RECORD OF DECISION

NM - Syracuse Erie Blvd. MGP
Syracuse, Onondaga County
Site No. 734060
March 2015

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

DECLARATION STATEMENT - RECORD OF DECISION

NM - Syracuse Erie Blvd. MGP
Syracuse, Onondaga County
Site No. 734060
March 2015

Statement of Purpose and Basis

This document presents the remedy for the NM - Syracuse Erie Blvd. MGP site, an inactive hazardous waste disposal site. The remedial program was chosen in accordance with the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375, and is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300), as amended.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the NM - Syracuse Erie Blvd. MGP site and the public's input to the proposed remedy presented by the Department. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Description of Selected Remedy

The elements of the selected remedy are as follows:

1. 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 site management of the remedy as per NYSDEC's document titled "DER-31/Green Remediation". 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 gas and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials; and
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste.

2. Installation of NAPL recovery wells along or near the western site boundary if determined to be necessary based on pre-design investigations and/or a pilot testing program. NAPL recovery wells will be located and designed to address viscous NAPL and potentially high volumes of NAPL recharge, if NAPL accumulates and is recoverable. The wells will be designed to function passively, without active pumping. However, active collection may be used if

determined necessary. NAPL will be allowed to accumulate in the wells and will be removed periodically for off-site treatment and disposal. Pre-design investigation or pilot testing may be necessary to determine the specifics of this NAPL recovery program. Additional product recovery wells may be required based on performance of the initial wells, new information, or a documented change in conditions.

3. A site cover consisting of the existing office complex, driveways, paved parking lots, concrete sidewalks, landscaping, and lawn currently exists and will be maintained to allow for commercial and industrial uses of the site. Any site redevelopment will maintain a site cover, which may 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 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, 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 commercial site use as set forth in 6 NYCRR Part 375-6.7(d).

4. 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 Onondaga County DOH; and

•requires compliance with the Department approved Site Management Plan.

5. Site Management Plan:

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

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

Institutional Controls: The environmental easement discussed in Paragraph 4 above.

Engineering Controls: The NAPL recovery system discussed in Paragraph 2 and the cover system discussed in Paragraph 3 above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations on the controlled property;
- descriptions of the provisions of the deed restriction including any land use and groundwater use restrictions;
- provisions for the management and inspection of the soil cover;
- maintenance of existing retaining wall system (to mitigate potential discharge of material into Onondaga Creek) and the chain-link fence/security that currently exists around the property boundary.
- maintaining site access controls and Department notification;
- the steps necessary for the periodic reviews and certification of the institutional controls.
- a provision for further investigation and remediation should large scale redevelopment occur, if any of the existing structures are demolished, or if the subsurface is otherwise made accessible. 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. Based on the investigation results and the Department's determination of the need for a remedy, a Remedial Action Work Plan (RAWP) will be developed for the final remedy for the site, including removal and/or treatment of any source areas to the extent feasible. Citizen Participation Plan (CPP) will continue through this process. Any necessary remediation will be completed prior to, or in association with, redevelopment.

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 natural attenuation component of the remedy;
- a schedule of monitoring and frequency of submittals to the Department;

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

- compliance monitoring of the NAPL recovery system to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
- maintaining site access controls and Department notification; and
- providing the Department access to the site and O&M records.

New York State Department of Health Acceptance

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

Declaration

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

March 30, 2015

Date

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

RECORD OF DECISION

NM - Syracuse Erie Blvd. MGP
Syracuse, Onondaga County
Site No. 734060
March 2015

SECTION 1: SUMMARY AND PURPOSE

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for the above referenced site. The disposal of hazardous wastes at the site has resulted in threats to public health and the environment that would be addressed by the remedy. The disposal or release of hazardous wastes at this site, as more fully described in this document, has contaminated various environmental media. The remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This Record of Decision (ROD) identifies the selected remedy, summarizes the other alternatives considered, and discusses the reasons for selecting the remedy.

The 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 6 NYCRR Part 375. This document is a summary of the information that can be found in the site-related reports and documents.

SECTION 2: CITIZEN PARTICIPATION

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

Onondaga County Public Library
477 South Salina Street
Syracuse, NY 13201
Phone: 315-435-1800

NYSDEC
Attn: Diane Carlton

615 Erie Blvd. West
Syracuse, NY 13201
Phone: 315-426-7403

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

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

Receive Site Citizen Participation Information By Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at http://www.dec.ny.gov/chemical/61092.html

SECTION 3: SITE DESCRIPTION AND HISTORY

Location: The NM-Erie Boulevard MGP Site is located in an urban area in the City of Syracuse, Onondaga County. The site is bounded by West Genesee Street to the north, North Franklin Street to the east and Erie Boulevard West to the south. The site is owned by Niagara Mohawk Power Corporation (NM), doing business as National Grid.

Site Features: Onondaga Creek borders the site on the west. The seven acre former MGP site is within the 10 acre National Grid facility, consisting of five occupied office buildings. The remaining site area is covered with paved parking lots and roadways. Site access is restricted to the general public by perimeter fencing, locking gates, and an onsite security service.

Current Zoning/Use(s): The site is zoned for commercial use. The site is occupied by five buildings comprising the National Grid Syracuse Office Complex. The immediate surrounding area is zoned for commercial and central business use.

Past Use of the Site: The prior uses of the site include three mills (a salt mill, a saw mill, a linseed oil mill) and a tannery. The first manufactured gas plant (MGP) was constructed in 1849 and operated until the 1930s. During World War 1 (1917 to 1918) the plant produced toluol used for the manufacture of dynamite at another location.

Site Geology and Hydrogeology: Fill material is present below the asphalt pavement surface cover and ranges in thickness from 3 to 28 feet. The fill unit is underlain by a clay/silt layer. This

unit is discontinuous and ranges in thickness from 2 to 22 feet. A sand and gravel unit is encountered beneath the clay/silt layer at depths ranging from 6 to 30 feet below ground surface (bgs). The water table is generally encountered at a depth of approximately 20 feet bgs at the site and flows from south to north. The site is adjacent to Onondaga Creek, which is a losing stream at this location, meaning that water flows from the creek into groundwater. Groundwater is naturally very saline, which renders it unsuitable for potable purposes.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives (or an alternative) that restrict(s) the use of the site to commercial use (which allows for industrial use) as described in Part 375-1.8(g) were/was evaluated in addition to an alternative which would allow for unrestricted use of the site.

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

SECTION 5: ENFORCEMENT STATUS

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

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

Niagara Mohawk Power Corporation, dba National Grid

The Department and National Grid/Niagara Mohawk Power Corporation entered into a multi-site Consent Orders on December 7, 1992 (Index No.D0-0001-9210) and on November 7, 2003 (Index No.A4-0473-0000). These Orders obligate the responsible party to implement a full remedial program for 21 former MGP sites across the State, including the Erie Boulevard site.

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
- surface water
- soil
- sediment
- soil vapor
- indoor air
- sub-slab vapor

6.1.1: Standards, Criteria, and Guidance (SCGs)

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

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

6.1.2: RI Results

The data have identified contaminants of concern. A "contaminant of concern" is a 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)
NAPHTHALENE

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

- groundwater
- soil

6.2: Interim Remedial Measures

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

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

6.3: Summary of Environmental Assessment

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

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

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. The specific VOCs of concern for the site are benzene, toluene, ethylbenzene, and xylenes. These are collectively referred to as BTEX in this document. SVOCs of concern are the polycyclic aromatic hydrocarbons (PAHs). Total PAH concentrations referred to in this document are the sum of individual PAH compounds. The inorganic contaminant of concern is cyanide in the form of iron-cyanide salts.

Groundwater: The primary contaminants of concern related to MGP processes include benzene, toluene, ethylbenzene and xylenes (BTEX), polycyclic aromatic hydrocarbons (PAHs), and metals. Remedial investigations indicate a deep contaminated groundwater plume of BTEX and naphthalene, with past maximum concentrations of 20,700 ppb and 15,000 ppb respectively, flows off-site, under Onondaga Creek and toward the northwest and has migrated approximately 2,000 feet down gradient of the site. The prior high concentrations were found on-site near the former MGP structures, and have decreased over the years, with more recent levels of BTEX and naphthalene of 11,390 ppb and 2,800 ppb, respectively.

Soil: Subsurface soil has been impacted primarily in the western part of the site in the vicinity of the former MGP operations. This area is largely covered by a parking lot and is limited to the on-site area. The lateral extent of MGP impacts to shallow groundwater is limited to the immediate vicinity of the former MGP structures. Coal tar was observed in several soil borings, and test pits

located onsite, primarily in the western parking lot. However, there has been no accumulation of free-phase light or dense non-aqueous phase liquid (LNAPL or DNAPL) observed in any of the monitoring wells on-site or down gradient of the site. The upper 8 to 10 feet of soil is not impacted by coal tar as shown in most of the soil borings.

Soil Vapor: As part of the Supplemental Remedial Investigation field investigations, soil vapor samples were collected from 30 sampling locations onsite. Several volatile organic compounds (VOCs), including BTEX and naphthalene, were identified in soil vapor samples collected from each sampling location. Overall, the VOC concentrations detected were relatively low, with the majority of the results ranging from non-detect to 10 micrograms per cubic meter (µg/m3). Sub-slab vapor and indoor air samples were collected to evaluate the vapor intrusion exposure pathway. While some VOCs were identified in the sub-slab vapor samples, MGP related VOCs were not identified in any of the indoor air samples at concentrations exceeding typical background indoor air values. Non-MGP related VOCs (methylene chloride and trichloroethylene) were identified at two indoor air sampling locations at concentrations slightly greater than typical background indoor air values, but the concentrations at those sampling locations were less than NYSDOH published air guideline values. The presence of methylene chloride and trichloroethylene in indoor air was attributed to operational use of products inside the buildings (not the former MGP). The results do not indicate a need for further investigation or remedial actions for this environmental media.
Surface Water: Analysis of surface water samples collected from Onondaga Creek did not contain detectable levels of VOCs and SVOCs. While some metals were detected in the surface water samples, they were not attributable to the site. Cyanide was not detected in any of the surface water samples.

Sediment: Sediment samples were collected from 26 locations in Onondaga Creek upstream, adjacent to, and downstream of the site, and analyzed for VOCs, SVOCs, inorganic constituents (including cyanide), PCBs, and pesticides. The analytical results indicate that VOCs were either not detected in sediment, or were detected at very low concentrations were low (1 ppb or less). SVOCs were identified upstream, adjacent to, and downstream of the site. The presence of PAHs in sediment samples upstream of the site and the heavily urbanized nature of the surrounding area indicated that there are current sources of PAHs impacting the creek sediments that are unrelated to the site. Cyanide compounds were not identified in any of the sediment samples. Certain metals and pesticides were detected in the sediment samples, but are unrelated to the site.

