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June 7, 2011 **SENT VIA ELECTRONIC MAIL**

Mr. Richard Dana, CPG
Division of Environmental Remediation, Remedial Bureau C, 11th Floor
New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-7014

Subject: **Final Remedial Design Work Plan**
Site #: 9-32-098
NYSEG – Lockport Transit Street MGP Site

Dear Mr. Dana:

On behalf of New York State Electric and Gas Corporation (NYSEG), AECOM is submitting the final Remedial Design Work Plan (RDWP) at the Lockport Transit Street Manufactured Gas Plant (MGP) Site in Lockport, NY to the New York State Department of Environmental Conservation (NYSDEC) for approval.

This final RDWP encorporates comments from the NYSDEC letter dated May 26, 2011. As discussed on a conference call between NYSDEC, NYSEG and AECOM on June 2, 2011, the three comments not directly encorporated into the final RDWP involve the following comments:

- Page 1-2 – contingency plan in the community air monitoring plan to deal with drill water that could be heavily contaminated (this was determined to not be an issue since drill water will be containerized in a sealed vessel);
- Appendix A, page 3-2, Section 3.1.4 – potential for an angled injection well (this was discussed and will be considered during the design process); and
- Appendix A, Page 3-3, Section 3-3 – target permeability of1 to 3 Lugeons (the results of the pilot test will determine effective target permeabilities and will be evaluated further in the design process).

The Grout Wall Treatability Study field work is presently scheduled to begin the week of July 11. We would appreciate NYSDEC approval of this final RDWP by June 24 such that the scheduled start dates can be confirmed with the subcontractors.

Should you have any questions or require additional information in the meantime, please do not hesitate to call me at (518) 396-7638 or Tracy Blazicek at (607) 762-8839.

Yours sincerely,

Scott Underhill

Scott Underhill, P.E.
Project Manager

cc: T. Blazicek, NYSEG

AECOM Environment

Prepared for:
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Prepared by:
AECOM
Latham, NY
Project 60194949
June 2011

Remedial Design Work Plan
Lockport Transit Street Former MGP Site
Lockport, New York
NYSDEC Site # 9-32-098

Final

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Remedial Design Work Plan
Lockport Transit Street Former MGP Site
Lockport, New York
NYSDEC Site # 9-32-098

Final

Prepared By: Scott McDonough

Reviewed By: Scott Underhill, P.E.

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ENGINEERING CERTIFICATION

I hereby certify that the Remedial Design Work Plan for the Lockport Transit Street Former Manufactured Gas Plant was prepared in accordance with all applicable statues and regulations and in substantial conformance with the New York State Department of Environmental Conservation Division of Remediation (DER) Technical Guidance for Site Investigation and Remediation (DER10).

Respectfully submitted,
AECOM Technical Services Northeast, Inc.

6-8-11

Scott A. Underhill Date
Registered Professional Engineer
New York License No. 075332

1.0 Purpose and Objectives

On behalf of New York State Electric and Gas Corporation (NYSEG), AECOM Environment has prepared this Remedial Design Work Plan (RDWP) for the land based remediation of impacted soils and groundwater at Lockport Transit Street Former Manufactured Gas Plant (MGP) Site (Site) located in Lockport, Niagara County, New York (Figure 1). This RDWP provides the guidelines to implement the remedy selected by the New York State Department of Environmental Conservation (NYSDEC) in accordance with the Record(s) of [ROD, NYSDEC, 2009] and the Administrative Order on Consent [CO, Index No. D0-0002-9309] between NYSDEC and NYSEG (NYSDEC, 1994).

This RDWP presents the approach by which the design will be completed in order to satisfy the remedial objectives for the Site. The components of the remedy covered by this RDWP, as defined in the ROD(s), are as follows:

- Relocation of the Control House and 12kV switchgear from the western portion of the site to the eastern portion of the site.
- Excavation and removal of impacted soils west of the existing substation and parts of LaGrange Street.
- Installation of an overburden NAPL collection trench along the north and west sides of the existing substation.
- Installation of a geomembrane cap overlain with crushed stone above portions of the site.
- Installation of approximately 400 linear feet (LF) of grout wall within the bedrock down gradient of the overburden NAPL collection trench and approximately 200 LF of grout wall within the bedrock along the nearby Barge Canal in the vicinity of seeps recorded during investigation work.
- Installation of a subsurface barrier on the south and east sides of the site.
- Installation of NAPL collection wells both at onsite and offsite locations.
- Excavation and removal of impacted sediments from the Barge Canal.
- To the extent practicable green remediation and sustainability will be considered in the design and implementation of the remedy.
- Site Management Plan (SMP) and environmental easements.

