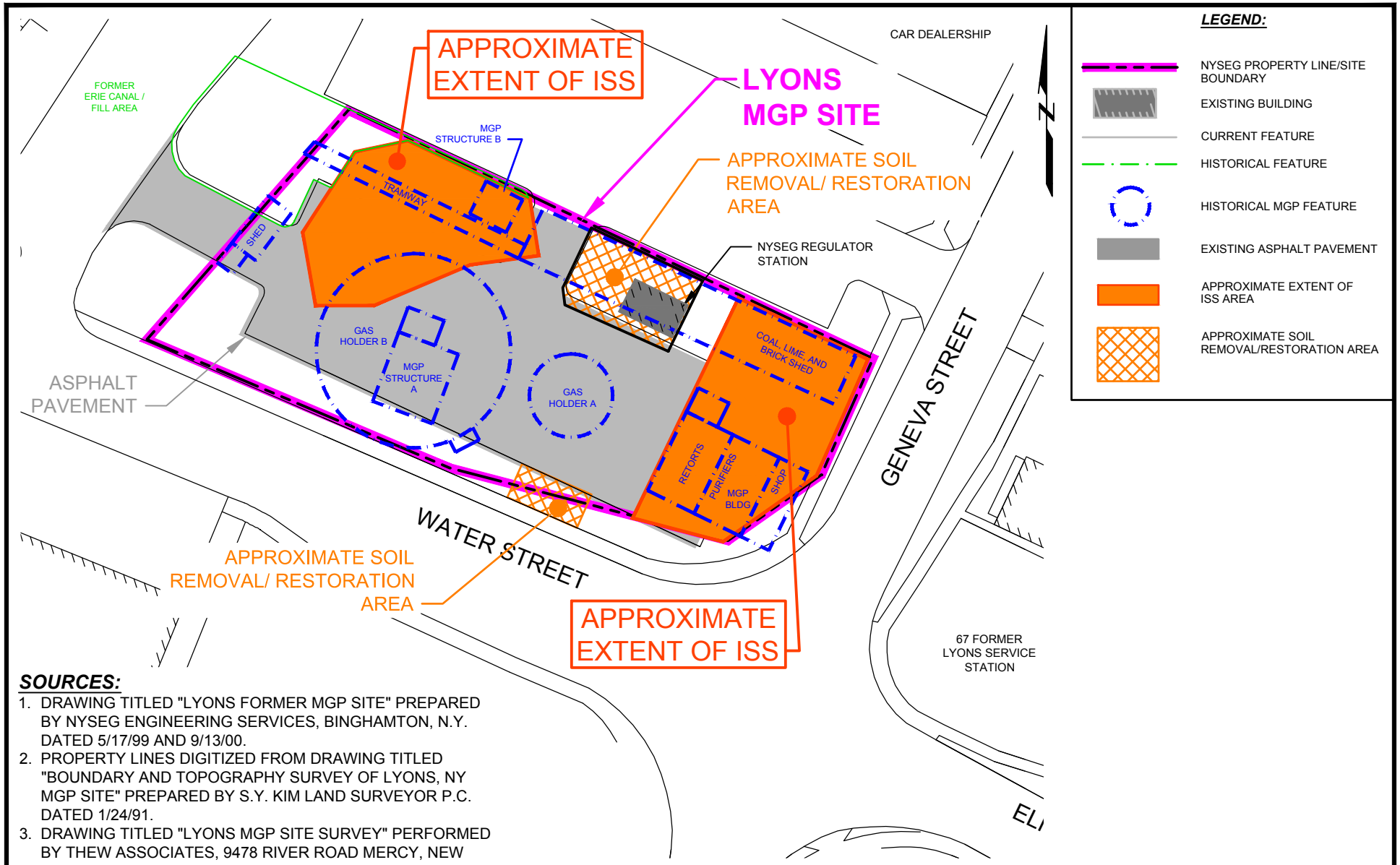
NYSEG
BINGHAMTON, NEW YORK

GEI Consultants

ALTERNATIVE 2:
SOIL REMOVAL/COVER; MNA;
ICs/ ECs

Project 112830-2002 | March 2015 | Figure 4

\\gtb1v-fs01\ I:\Project\NYSEG\LYONS\Drawings\Figures\FS\Lyons-FSR - Figures.dwg - 2/26/2015