6.4: Summary of Human Exposure Pathways

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

Since the site is covered by asphalt, fill or site buildings, people will not come into contact with soil and groundwater contamination unless they dig below the surface. People are not drinking the groundwater because the area is served by a public water supply not affected by site contamination.

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.

RAOs for Environmental Protection

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

SECTION 7: SUMMARY OF THE SELECTED REMEDY

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

The selected remedy is referred to as the Cover System, Long-Term Monitoring, NAPL Recovery, Natural Attenuation and Institutional Controls (ICs) remedy.

The estimated present worth cost to implement the remedy is $1,722,000. The cost to construct the remedy is estimated to be $261,500 and the estimated average annual cost is $66,000.

The elements of the selected remedy are as follows:

1. 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 site management of the remedy as per NYSDEC's document titled "DER-31/Green Remediation". 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 gas and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials; and
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste.

2. Installation of NAPL recovery wells along or near the western site boundary if determined to be necessary based on pre-design investigations and/or a pilot testing program. NAPL recovery wells will be located and designed to address viscous NAPL and potentially high volumes of NAPL recharge, if NAPL accumulates and is recoverable. The wells will be designed to function passively, without active pumping. However, active collection may be used if determined necessary. NAPL will be allowed to accumulate in the wells and will be removed periodically for off-site treatment and disposal. Pre-design investigation or pilot testing may be necessary to determine the specifics of this NAPL recovery program. Additional product recovery wells may be required based on performance of the initial wells, new information, or a documented change in conditions.

3. A site cover consisting of the existing office complex, driveways, paved parking lots, concrete sidewalks, landscaping, and lawn currently exists and will be maintained to allow for commercial and industrial uses of the site. Any site redevelopment will maintain a site cover, which may 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 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, 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 commercial site use as set forth in 6 NYCRR Part 375-6.7(d).

4. 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 Onondaga County DOH; and

•requires compliance with the Department approved Site Management Plan.

5. Site Management Plan:

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

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

Institutional Controls: The environmental easement discussed in Paragraph 4 above.

Engineering Controls: The NAPL recovery system discussed in Paragraph 2 and the cover system discussed in Paragraph 3 above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations on the controlled property;
- descriptions of the provisions of the deed restriction including any land use and groundwater use restrictions;
- provisions for the management and inspection of the soil cover;
- maintenance of existing retaining wall system (to mitigate potential discharge of material into Onondaga Creek) and the chain-link fence/security that currently exists around the property boundary.
- maintaining site access controls and Department notification;
- the steps necessary for the periodic reviews and certification of the institutional controls.
- a provision for further investigation and remediation should large scale redevelopment occur, if any of the existing structures are demolished, or if the subsurface is otherwise made accessible. 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. Based on the investigation results and the Department's determination of the need for a remedy, a Remedial Action Work Plan (RAWP) will be

developed for the final remedy for the site, including removal and/or treatment of any source areas to the extent feasible. Citizen Participation Plan (CPP) will continue through this process. Any necessary remediation will be completed prior to, or in association with, redevelopment.

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 natural attenuation component of the remedy;
- a schedule of monitoring and frequency of submittals to the Department;

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

- compliance monitoring of the NAPL recovery system to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
- maintaining site access controls and Department notification; and
- providing the Department access to the site and O&M records.

Exhibit A

Nature and Extent of Contamination

This exhibit describes the findings of the Remedial Investigation (RI) for all environmental media that were evaluated. As described in Section 6.1, many samples were collected from various environmental media to characterize the nature and extent of contamination (soil and groundwater investigation locations are shown on Figures 2 and 3, respectively.)

For each medium in 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 standards, criteria and guidance values (SCGs) for the site. The contaminants are arranged into three categories: volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and inorganics. The specific VOCs of concern for the site are benzene, toluene, ethylbenzene, and xylenes. These are collectively referred to as BTEX in this document. SVOCs of concern are the polycyclic aromatic hydrocarbons (PAHs). Total PAH concentrations referred to in this document are the sum of individual PAH compounds. The inorganic contaminant of concern is cyanide in the form of iron-cyanide salts. 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 6.1.1 are also presented.

The following sections of this exhibit identify the wastes found at the site and then identify, by environmental media, the individual contaminants in each environmental media that are associated with the manufactured gas disposal/operations at the site. For each medium in which contamination was identified, the media discussion includes a table that compares the site data to the appropriate Unrestricted SCGs for each media. In addition, the soil data tables include a comparison of the analytical data to the appropriate Restricted-Use Soil Cleanup Objective (SCO) found in Part 375-6.8 (b) for each individual contaminant.

Waste/Source Materials

As described in the RI Report, waste/source materials were identified at the site and are impacting soil and groundwater. Wastes are defined in 6 NYCRR Part 375-1.2 and include solid, industrial and/or hazardous wastes. Source is also defined in 6 NYCRR Part 375-1.2; and a source is where quantities of contaminants are found which can migrate and release significant levels of contaminants to another environmental medium. The primary waste/source material present at the site is coal tar. Coal tar is a reddish brown to black oily liquid by-product which formed as a condensate as the manufactured gas cooled and which does not readily dissolve in water. Materials such as coal tar are commonly referred to as non-aqueous phase liquids, or NAPLs. The terms NAPL and coal tar are used interchangeably in this document.

Visual observations of NAPL were limited to the northwest portion of the on-site parking lot west of Buildings B, C, and D. The NAPL is inferred to have originated from former gas holders and vessels used to separate tar from the raw gas. Site investigation data indicate that the former manufactured gas plant (MGP) structures (to the extent such structures still remain) do not contain pooled NAPL. NAPL-saturated soil was encountered during the investigation activities, in limited depth intervals and typically below the water table (approximately 20 to 25 feet below ground surface [bgs]) (see Figure 4). NAPL saturation in borings was observed to decrease with depth, and in several cases, samples from the bottom of the soil borings were observed to be NAPL-free. In addition, no measurable amount of NAPL has (nearly 20 years of observations) been identified in any monitoring well, including an on-site well located within source material that was specifically constructed to

recover mobile NAPL, if present. Collectively, the data indicate that the NAPL has depleted itself to residual saturation and is immobile.

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

Surface Soil

Surface soil samples were collected from three off-site locations adjacent to the western perimeter of the site along the Onondaga Creek stream bank. Surface soil concentrations were less than or generally consistent with commercial use SCOs presented in 6 NYCRR Part 375-6.8(b) (hereinafter the "commercial use SCOs").

No site-related surface soil contamination of concern was identified during the RI. A majority of the site is covered by asphalt pavement, concrete sidewalks, buildings, and landscaping (with little or no exposed surface soil). Therefore, no remedial alternatives were evaluated for surface soil.

Subsurface Soil

Analytical results for subsurface soil confirmed the general understanding of the nature and extent of impacts based on visual observation of NAPL. The occurrence of soils exceeding the New York State Department of Environmental Conservation's recommended subsurface soil cleanup level of 500 parts per million (ppm) for total PAHs, as well as the distribution of NAPL, was limited to the western portion of the site (see Figure 4). Soil was identified as NAPL-saturated if field descriptions indicated sufficient NAPL was present to be mobile; however, no measurable NAPL has, after nearly 20 years of observations, been identified in monitoring wells at the site, including a well within the source area that was specifically constructed to recover mobile NAPL, if present. Recoverable NAPL is not suspected to be present under the buildings. Sampling locations where total PAHs were identified in one or more intervals at concentrations greater than 500 ppm are shown by the color-coded symbols on Figure 4. Most of these exceedances start at a depth of 8 to 10 feet bgs. The analytical results indicate that VOCs, including BTEX, and SVOCs (specifically PAHs) are the subsurface soil contaminants of concern. Total PAHs generally ranged from 0 to 5,300 ppm, except at one location, MW-4 which contained the highest PAH concentration of 47,000 ppm. Total BTEX concentrations ranged from 0 to 3,700 ppm. The highest concentration of total BTEX was found at 22 feet below grade at location SB-12. Only one inorganic compound (cyanide) was detected at levels slightly above the unrestricted soil cleanup objective, at concentrations ranging from 0 to 33.6 ppm.

Table 1 – Subsurface Soil

Detected Constituents of Concern	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG[c] (ppm)	Frequency Exceeding Restricted SCG
VOC					
Benzene	0.0004 – 430	0.06	28/187	0.06[d]	28/187
Ethylbenzene	0.0004 – 870	1	35/187	1[d]	35/187
Toluene	0.0003 – 870	0.7	25/187	0.7 [d]	25/187
Xylenes (total)	0.0005 – 1,500	0.26	47/187	1.6[d]	35/187
SVOC					
Acenaphthene	0.006 – 440	20	15/153	98[d]	5/153
Acenaphthylene	0.003 – 2,000	100	4/153	107[d]	4/153
Anthracene	0.007 – 2,400	100	4/153	500	1/153
Benzo(a)anthracene	0.006 – 1,600	1	52/153	1[d]	52/153
Benzo(a)pyrene	0.015 – 1,900	1	47/153	1	47/153

Detected Constituents of Concern	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG[c] (ppm)	Frequency Exceeding Restricted SCG
Benzo(b)fluoranthene	0.01 – 1,400	1	42/153	1.7[d]	37/153
Benzo(g,h,i)perylene	0.008 – 600	100	1/153	500	1/153
Benzo(k)fluoranthene	0.006 – 1,400	0.8	43/153	1.7[d]	35/153
Chrysene	0.007 – 1,400	1	52/153	1[d]	52/153
Dibenzo(a,h)anthracene	0.006 – 16	0.33	21/153	0.56	16/153
Fluoranthene	0.013 – 4,400	100	4/153	500	2/153
Fluorene	0.01 – 2,100	30	8/153	386[d]	2/153
Indeno(1,2,3-cd)pyrene	0.009 – 1,000	0.5	43/153	5.6	15/153
Naphthalene	0.004 – 12,000	12	28/153	12[d]	28/153
Phenanthrene	0.003 – 6,700	100	6/152	500	3/152
Pyrene	0.003 – 3,000	100	4/153	500	2/153
Inorganics					
Cyanide	0.18 - 33.6	27	2/132	27	2/132

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.

Based on the findings of the RI, the presence of NAPL in on-site soil has resulted in soil contamination. 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 BTEX and PAHs.

Groundwater

Groundwater at the site and off-site has been impacted by dissolved phase BTEX compounds, PAHs, and cyanide (on-site only) related to MGP constituents in the subsurface soil at the site. Groundwater at the site was observed to occur at approximately 20 to 25 feet bgs, and at approximately 30 feet bgs offsite. The major hydrologic feature near the site is Onondaga Creek, which is a losing stream, meaning that shallow groundwater moves away from the creek into the aquifer, not from the aquifer into the creek. RI data indicate that shallow groundwater moves away from the creek and downward; deeper groundwater moves predominantly northwestward (toward and under the creek).