This RDWP provides the basis of design and outlines the design documents to be prepared for each component of remediation mentioned above but excluding the SMP and environmental easements. Additional detail is provided for the basis of the work, including: site preparation, excavation, grout wall installation, cap installation, subsurface barrier installation, extraction well installation, waste management, water management, site restoration, traffic control, and community protection activities to be undertaken during the work.

This RDWP also includes the details of the grout wall pilot test activities that will provide necessary site-specific information to support the Remedial Design. The Grout Wall Pilot Study Work Plan is provided in Appendix B.

DER-10 requirements

A copy of the ROD has been included as Appendix C of this document to satisfy the following requirements of Section 5.2 (b) of the DER-10:

- Summary of the Remedial Investigation Report, provided in Section 5.1 of the ROD;
- Summary of sampling results collected up to the date of the publication of the ROD;
- Identification of all applicable Standards, Criteria, and Guidance (SCGs);
- Figures identifying all areas where the remedial action will be conducted; and
- Figures showing the vertical and horizontal extent of the area to be remediated.

In accordance with the CO and the Technical Guidance for Site Investigation and Remediation [(DER-10); NYSDEC, 2010], the Remedial Design program will include the preparation/submittal of the following information:

Remedial Design Work Plan (this document):

- Remedial Design Report (this RDWP is submitted in lieu of the Remedial Design Report);
- Schedule to implement the Remedial Design;
- Protocols to determine the effectiveness of the Remedial Design; and
- Description of field activities (i.e., Grout Wall Pilot Study Work Plan). A Community Air Monitoring Plan (CAMP) for the pilot test work has been included as part of the Grout Wall Pilot Study Work Plan. A Health and Safety Plan (HASP) in the form of a Task Hazard Analysis (THA) for the pilot test work has been included as an attachment to the Grout Wall Pilot Study Work Plan.

50% design submittals will include drafts of the following:

- Remedial Design specifications and drawings;
- Contingency Plan; and
- Citizen's Participation Plan (CPP).

100% design submittals include the following:

- Biddable quality design documents for the Remedial Design, consisting of specifications and drawings, complete and in final form.

The following additional documents are not explicitly required by the CO, but are integral to the remedial design program. They will be provided with the100% design submittal:

- Community Air Monitoring Plan (CAMP);
- Odor, Vapor, and Dust Control Plan (OVDCP);
- Transportation Plan;
- Construction Site-Specific HASP;
- Vibration Monitoring Plan (if necessary); and
- Permitting Plan that includes associated permits and review correspondence.

A SMP will be developed following completion of the remedial action.

1.1 Site History

1.1.1 Operational/Disposal History

The Manufactured Gas Plant operated from 1851 until 1927, producing a combustible gas that was delivered through pipes to local homes and businesses, in the same manner that natural gas is delivered today. At first, the gas was produced by heating coal ("coal carbonization"). Sometime around 1914, the plant also began using a second method known as the "carbureted water gas" process, which involved the use of petroleum products for gas making. The waste materials from these two processes are distinct but broadly similar, with the principal waste being a dark, oily waste commonly known as coal tar. For discussion purposes, tars produced by both processes are referred to as "MGP tar" or nonaqueuous phase liquids (NAPL).

Structures present during the operation of the plant included a number of gas holders (15,000; 50,000; and 150,000 cubic feet), retorts for carbonizing the coal, tar tanks, oil tanks, a purifier house, and coal handling and storage. These buildings were demolished between 1928 and 1948. The locations of these historic structures are shown on Figure 2.

The State Road Tar Works operated from approximately 1900 to 1911 as a processing plant for tar generated at the Transit Street former MGP Site. This site was separately addressed in a Record of Decision (ROD) dated March 2007. Construction described in that ROD was completed in May of 2008, and the required site management plan and institutional controls are being developed.

1.1.2 Remedial History

Previous investigations of this site include a site screening between 1982 and 1985 and additional sampling conducted from 1991 to 1995. A soil removal was performed in 1997 to remove MGP tar contaminated soils from the adjacent gas station property.

The site screening investigation included the collection of groundwater, surface water and soil samples. Borings, test pits and monitoring wells were utilized during these investigations. MGP tar was observed in former MGP structures which remain in the subsurface, and in both soil and bedrock outside these structures.

The soil removal involved the removal of tar contaminated material during a tank removal at the gas station immediately north of the site. Petroleum contamination associated with these tanks was removed by the property owner; while disposal costs for tar contaminated soil (approximately 240 tons) was paid for by NYSEG.

1.1.3 Enforcement Status

New York State Electric & Gas (NYSEG) entered into a multi-site Consent Order on March 30, 1994. The Order (#D0-0002-9309) obligates the responsible parties to implement a full remedial program for 33 former MGP sites across New York State, including the Cortland-Homer site.