SOURCES:

1. DRAWING TITLED "LYONS FORMER MGP SITE" PREPARED BY NYSEG ENGINEERING SERVICES, BINGHAMTON, N.Y. DATED 5/17/99 AND 9/13/00.
2. PROPERTY LINES DIGITIZED FROM DRAWING TITLED "BOUNDARY AND TOPOGRAPHY SURVEY OF LYONS, NY MGP SITE" PREPARED BY S.Y. KIM LAND SURVEYOR P.C. DATED 1/24/91.
3. DRAWING TITLED "LYONS MGP SITE SURVEY" PERFORMED BY THEW ASSOCIATES, 9478 RIVER ROAD MERCY, NEW YORK, DATED 11/2011.

0 50' 100'

SCALE: 1" = 50'

Lyons MGP Site
Village of Lyons, New York

NYSEG
Binghamton, New York

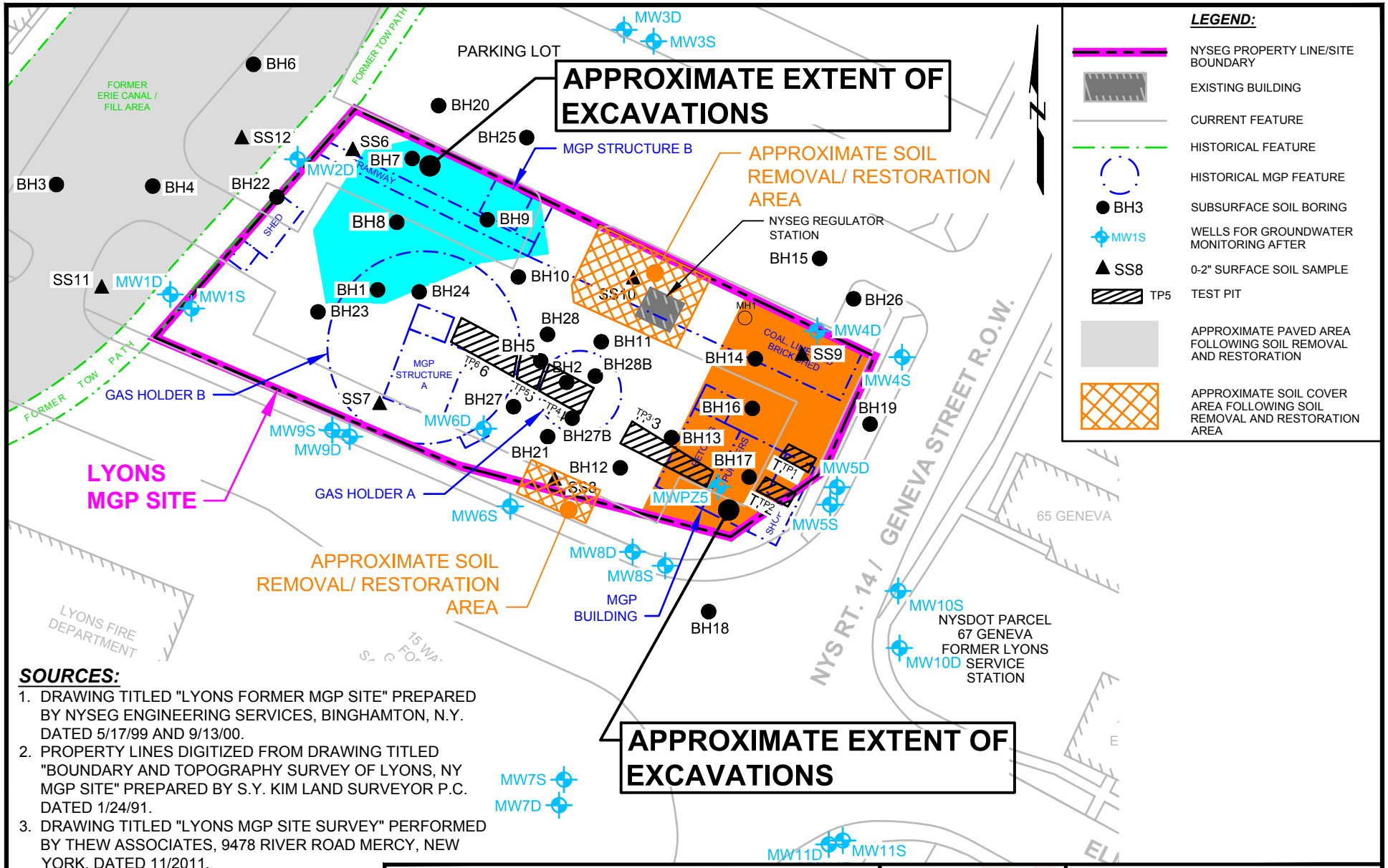
GEI Consultants

Project 112830

ALTERNATIVE 3:
ISS; SURFACE SOIL RESTORATION/REGRADING; MNA; ICs/ECs

March 2015 Figure 5

\\gtb1v-fs01\ I:\Project\NYSEG\LYONS\Drawings\Figures\PRAP\Lyons-PRAP F2.dwg - 2/26/2015



SOURCES:

1. DRAWING TITLED "LYONS FORMER MGP SITE" PREPARED BY NYSEG ENGINEERING SERVICES, BINGHAMTON, N.Y. DATED 5/17/99 AND 9/13/00.
2. PROPERTY LINES DIGITIZED FROM DRAWING TITLED "BOUNDARY AND TOPOGRAPHY SURVEY OF LYONS, NY MGP SITE" PREPARED BY S.Y. KIM LAND SURVEYOR P.C. DATED 1/24/91.
3. DRAWING TITLED "LYONS MGP SITE SURVEY" PERFORMED BY THEW ASSOCIATES, 9478 RIVER ROAD MERCY, NEW YORK, DATED 11/2011.