The off-site groundwater plume is a result of groundwater passing beneath the site and slowly dissolving the more soluble compounds of the NAPL and then transporting the compounds downward and northwestward under Onondaga Creek to approximately 2,000 feet down gradient of the site. Upon leaving the site, the compounds in the deep groundwater that exceed SCGs are almost exclusively BTEX and naphthalene (i.e., the most soluble and most mobile compounds dissolving from NAPL).

The highest BTEX, PAH, and cyanide concentrations in groundwater have been found in the shallow wells along the west edge of the parking lot west of Buildings B, C, and D (wells MW-4S and MW-7S). Based on the RI data, the MGP impacts in shallow groundwater are confined to the site. The concentrations in the deep off-site wells decrease with distance from the former MGP site. The extent of contamination in on-site and off-site shallow and deep groundwater is shown on Figure 3. The RI data indicate that the dissolved phase groundwater plume is stable (it is not expanding in size and concentrations and are staying approximately the same or possibly decreasing) due to natural attenuation.

Table 2 - Groundwater

Detected COCs	SCG[b] (ppb)	On-Site Monitoring Wells		Off-Site Monitoring Wells	
		Concentration Range Detected (ppb)[a]	Frequency Exceeding SCG	Concentration Range Detected (ppb)[a]	Frequency Exceeding SCG
VOCs					
Benzene	1	0.38 - 12,000	23/80	0.5 - 74	20/60
Ethylbenzene	5	0.6 - 2,800	22/80	0.4 - 350	22/60
Toluene	5	0.19 - 1,700	16/80	0.13 -1,400	25/60
Xylenes (total)	5	2 - 4,200	29/80	0.69 - 1,300	27/60
SVOCs					
Acenaphthene	20	0.39 - 1,400	30/79	0.6 - 43	7/59
Anthracene	50	0.06 - 390	9/79	0.1 - 9	0/59
Benzo(a)anthracene	0.002	0.4 - 270	17/79	3.2 - 4.2	1/59
Benzo(a)pyrene	0	0.2 - 200	13/79	2 - 3	1/59
Benzo(b)fluoranthene	0.002	0.2 - 130	10/79	1.6 - 2.2	1/59
Benzo(k)fluoranthene	0.002	0.2 - 200	12/79	ND	0/59
Chrysene	0.002	0.4 - 240	15/79	2.5 - 3.9	1/59
Fluoranthene	50	0.1 - 750	10/79	0.1 - 6.8	0/59
Fluorene	50	0.2 - 520	11/79	1 - 55	1/59
Indeno(1,2,3-cd)pyrene	0.002	0.2 - 100	6/79	2.4 - 2.7	1/59
Naphthalene	10	0.5 - 15,000	28/79	0.2 - 4,200	27/59
Phenanthrene	50	0.1 - 1,500	13/79	0.4 - 54	1/59
Pyrene	50	0.1 - 660	10/79	0.2 - 13	0/59
Inorganics					
Cyanide	200	0.013 - 5,960	9/72	3.4	0/38

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).
ND – The constituent was not detected.

Based on the findings of the RI, the presence of NAPL in on-site soil has resulted in dissolved phase groundwater contamination at on-site and off-site locations. The site contaminants identified in groundwater which are considered the primary contaminants of concern, to be addressed by the remedy selection process, are: BTEX and PAHs, and to a lesser extent, cyanide.

Surface Water

Surface water samples were collected during the RI from three locations in Onondaga Creek. These samples were analyzed for VOCs, SVOCs, and inorganic constituents. No site-related surface water contamination of concern was identified during the RI. Therefore, no remedial alternatives were evaluated for surface water.

Sediments and Sediment Pore Water

Sediment samples were collected during the RI from locations in Onondaga Creek upstream, adjacent to, and downstream of the site. VOCs were not detected in the majority of the sediment samples, and when detected, the VOC concentrations were low 1 part per billion [ppb] or less. PAHs were detected in each sediment sample and they were determined to be consistent with upstream/background conditions based on the concentrations and distribution of the PAHs. Cyanide compounds were not identified in any of the sediment samples.

Sediment pore water samples were also collected from the three surface water sampling locations in Onondaga Creek. SVOCs were identified upstream, adjacent to, and downstream of the site. The presence of SVOCs in sediment samples upstream of the site and the heavily urbanized nature of the surrounding area indicated that there are current sources of SVOCs impacting the creek sediments that are unrelated to the site. No spatial trend was apparent relative to the concentrations of SVOCs in the creek and the site.

No site-related sediment or sediment pore water contamination of concern was identified during the RI. Therefore, no remedial alternatives were evaluated for sediment.

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 soil vapor, sub-slab soil vapor under structures, and indoor air inside structures.

Initially, soil vapor samples were collected in the vicinity of the on-site buildings. Several VOC constituents, including BTEX and naphthalene, were identified in each soil vapor sample and overall, the VOC concentrations were relatively low. Methylene chloride and trichloroethylene were the two primary VOCs detected in indoor samples and at maximum concentrations of 36 micrograms per cubic meter ($\mu g/m^3$) and 4.9 $\mu g/m^3$ respectively. The NYSDOH air guideline values are 60 $\mu g/m^3$ and 5 $\mu g/m^3$, respectively. The methylene chloride and trichloroethylene compounds (found in the existing building storage room) were used as part of the present day operations and are not related to the operation of the former MGP.

Based on the sampling results, no-site related vapor contamination of concern was identified during the RI. The results do not indicate a need for further investigation or remedial actions for this environmental media.

Exhibit B

Description of Remedial Alternatives

The following potential remedies were considered based on the remedial action objectives (see Section 6.5) to address the contaminated soil and groundwater identified at the site as described in Exhibit A.

Alternative 1: No Action

Alternative 1 will allow the site to remain in its current condition. The existing features of the National Grid Syracuse office complex (Office Complex) will be maintained to the extent National Grid continues to own and occupy the property. These features include the existing ground cover material (e.g., asphalt pavement, buildings, landscaping), the retaining wall along the western site boundary (adjacent to Onondaga Creek), and the perimeter fencing/security. This alternative serves as the baseline for comparison of the overall effectiveness of the other remedial alternatives and does not provide any additional protection of the environment and public health. This alternative could be implemented immediately and there are no costs associated with this alternative.

Alternative 2: Cover System, Long-Term Monitoring, NAPL Recovery, Natural Attenuation and Institutional Control

Alternative 2 will not involve active remedial measures to remove, treat or contain MGP-impacted subsurface material other than passive NAPL recovery (if determine to be necessary.) This alternative would include the following:

- Installation of NAPL recovery wells along or near the western site boundary. NAPL recovery wells will be located and designed to address viscous NAPL and potentially high volumes of NAPL recharge. The wells will be designed to function passively, without active pumping. However, active collection may be used if determined necessary. NAPL will be allowed to accumulate in the wells and will be removed periodically for off-site treatment and disposal. Pre-design investigation or pilot testing may be necessary to determine the specifics of this NAPL recovery program. Additional product recovery wells may be required based on performance of the initial wells, new information, or a documented change in conditions.
- A site cover consisting of existing office complex, driveways, paved parking lots, concrete sidewalks, landscaping, and lawn currently exists and will be maintained to allow for commercial and industrial uses of the site. Any site redevelopment will maintain a site cover, which may 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 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, 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 commercial site use as set forth in 6 NYCRR Part 375-6.7(d).
- Institutional control in the form of an environmental easement that restricts the site to commercial use and restricts the use of groundwater as a source of potable or process water, without necessary water treatment as determined by the NYSDOH or County DOH.

- Development of a site management plan necessary to protect public health and the environment from any contamination identified at the site and a provision for site investigation and remediation should the existing buildings be removed or if the subsurface is otherwise made accessible.
- Long-term groundwater monitoring to evaluate the effectiveness of natural attenuation of groundwater impact over an extended period of time.

The cost to implement Alternative 2 has been estimated as follows:

Present Worth: *$1,722,000*
Capital Cost: *$261,500*
Annual Costs: *$66,000*
Alternative 2 would be implemented in approximately 3 months.

Alternative 3: Focused Soil Containment and Institutional Controls

This alternative would include the following:

- Installation of a water-tight sheetpile wall to approximately 70 feet bgs to contain MGP-contaminated subsurface soil extending both above and below the water table in the northwestern corner of the parking lot (Figure 5).
- Installation of engineering cap to cover the area enclosed by the sheetpiling to reduce the infiltration of precipitation into the soil containment area.
- Long-term monitoring of water levels inside and outside of the containment area to determine the effectiveness of the wall at containing the contaminated material.
- Institutional control in the form of an environmental easement that restricts the site to commercial use and restricts the use of groundwater as a source of potable or process water, without necessary water treatment as determined by the NYSDOH or County DOH.
- Development of a site management plan necessary to protect public health and the environment from any contamination identified at the site.

Present Worth: *$5,890,000*
Capital Cost: *$5,400,000*
Annual Costs: *$21,600*
Alternative 3 would be implemented in approximately 8 months.

Alternative 4: Focused In-Situ Soil Solidification and Institutional Control

This alternative involves in-situ soil solidification (ISS) of soil in the northwest corner of the parking lot. The component of this alternative would include the following:

- Soil excavation to approximate depth of 10 to 15 feet below grade in the source area to allow for in-situ solidification of impacted material.
- Performance of ISS of approximately 12,400 cubic yards to a depth of about 50 feet bgs within the focused area (Figure 5). 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 solidified mass will then be covered with a cover system to prevent direct exposure to the solidified mass and

protect the solidified mass from damage due to freeze/thaw cycles. The resulting solid matrix reduces or eliminates mobility of contamination and reduces or eliminates the matrix as a source of groundwater contamination.

- Installation of a soil cover over the ISS area. The soil cover will be a minimum of four feet of soil with the top 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 over the ISS area (with the upper six inches of the soil of sufficient quality to maintain a vegetation layer for landscaped areas). The soil cover system may also consist of structures such as buildings, pavement, or sidewalks. 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).
- Institutional control in the form of an environmental easement that restricts the site to commercial use and restricts the use of groundwater as a source of potable or process water, without necessary water treatment as determined by the NYSDOH or County DOH.
- Development of a site management plan necessary to protect public health and the environment from any contamination identified at the site.

Present Worth: *$5,540,000*
Capital Cost: *$5,060,000*
Annual Costs: *$21,600*
Alternative 4 would be implemented in approximately 10 months.