Lyons MGP Site
Village of Lyons, New York

NYSEG
Binghamton, New York

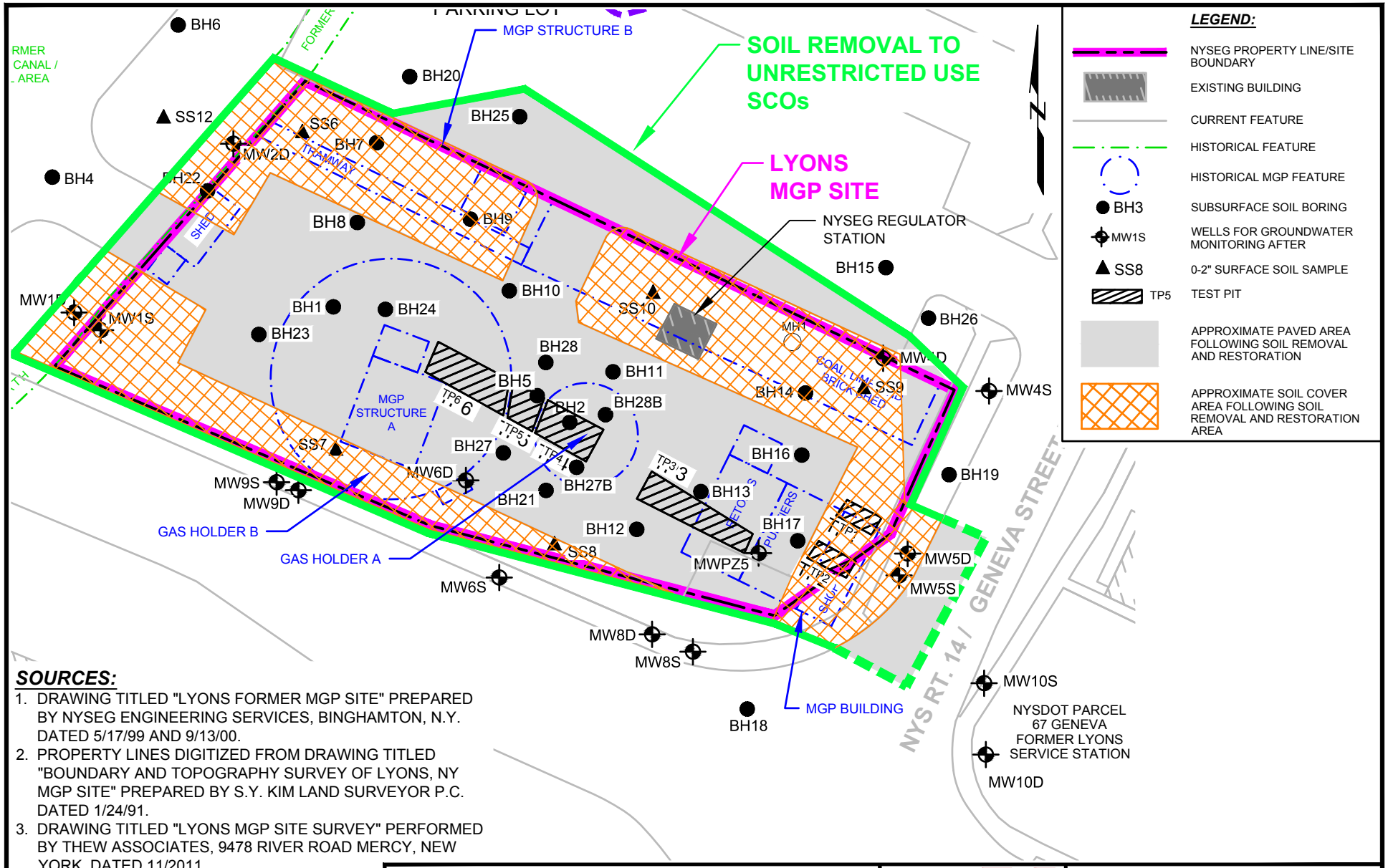
GEI Consultants

Project 112830

ALTERNATIVE 4: EXCAVATION; SOIL REMOVAL/COVER; MNA; ICs/ECs

March 2015 Figure 6

\\gtb1v-fs01\ I:\Project\NYSEG\LYONS\Drawings\Figures\PRAP\Lyons-PRAP - F3-4.dwg - 2/26/2015



SOURCES:

1. DRAWING TITLED "LYONS FORMER MGP SITE" PREPARED BY NYSEG ENGINEERING SERVICES, BINGHAMTON, N.Y. DATED 5/17/99 AND 9/13/00.
2. PROPERTY LINES DIGITIZED FROM DRAWING TITLED "BOUNDARY AND TOPOGRAPHY SURVEY OF LYONS, NY MGP SITE" PREPARED BY S.Y. KIM LAND SURVEYOR P.C. DATED 1/24/91.
3. DRAWING TITLED "LYONS MGP SITE SURVEY" PERFORMED BY THEW ASSOCIATES, 9478 RIVER ROAD MERCY, NEW YORK, DATED 11/2011.

Lyons MGP Site
Village of Lyons, New York

NYSEG
Binghamton, New York

GEI Consultants

Project 112830

ALTERNATIVE 5: EXCAVATION OF SOIL TO UNRESTRICTED USE SCOs

March 2015 Figure 7

\\gtb1v-fs01\ I:\Project\NYSEG\LYONS\Drawings\Figures\PRAP\Lyons-PRAP - F3-4.dwg - 2/26/2015