Alternative 5: Large Scale Solidification for Soil Exceeding Commercial Use SCOs and/or Exhibiting NAPL, and Institutional Control

This alternative is essentially the same as Alternative 4, except solidification (ISS treatment) will occur in a much larger area (see Figure 5) to address all accessible source areas. Alternative 5 will include the following:

- Soil excavation to approximate depth of 10 to 15 feet bgs to allow for in-situ solidification of impacted material.
- Performance of in-situ soil solidification (ISS) of approximately 26,000 cubic yards, within an approximately 46,890 square foot area and to a depth of about 50 feet bgs.
- Installation of a soil cover over the ISS area. The soil cover will be a minimum of four feet of soil with the top 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 over the ISS area, 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).
- Institutional control in the form of an environmental easement that restricts the site to commercial use and restricts the use of groundwater as a source of potable or process water, without necessary water treatment as determined by the NYSDOH or County DOH.
- Development of a site management plan necessary to protect public health and the environment from any contamination identified at the site.

Present Worth: *$19,800,000*
Capital Cost: *$19,400,000*
Annual Costs: *$21,600*
Alternative 5 would be implemented in approximately 12 months.

Alternative 6: Excavation for Soil Exceeding Unrestricted Use SCOs and/or Exhibiting NAPL, and Enhanced Bioremediation

This alternative is the most aggressive soil remedial alternative to address all impacted material to the extent possible. The alternative would include the following components:

- Excavation of approximately 250,000 cubic yards of on-site soil that contains NAPL and/or contaminants at concentrations exceeding the unrestricted use SCOs to a depth of about 70 feet bgs. Groundwater dewatering will be necessary to accomplish soil removal to this depth.
- Groundwater treatment through enhanced bioremediation to address residual contamination in groundwater after soil excavation.
- Backfilling of excavation area to established grade with clean fill material brought from a clean off-site area. 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).

Present Worth: *$240,130,000*
Capital Cost: *$233,748,000*
Annual Costs: *$247,600*

Alternative 6 would be implemented in approximately 10 years.

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
Alternative 1 - No Action	$0	$0	$0
Alternative 2 – Cover System, Long-Term Monitoring, NAPL Recovery, Natural Attenuation and Institutional Control (IC)	$261,500	$66,000	$1,722,000
Alternative 3 – Focused Soil Containment and IC	$5,400,000	$21,600	$5,890,000
Alternative 4 – Focused In-Situ Soil Solidification and IC	$5,060,000	$21,600	$5,540,000
Alternative 5 – Large Scale Solidification for Soil Exceeding Commercial Use SCOs and/or Exhibiting NAPL, and IC	$19,400,000	$21,600	$19,800,000
Alternative 6 – Excavation for Soil Exceeding Unrestricted Use SCOs and/or Exhibiting NAPL, and Enhanced Bioremediation	$233,748,000	$247,600	$240,130,000

Exhibit D

SUMMARY OF THE SELECED REMEDY

The Department has selected Alternative 2 – Cover System, Long-Term Monitoring, NAPL Recovery, Natural Attenuation and Institutional Control (IC) as the remedy for this site. The elements of the alternative are described in Section 7. The limits of this remedy are shown on Figure 6. Alternative 2 will achieve the remediation goals related to protection of human health by placing land and groundwater use restrictions on the site, maintaining the existing site cover that prevents direct exposure to contamination, removing coal tar (if it becomes recoverable) from the subsurface, and monitoring the expected decrease in contaminant levels in groundwater. The selected remedial alternative is readily implementable, has no short-term negative environmental impacts or risks to the community, and will be effective over the long-term.

Basis for Selection

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

The remedy has been selected because, as described below, it satisfies the threshold criteria (the first two evaluation criteria) and provides the best overall response to achieving the next six primary balancing criteria.

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. Alternative 1, the “no action” alternative, will not provide protection to human health and the environment over what currently exists and will not be effective over the long-term. Accordingly, Alternative 1 has been dropped from further consideration. Alternative 2, the selected remedy, will protect public health and the environment over the long-term through an institutional control, natural degradation processes, and NAPL removal (if determined necessary) from recovery wells to be installed near or along the western site boundary. Under the selected alternative, the existing site cover, retaining wall system, and the perimeter fencing will be maintained to prevent human exposures to contaminants; and long-term groundwater monitoring will be conducted to evaluate changes in groundwater conditions.

Each of the remaining alternatives provide similar protection of human health, with differing degrees of environmental protection. Alternatives 3 through 6 add varying degrees of active remedial measures to Alternative 2 to address contaminants in subsurface soil and groundwater. Alternative 6 will provide the greatest environmental protection due to the total removal of the impacted material. Contaminated soil will remain in certain inaccessible locations under each of the alternatives due to the presence of numerous site constraints that define the area that is feasible to remediate, including the adjacent Office Complex buildings and underground utility infrastructure. These remaining source areas would represent potential sources of ongoing groundwater contamination. Alternatives 3 and 4 address the same area of contamination through excavation and in-situ solidification, respectively. Alternative 5 would address a larger area of source material through in-situ solidification.

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

Alternative 2 will comply with SCGs over time by removing mobile coal tar from the subsurface and allowing natural attenuation processes to restore groundwater quality. Alternatives 3 through 6 would provide increasing degrees of source remediation to reduce the time needed to achieve groundwater quality standards. Under each alternative, there will continue to be exceedances of certain chemical-specific SCGs in soil and/or groundwater for extended periods of time. The NAPL or MGP-related contaminants in subsurface soil and groundwater which would remain under these alternatives would be managed by institutional control (e.g., restricting land use to commercial and industrial, requiring compliance with an SMP, and groundwater use restrictions) to protect public health until SCGs are achieved.

The next six "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies. Because Alternatives 2 through 6 satisfy the threshold criteria, the remaining criteria are particularly important in selecting the remedy.

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.

Alternatives 2 through 6 will all provide adequate long-term effectiveness but at varied levels. Alternatives 2 through 6 will effectively meet the RAOs related to potential direct contact, ingestion, and inhalation human health exposure pathways by the institutional controls that are included with these alternatives.

Natural attenuation processes and NAPL recovery efforts under Alternative 2 are expected to be effective over the long-term at reducing contaminants in groundwater. Alternatives 3 through 6 have progressively higher degrees of long-term effectiveness than Alternative 2 because of the active remedial measures to contain, treat, or remove contaminated subsurface soils. Alternatives 3 and 4 would provide long-term effectiveness over the area addressed by the sheetpile wall and ISS, respectively. Alternative 5 would provide greater long-term effectiveness compared to Alternatives 2 through 4, as a larger area would be addressed through ISS. Alternative 6 will provide the highest degree of long-term effectiveness and permanence due to the massive amount of soil to be removed and disposed off-site.

For all of the alternatives, the institutional control provided by each would adequately and reliably manage the risk of the remaining contaminated material.

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 2 relies on the removal of coal tar (if determined necessary) and natural degradation processes to reduce the mobility and volume of contaminants in subsurface soil. Alternatives 3 through 6 involve provide increasing reductions of the mobility and volume of contaminants in soil and groundwater in comparison to Alternative 2 through removal or in-situ solidification. Groundwater would continue to be unsuitable for human consumption due to the extremely high salinity levels regardless of the alternative selected. Therefore, given that groundwater impact is deep and does not pose direct human exposure, any additional remedial actions beyond what is being selected does not justify added expense and effort. The dissolved phase plume is stable (it is not expanding in size and concentrations are staying approximately the same or decreasing) due to natural attenuation by biodegradation.

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.

The short-term negative impacts associated with Alternative 2 are minor, and limited to the installation of monitoring and recovery wells, which can easily be accomplished. Potential short-term impacts under Alternatives 3, 4, and 5 are primarily associated with the soil disturbance that will occur during containment construction (i.e., sheetpile wall installation), pre-ISS excavation, off-site transportation and treatment/disposal, and ISS. The associated potential short-term impacts include potential damage to existing Office Complex buildings without proper support systems, disruption to the Office Complex workers and the surrounding community due to increased truck traffic, noise, and potential odors associated with excavation and handling of contaminated soils. These same potential short-term impacts apply to Alternative 6 but to a much greater extent as more extensive materials including soil and groundwater will need to be handled. Deep excavation to 70 feet required under this alternative would increase the potential impacts to workers. Dewatering efforts under Alternative 6 would be extensive and difficult and would result in significant short-term impacts as billions of gallons of dewatered water would be treated on-site. Groundwater dewatering under this alternative would significantly reduce surface water level in the Onondaga Creek as surface water would migrate into the excavation areas as groundwater is withdrawn.

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.

Each of the alternatives is technically and administratively implementable but with varied degree of difficulties. Alternative 2 is the most straightforward alternative to implement. Alternatives 3, 4, and 5 would be increasingly more difficult to implement, compared to Alternative 2, for a number of reasons, most of which are related to conducting the remediation at an active and large office complex with remedial limits proximate to existing, occupied buildings as well as other infrastructures. The offsite groundwater plume is deep and largely inaccessible due to highways, associated on-ramps, intersecting city streets and commercial development. Alternative 6 is the most difficult alternative and may not be technically feasible to implement due to the areal extent of excavation encompassing the majority of the very limited available space within the Office Complex, the significant depth of excavation (approximately 70 feet bgs), and the enormous volume of soil to be excavated with a corresponding volume of clean fill to be imported including billions of gallons of groundwater to be handled.

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 for the alternatives vary significantly based on the degree of active remediation. These costs are presented in Exhibit C. Alternative 2 attains the remedial goals for this site in a cost effective manner, with approximately 10 to 400 times lower cost than the other alternatives without sacrificing the effectiveness at addressing remedial action objectives established for the site.

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

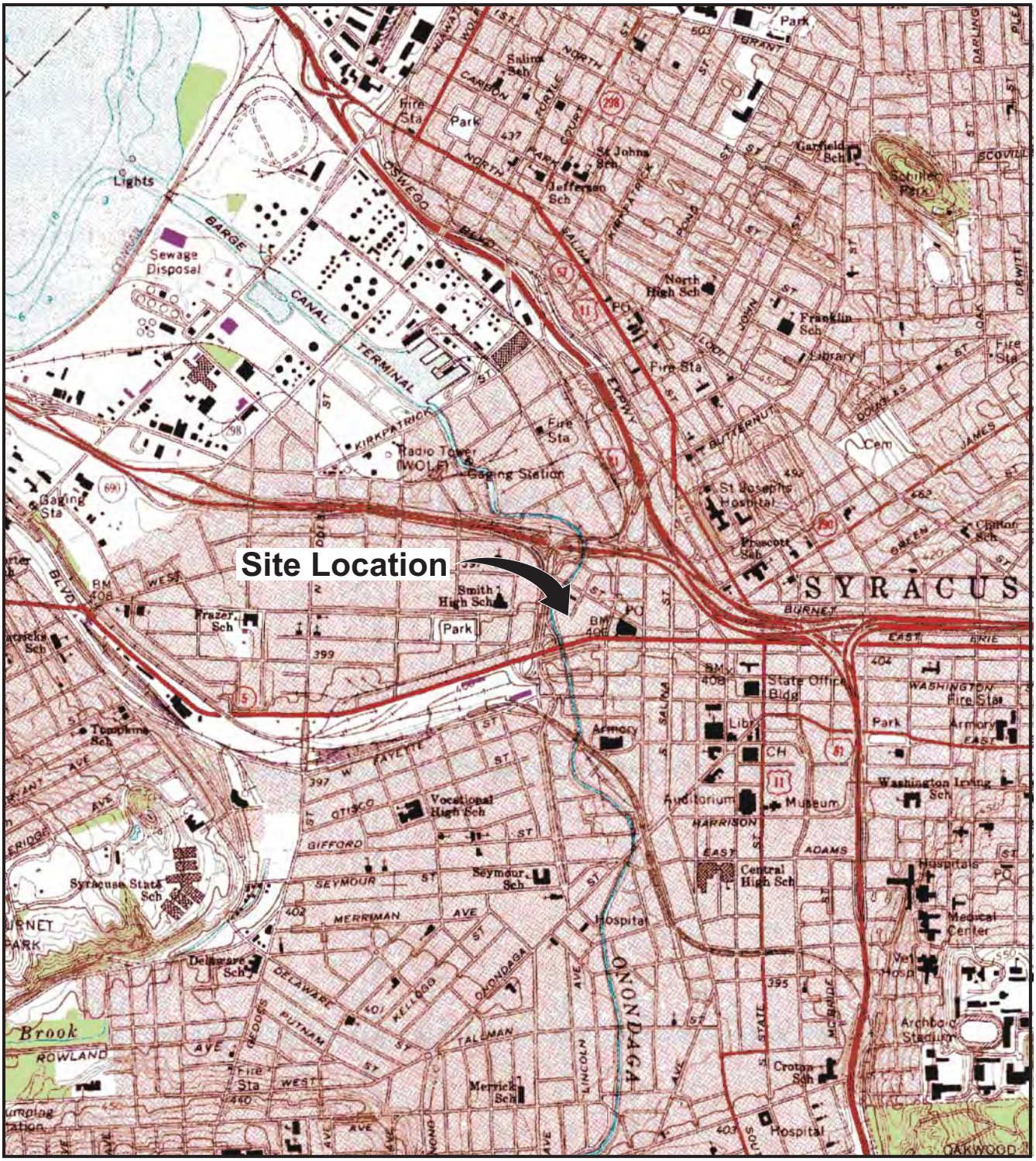
selection of the soil remedy.

The current, intended, and reasonably anticipated future use of the site is commercial, and some contaminated soil and groundwater will remain on- and off-site for varying periods of time under each alternative. All of the alternatives are consistent with commercial land use. The contamination that will remain under Alternative 2 will be effectively addressed with implementation of an SMP and institutional control and NAPL recovery efforts.

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

9. Community Acceptance. Concerns of the community regarding the investigation, the evaluation of alternatives, and the PRAP were evaluated. A responsiveness summary has been prepared that describes public comments received and the manner in which the Department addressed the concerns raised.

Alternative 2 has been selected because, as described above, it satisfies the threshold criteria and provides the best overall response to achieving the balancing criteria.



REFERENCE: BASE MAP USGS 7.5 MIN. QUAD., SYRACUSE WEST, NEW YORK, 1973, PHOTOREVISED 1978.

2000' 0 2000'

Approximate Scale: 1" = 2000'

Area Location

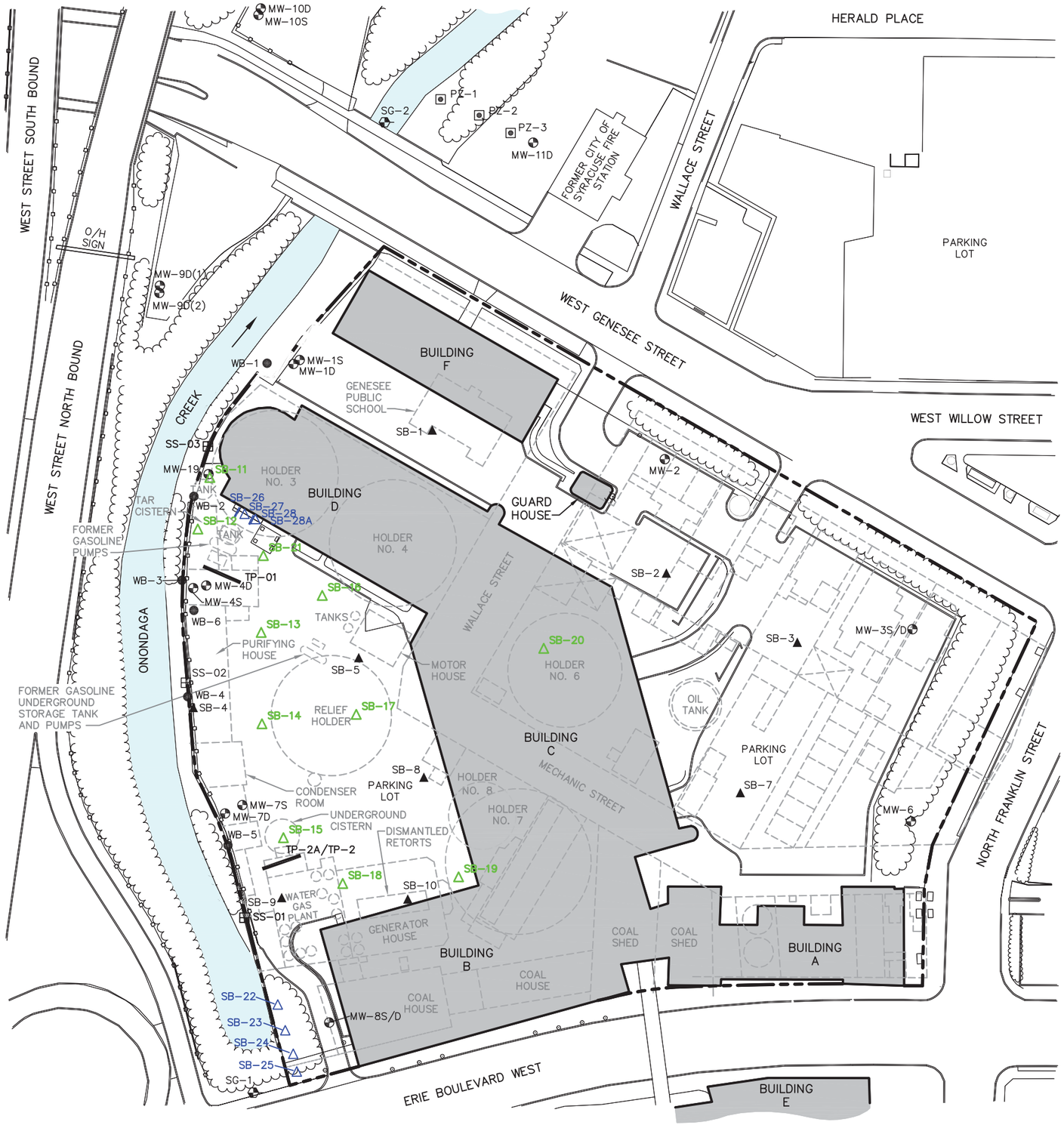
NATIONAL GRID
ERIE BOULEVARD FORMER MGP SITE
SYRACUSE, NEW YORK

SITE LOCATION MAP

ARCADIS

FIGURE
1

10/16/2014 SYRACUS. DIV/GROUP: ENV/IM-DV DJHOWES
B0036694/0000/00005/CDR/36694N01.CDR



LEGEND:

SB-27△	CONSTRUCTION PROJECT INVESTIGATION SOIL BORING (2012)
SB-26	CONSTRUCTION PROJECT SOIL BORING UTILITY CLEARANCE TRENCH (2012)
SB-11△	FINAL RI SOIL BORINGS (2008)
SB-5 ▲	PSA SOIL BORINGS (1995)
MW-1S/D	EXISTING MONITORING WELL LOCATION
PZ-2	EXISTING PIEZOMETER LOCATION
SG-2	EXISTING STAFF GAUGE LOCATION
SS-02	SURFACE SOIL SAMPLING LOCATION
WB-1 ●	FORMER WALL BORING LOCATION
TP-01	TEST PIT LOCATION
	FORMER MGP SITE BOUNDARY (APPROXIMATE)
	TREES/VEGETATION
	GUARD RAIL

NOTES:

1. BASE MAP DEVELOPED FROM PHOTOGRAMMETRIC SURVEY PERFORMED BY LOCKWOOD MAPPING IN SPRING 1995.
2. FORMER MANUFACTURED GAS PLANT (MGP) STRUCTURES, WITH THE EXCEPTION OF HOLDERS NO. 7 AND NO. 8, ARE FROM THE FORMER SYRACUSE LIGHTING COMPANY GAS PLANT, AS SHOWN ON SANBORN MAPPING DATED 1911. HOLDER NO. 7 IS FROM PLOT PLAN PREPARED BY MELVIN L. KING ARCHITECT, DATED SEPTEMBER 2, 1931. HOLDER NO. 8 IS FROM SANBORN MAPPING DATED 1892.
3. LOCATIONS OF CONSTRUCTION PROJECT INVESTIGATION SOIL BORINGS/UTILITY CLEARANCE TRENCHES, FINAL RI SOIL BORINGS, RETAINING WALL, MONITORING WELLS, PIEZOMETERS, AND STAFF GAUGES ARE BASED ON SURVEY PERFORMED BY NATIONAL GRID.
4. PRELIMINARY SITE ASSESSMENT (PSA) SOIL BORING, TEST PIT, AND SURFACE SOIL SAMPLING LOCATIONS ARE APPROXIMATE.
5. LOCATIONS OF FORMER GASOLINE UNDERGROUND STORAGE TANKS AND FORMER GASOLINE PUMPS ARE APPROXIMATED FROM SITE PLAN PREPARED BY KING AND KING ARCHITECTS, DATED MARCH 31, 1972.

0 100' 200'
GRAPHIC SCALE

NATIONAL GRID
ERIE BOULEVARD FORMER MGP SITE
SYRACUSE, NEW YORK

HISTORICAL MGP STRUCTURES AND SAMPLING LOCATIONS

ARCADIS

FIGURE
2

CITY: SYRACUSE, NY GROUP: ENV/IM-DV DB: A. SCHILLING, R. ALLEN, E. KRAHMER PIC: T. W. YOUNG PM/TM: J. BRUSSEL TR: M. HYSELL LYR: ON=*;OFF=REF, (FRZ)
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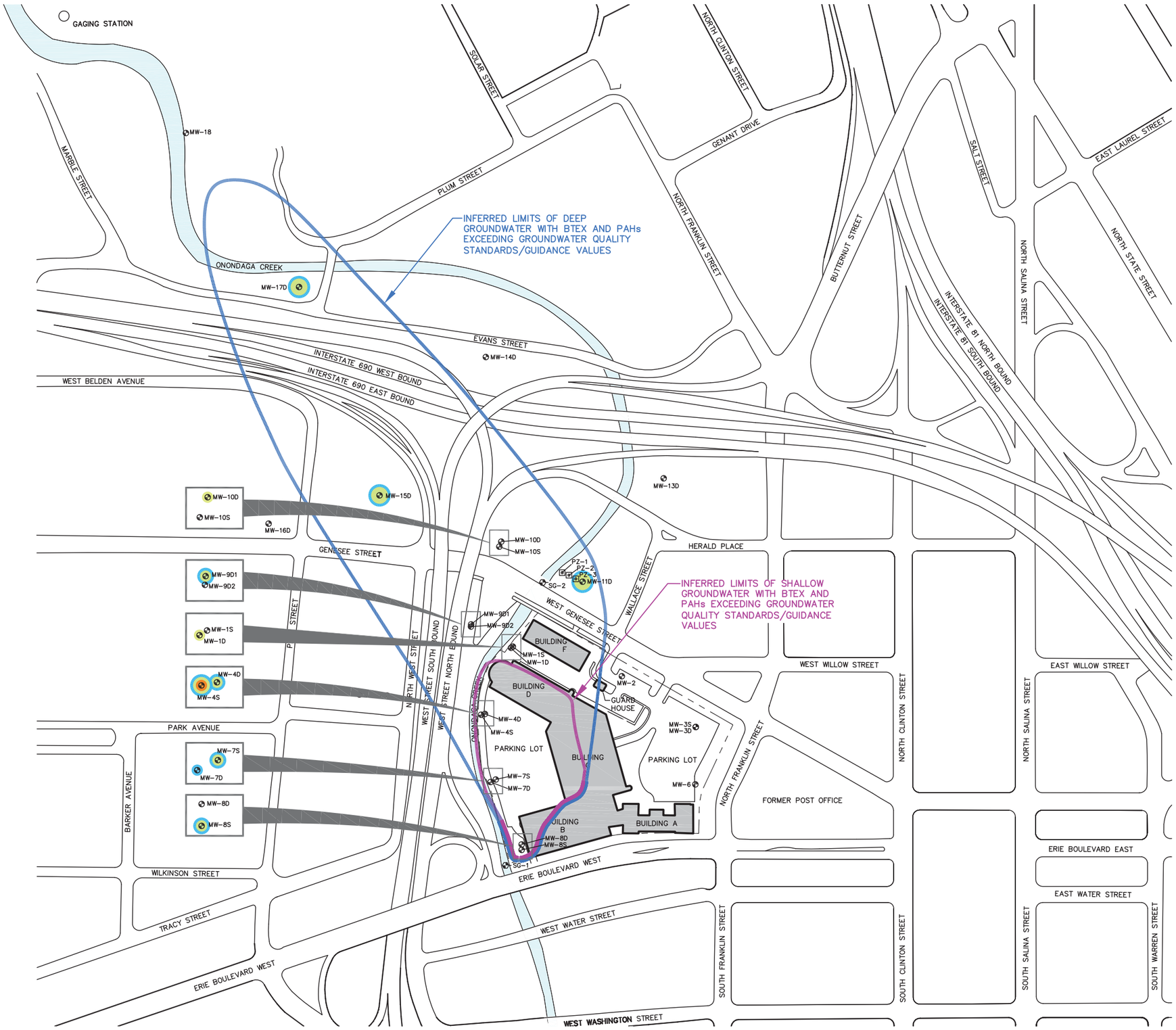

LEGEND:

MW-1S/D	EXISTING MONITORING WELL LOCATION
PZ-2	EXISTING PIEZOMETER LOCATION
SG-2	EXISTING STAFF GAUGE LOCATION
	INFERRED LIMITS OF SHALLOW GROUNDWATER
	INFERRED LIMITS OF DEEP GROUNDWATER
	FORMER MGP SITE BOUNDARY (APPROXIMATE)

COLOR CODING DESIGNATES WELL WHERE ONE OR MORE OF THE FOLLOWING CONSTITUENTS WAS IDENTIFIED IN GROUNDWATER AT CONCENTRATIONS EXCEEDING TOGS 1.1.1 STANDARDS/GUIDANCE VALUES DURING THE MOST RECENT SAMPLING EVENT FOR:

- PAH
- BTEX
- CYANIDE

NOTES:

1. BASE MAP DEVELOPED FROM NEW YORK STATE GEOGRAPHIC INFORMATION SYSTEMS, OFFICE OF CYBER SECURITY & CRITICAL INFRASTRUCTURE, LAST UPDATED 4/25/2007.
2. MONITORING WELL, PIEZOMETER, AND STAFF GAUGE LOCATIONS ARE BASED ON SURVEY PERFORMED BY NATIONAL GRID.
3. BTEX = BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES.
4. PAH = POLYCYCLIC AROMATIC HYDROCARBONS.
5. NAPL = NON-AQUEOUS PHASE LIQUID.
6. NO MEASURABLE NAPL OBSERVED IN GROUNDWATER.
7. TOGS 1.1.1 STANDARDS/GUIDANCE VALUES ARE FROM THE NYSDEC DIVISION OF WATER, TECHNICAL AND OPERATIONAL GUIDANCE SERIES DOCUMENT TITLED "AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES AND GROUNDWATER EFFLUENT LIMITATIONS", (TOGS 1.1.1) DATED JUNE 1998, LAST REVISED JUNE 2004.

0 300' 600'

GRAPHIC SCALE

NATIONAL GRID
ERIE BOULEVARD FORMER MGP SITE
SYRACUSE, NEW YORK

DISTRIBUTION OF BTEX, PAHs, AND CYANIDE IN ONSITE AND OFFSITE GROUNDWATER

ARCADIS

FIGURE 3

CITY: SYRACUSE, NY GROUP: ENV/IM-DV DB: A. SCHILLING, R. ALLEN, E. KRAHMER PIC: T.W. YOUNG PM/TM: J. BRUSSEL TR: M. HYSELL LYR: ON=*;OFF=REF, (FRZ)
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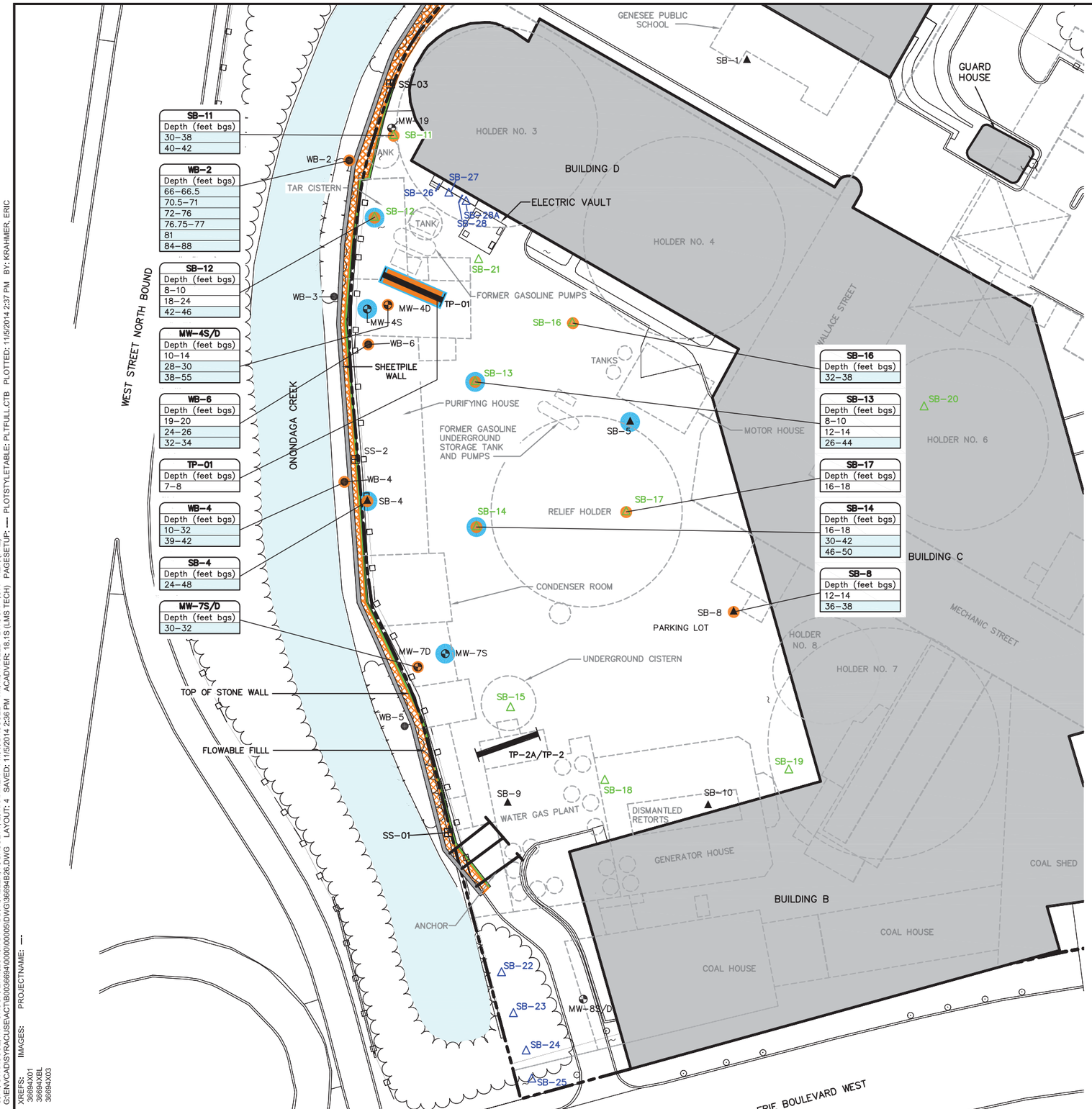

LEGEND:

- SB-27△ CONSTRUCTION PROJECT INVESTIGATION SOIL BORINGS (2012)
- SB-26 CONSTRUCTION PROJECT SOIL BORING UTILITY CLEARANCE TRENCH (2012)
- SB-11△ FINAL RI SOIL BORINGS (2008)
- SB-5 ▲ PSA SOIL BORINGS (1995)
- MW-1S/D EXISTING MONITORING WELL LOCATION
- SS-02 SURFACE SOIL SAMPLING LOCATION (2002)
- WB-1 ● FORMER WALL BORING LOCATION (1995)
- TP-01 TEST PIT LOCATION
- FORMER MGP SITE BOUNDARY (APPROXIMATE)
- TREES/VEGETATION
- GUARD RAIL
- STONE WALL
- SHEETPILE WALL
- BULKHEAD TIE BACK STRUCTURE FOR SHEETPILE WALL
- FLOWABLE FILL
- SB-8 (Depth (feet bgs) 12–14, 36–38) SOIL BORING AND CORRESPONDING DEPTHS OF POTENTIAL NAPL SATURATED SOIL – BLUE HIGHLIGHTING INDICATES INTERVAL IS BELOW THE WATER TABLE
- PAH SOIL ANALYTICAL RESULT > 500 ppm
- POTENTIAL NAPL SATURATED SOIL

NOTES:

1. BASE MAP DEVELOPED FROM PHOTOGRAMMETRIC SURVEY PERFORMED BY LOCKWOOD MAPPING IN SPRING 1995.
2. FORMER MANUFACTURED GAS PLANT (MGP) STRUCTURES, WITH THE EXCEPTION OF HOLDERS NO. 7 AND NO. 8, ARE FROM THE FORMER SYRACUSE LIGHTING COMPANY GAS PLANT, AS SHOWN ON SANBORN MAPPING DATED 1911. HOLDER NO. 7 IS FROM PLOT PLAN PREPARED BY MELVIN L. KING ARCHITECT, DATED SEPTEMBER 2, 1931. HOLDER NO. 8 IS FROM SANBORN MAPPING DATED 1892.
3. LOCATIONS OF CONSTRUCTION PROJECT INVESTIGATION SOIL BORINGS/UTILITY CLEARANCE TRENCHES, FINAL RI SOIL BORINGS, RETAINING WALL, MONITORING WELLS, PIEZOMETERS, AND STAFF GAUGES ARE BASED ON SURVEY PERFORMED BY NATIONAL GRID.
4. PRELIMINARY SITE ASSESSMENT (PSA) SOIL BORING, TEST PIT, AND SURFACE SOIL SAMPLING LOCATIONS ARE APPROXIMATE.
5. LOCATIONS OF FORMER GASOLINE UNDERGROUND STORAGE TANKS AND FORMER GASOLINE PUMPS ARE APPROXIMATED FROM SITE PLAN PREPARED BY KING AND KING ARCHITECTS, DATED MARCH 31, 1972.
6. LOCATION AND DETAILS OF SHEETPILE WALL ARE FROM ONONDAGA CREEKWALL SHEETPILING PROJECT BY McMAHON & MANN CONSULTING ENGINEERS, DATED SEPTEMBER 1996.
7. BGS = BELOW GROUND SURFACE.
8. WALL BORINGS WB–2, WB–3, WB–4, AND WB–5 WERE COMPLETED WEST OF THE EXISTING SHEETPILE WALL. THE GROUND SURFACE AT THESE LOCATIONS IS APPROXIMATELY 15 FEET BELOW THE GROUND SURFACE OF THE WESTERN ONSITE PARKING LOT.
9. ppm = PARTS PER MILLION.
10. PAH = POLYCYCLIC AROMATIC HYDROCARBONS.

0 60' 120'
GRAPHIC SCALE

NATIONAL GRID
ERIE BOULEVARD FORMER MGP SITE
SYRACUSE, NEW YORK

DISTRIBUTION OF PAHs AND POTENTIAL NAPL SATURATED SOIL

ARCADIS

FIGURE 4

CITY: SYRACUSE, NY GROUP: ENV/IEST/IM-DV DB: R. ALLEN, R. BASSETT, E. KRAHMER PM: J. BRUSSEL TM: M. HYSELL LYR: ON=*;OFF=REF, (FRZ)
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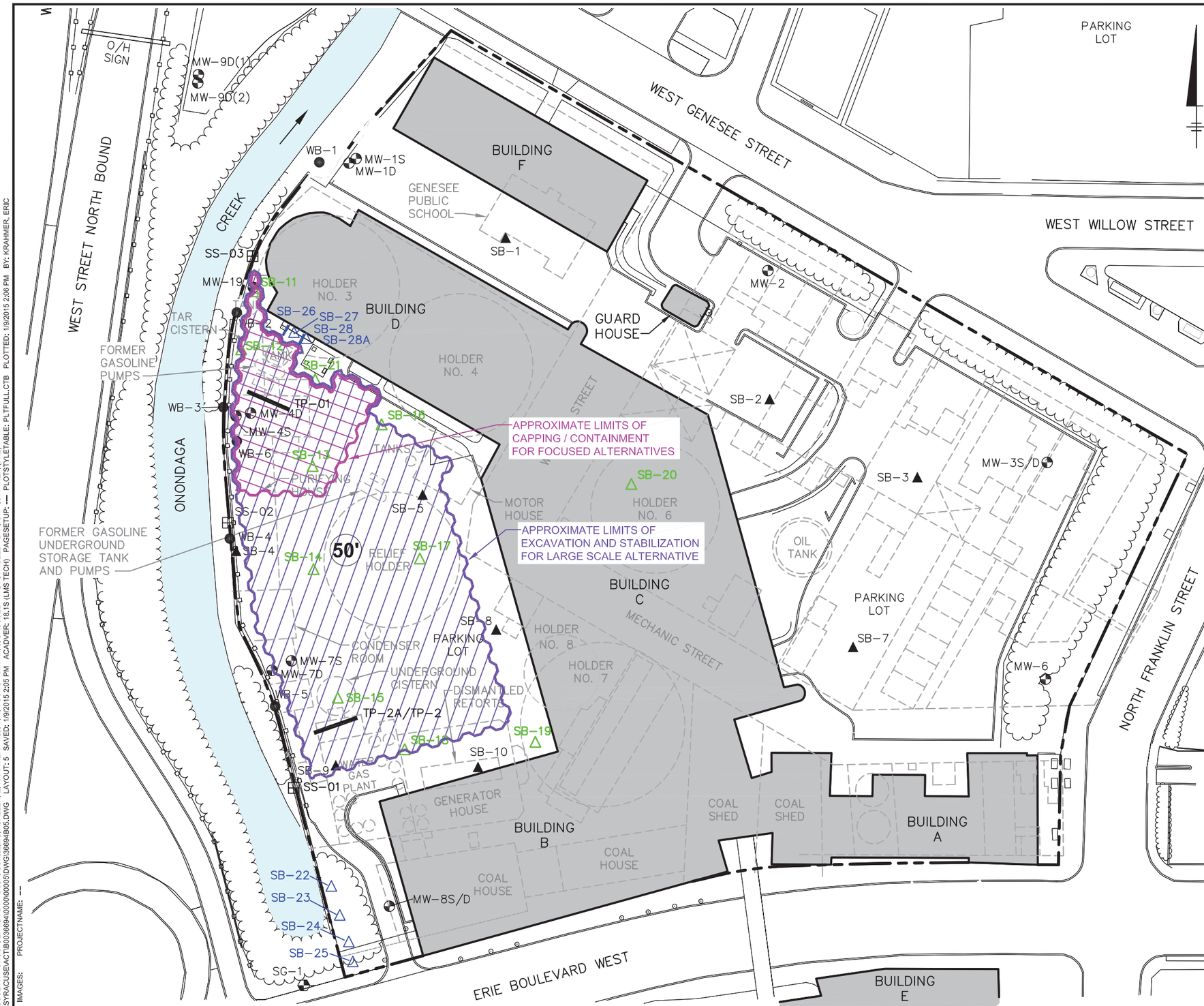

LEGEND:

- SB-27 — CONSTRUCTION PROJECT INVESTIGATION SOIL BORING (2012)
- SB-26 — CONSTRUCTION PROJECT SOIL BORING UTILITY CLEARANCE TRENCH (2012)
- SB-11 — FINAL RI SOIL BORINGS (2008)
- SB-5 — PSA SOIL BORINGS (1995)
- MW-1S/D — EXISTING MONITORING WELL LOCATION
- PZ-2 — EXISTING PIEZOMETER LOCATION
- SG-2 — EXISTING STAFF GAUGE LOCATION
- SS-02 — SURFACE SOIL SAMPLING LOCATION
- WB-1 — FORMER WALL BORING LOCATION
- TP-01 — TEST PIT LOCATION
- FORMER MGP SITE BOUNDARY (APPROXIMATE)
- TREES/VEGETATION
- GUARD RAIL
- APPROXIMATE LIMITS OF CAPPING AND CONTAINMENT (FOR FOCUSED ALTERNATIVES) OR EXCAVATION AND STABILIZATION (FOR LARGE SCALE ALTERNATIVES)
- APPROXIMATE LOCATION OF CONTAINMENT WALL (FOR FOCUSED ALTERNATIVES) OR EXCAVATION BRACING (FOR LARGE SCALE ALTERNATIVES)
- 50' — APPROXIMATE DEPTH OF STABILIZATION (FEET BGS) FOR LARGE SCALE ALTERNATIVES

NOTES:

1. BASE MAP DEVELOPED FROM PHOTOGRAMMETRIC SURVEY PERFORMED BY LOCKWOOD MAPPING IN SPRING 1995.
2. FORMER MANUFACTURED GAS PLANT (MGP) STRUCTURES, WITH THE EXCEPTION OF HOLDERS NO. 7 AND NO. 8, ARE FROM THE FORMER SYRACUSE LIGHTING COMPANY GAS PLANT, AS SHOWN ON SANBORN MAPPING DATED 1911. HOLDER NO. 7 IS FROM PLOT PLAN PREPARED BY MELVIN L. KING ARCHITECT, DATED SEPTEMBER 2, 1931. HOLDER NO. 8 IS FROM SANBORN MAPPING DATED 1892.
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4. PRELIMINARY SITE ASSESSMENT (PSA) SOIL BORING, TEST PIT, AND SURFACE SOIL SAMPLING LOCATIONS ARE APPROXIMATE.
5. LOCATIONS OF FORMER GASOLINE UNDERGROUND STORAGE TANKS AND FORMER GASOLINE PUMPS ARE APPROXIMATED FROM SITE PLAN PREPARED BY KING AND KING ARCHITECTS, DATED MARCH 31, 1972.
6. BGS = BELOW GROUND SURFACE.
7. THE ACTUAL LIMITS AND DEPTH OF THE SOIL EXCAVATION, AS WELL AS THE ASSOCIATED LIMITS FOR THE EXCAVATION BRACING, WOULD BE DETERMINED DURING THE REMEDIAL DESIGN BASED ON THE RESULTS OF THE PRE-DESIGN INVESTIGATION.

0 80' 160'
GRAPHIC SCALE

NATIONAL GRID
ERIE BOULEVARD FORMER MGP SITE
SYRACUSE, NEW YORK

APPROXIMATE LIMITS OF SOIL REMEDIAL ALTERNATIVES

ARCADIS

FIGURE 5

CITY: SYRACUSE NY GROUP: ENV/IM-DV DB: A. SCHILLING, R. ALLEN, E. KRAHMER PIC: T.W. YOUNG PM/TM: J. BRUSSEL TR: M. HYSELL LYR: ON=*;OFF=REF, (FRZ)
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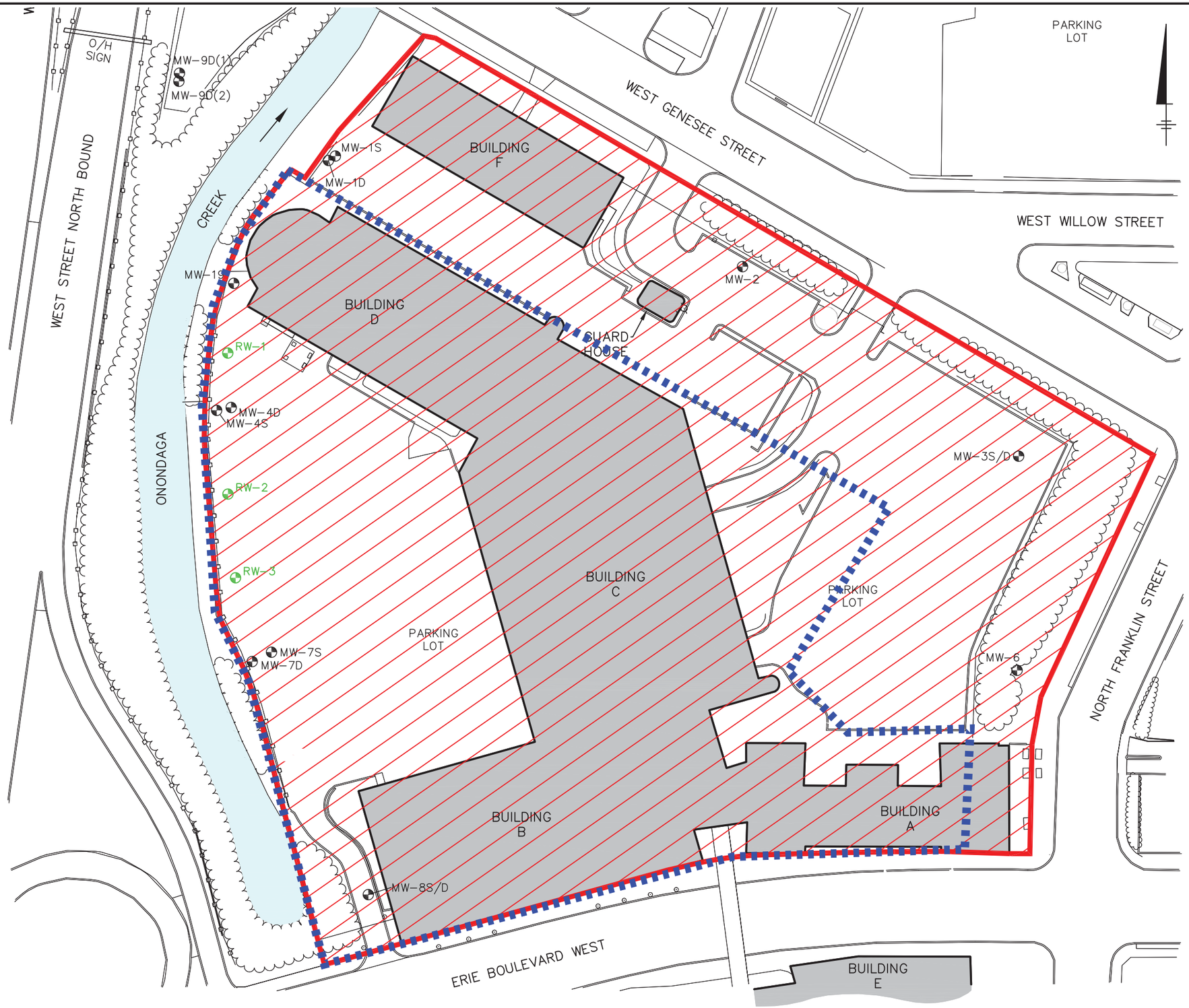

LEGEND:

- SITE BOUNDARY/APPROXIMATE AREA REQUIRING SITE COVER AND INSTITUTIONAL CONTROL
- RW-1 — APPROXIMATE LOCATION OF PROPOSED NAPL RECOVERY WELL
- MW-1S/D — EXISTING MONITORING WELL LOCATION
- PZ-2 — EXISTING PIEZOMETER LOCATION
- TREES/VEGETATION
- GUARD RAIL
- MGP Boundary

NOTES:

1. BASE MAP DEVELOPED FROM PHOTOGRAMMETRIC SURVEY PERFORMED BY LOCKWOOD MAPPING IN SPRING 1995.
2. LOCATIONS OF MONITORING WELLS AND PIEZOMETERS, ARE BASED ON SURVEY PERFORMED BY NATIONAL GRID.
3. LOCATIONS OF NON-AQUEOUS PHASE LIQUID (NAPL) RECOVERY WELLS ARE APPROXIMATE AND WILL BE DETERMINED DURING REMEDIAL DESIGN.
4. EXISTING ONSITE AND OFFSITE MONITORING WELLS WILL BE INCLUDED IN LONG-TERM GROUNDWATER MONITORING PROGRAM.

0 80' 160'
GRAPHIC SCALE

NATIONAL GRID
ERIE BOULEVARD FORMER MGP SITE
SYRACUSE, NEW YORK

APPROXIMATE LIMITS OF SELECTED REMEDY

ARCADIS

FIGURE
6

CITY: SYRACUSE, NY GROUP: ENV/IM-DV DB: A. SCHILLING, R. ALLEN, E. KRAHMER PIC: T.W. YOUNG PM/TM: J. BRUSSEL TR: M. HYSELL LYR: ON=*;OFF=REF, (FRZ)
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APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

NM – Syracuse Erie Blvd. MGP
Manufactured Gas Program
Onondaga County, New York
Site No. 734060

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

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

A public meeting was held on March 10, 2015, which included a presentation of the remedial investigation feasibility study (RI/FS) for the NM – Syracuse Erie Blvd. MGP Site as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period for the PRAP ended on March 25, 2015.

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

COMMENT 1: Were any sub-slab ventilation systems installed?

RESPONSE 1: Sub-slab ventilation systems were not required at the site. Analysis of soil vapor and indoor air samples collected at the site did not detect significant levels of MGP related volatile organic compound (VOC) contamination in any of the indoor air samples at concentrations exceeding typical background air values. Two non-MGP related VOCs (methylene chloride and trichloroethylene) were identified at two indoor air sampling locations, but the concentrations were detected at levels less than the NYSDOH guidance values. Also, the presence of these compounds was attributed to operational use of products inside the buildings and not the former MGP related operations.

COMMENT 2: Is there any historical information available regarding the volume of coal tar that was at the site?

RESPONSE 2: The Department and NYSEG are not aware of any historic information regarding initial volumes of coal tar released from the site.

COMMENT 3: Is there a reason there was more soil impact in the northwest corner of the site?

RESPONSE 3: The soil impact in the northwest corner of the site is not unexpected since this is also the area of the former Gas Holder #3. By-products (coal tar) from the gas stored in Holder #3 may have leaked from the gas holder into the environment resulting in the soil contamination.

COMMENT 4: What impact was identified in the Onondaga Creek?

RESPONSE 4: There was no site-related contamination identified in Onondaga Creek. Chemical constituents, including PAHs, metals and pesticides, were detected in Onondaga Creek sediments upstream of, adjacent to, and downstream of the site. Analysis of the sampling results indicate an even distribution of contaminants across the sampling locations which leads to the conclusion that urban runoff from streets and parking lots into the creek is the likely source of these contaminations.

COMMENT 5: Does the shallow groundwater aquifer eventually lower in elevation and combine with the deep groundwater aquifer?

RESPONSE 5: No. There is no hydraulic communication between shallow and deep (bedrock) groundwater aquifer as there is a confining till layer of dense silty clay approximately 20 feet thick separating the two aquifers.

COMMENT 6: How many wells are involved with the long-term monitoring component of this plan?

RESPONSE 6: Up to twenty monitoring wells will be used to monitor the groundwater to assess the long-term effectiveness of the selected remedy. The final number of monitoring wells will be determined during the design of the monitoring program.

APPENDIX B

Administrative Record

Administrative Record

NM – Syracuse Erie Blvd. MGP Site
Syracuse, Onondaga County, New York
Site No. 734060

1. Proposed Remedial Action Plan for the NM – Syracuse Erie Blvd. MGP site, dated February 2015, prepared by the Department.

2. Consent Order between the Department and Niagara Mohawk Power Corporation, doing business as National Grid (Index No.D0-0001-9210), December 7, 1992.

3. Consent Order between the Department and Niagara Mohawk Power Corporation, doing business as National Grid (Index No.A4-0473-0000), November 7, 2003.

4. Preliminary Site Assessment/Interim Remedial Measures (PSA/IRM) Study Report, February 1998, prepared by ARCADIS.

5. Initial Remedial Investigation Report, Erie Boulevard Former MGP Site Syracuse, New York, between 2000 and 2003, prepared by ARCADIS.

6. Remedial Investigation Report, Erie Boulevard Former MGP Site Syracuse, New York, Volume 1, May 2003, prepared by ARCADIS.

7. Remedial Investigation Report, Erie Boulevard Former MGP Site Syracuse, New York, Volume 2, May 2003, prepared by ARCADIS.

8. Supplemental Remedial Investigation Report (SRI) Erie Boulevard Former MGP Site Syracuse, New York, November 2007, prepared by ARCADIS.

9. Final Remedial Investigation Report, September 2008, prepared by ARCADIS.

10. Vapor Intrusion (VI) Investigation Erie Boulevard Former MGP Site Syracuse, NY, February 2009, prepared by ARCADIS.

11. Soil Investigation Erie Boulevard Former MGP Site Syracuse, New York, August 2012, prepared by ARCADIS.

12. Groundwater Monitoring Report, Erie Boulevard Former MGP Site Syracuse, New York, January 2013, prepared by ARCADIS.

13. Feasibility Study Report Erie Boulevard Former MGP Site Syracuse, New York, June 2009 Revised July 2014, prepared by ARCADIS.