In March 2009, the NYSDEC issued a ROD for the site, which established a remedial action for the on-site and off-site impacted materials. The Final Remedial Design will be submitted for approval to the NYSDEC.

2.0 Site Contamination

A remedial investigation/feasibility study (RI/FS) has been conducted to evaluate potential threats to human health and the environment.

2.1 Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. RI fieldwork was conducted between January 2005 and April 2006. The field activities and findings of the investigation are described in the RI report.

During the RI, soil borings, bedrock cores, and wells were used to delineate and characterize the soils, bedrock and groundwater in the subsurface at the site. Sediment cores were collected from the adjacent canal. Environmental samples were collected from the surface and subsurface soil, sediment, groundwater and surface water. Air samples were also collected from soil gas, indoor air and outdoor air to assess the potential for soil vapor to impact nearby buildings. These samples were analyzed for the contaminants typically found in MGP Tar and other MGP wastes.

2.1.1 Standards, Criteria, and Guidance (SCG)

To determine whether the soil and groundwater contain contamination at levels of concern, data from the investigation were compared to the following SCGs:

- Groundwater and surface water SCGs are based on the NYSDEC's "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.
- Soil SCGs are based on the NYSDEC's Cleanup Objectives "Technical and Administrative Guidance Memorandum [TAGM] 4046 and 6 NYCRR Subpart 375-6 - Remedial Program Soil Cleanup Objectives".
- Sediment SCGs are based on the NYSDEC's "Technical Guidance for Screening Contaminated Sediments."

Based on the RI results, in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of the site require remediation. These are summarized in Section 5.1.2. More complete information can be found in the RI report.

2.1.2 Nature and Extent of Contamination

The principal waste product produced at the former MGP site was MGP Tar, which is an oily, dark colored liquid with a strong, objectionable odor. Unlike most materials labeled as "tar", this is not a semi-solid, viscous material but has a physical consistency similar to motor oil, which enables it to move through the subsurface MGP Tar is referred to as a dense non-aqueous phase liquid or DNAPL since it is heavier than water and will not readily dissolve in water. When released into the subsurface, it will sink through the groundwater until it reaches some less permeable material which it cannot penetrate. It can, under certain conditions, move laterally away from the point where it was initially released.

The tar contains high levels of volatile and semi-volatile organic compounds (VOCs and SVOCs). The principal MGP Tar VOCs are benzene, toluene, ethylbenzene, and xylenes. These compounds, collectively known as BTEX, are slightly soluble in water. Groundwater which comes into contact with tar or tar-contaminated soils will become contaminated with BTEX compounds. This contaminated groundwater can then move through the subsurface along with the ordinary groundwater flow.

SVOCs are a group of compounds known as polycyclic aromatic hydrocarbons, commonly abbreviated as PAHs. PAH compounds are generally less soluble than BTEX, and are consequently less likely to dissolve in groundwater. This makes PAH compounds less mobile in the subsurface, so the highest levels of PAHs are normally found in close proximity to the tar from which they are derived. The specific semivolatile organic compounds of concern in soil and groundwater are the following polycyclic aromatic hydrocarbons (PAHs):

- acenaphthene
- acenaphthylene
- anthracene
- benzo(a)anthracene
- benzo(a)pyrene
- benzo(b)fluoranthene
- benzo(g,h,i)perylene
- benzo(k)fluoranthene
- dibenzo(a,h)anthracene
- chrysene
- fluoranthene
- fluorene
- indeno(1,2,3-cd) pyrene
- 2-methylnaphthalene
- naphthalene
- phenanthrene
- pyrene

In this document, PAH concentrations are referred to as total PAHs (TPAHs). The TPAH concentration is the sum of the concentrations of each PAH listed above.

All of the BTEX and PAH contaminants which dissolve in groundwater are subject to degradation by natural processes. Common soil bacteria are capable of using these chemical compounds as a food source, converting them to carbon dioxide and water. This degradation process takes place more rapidly when abundant oxygen is present in the groundwater, and can in many cases be expedited by the introduction of additional oxygen.

The following are the media which were investigated and a summary of the findings of the investigation.

Waste Materials

MGP tar was observed in the immediate vicinity of the MGP structures, which appear to be the sources of the waste. Tar has migrated from these structures into the surrounding soils, both vertically and horizontally. Full investigation of the substation area could not be completed due to the proximity to electrical hazards, but the borings that were completed nearby found tar saturated soils starting at 3-4 feet below grade which would be expected to continue downward to bedrock approximately 15 feet below grade.

Evidence of tar migration is not seen east of this area, except for an area of shallow (<4 feet) soils with sheens and MGP odors which appear to be associated with the farthest east, at-grade holder. Bedrock was typically 20 feet below grade to the east. On the western portion of the substation, some tar was observed as shallow as 3 feet below grade, and tar saturated soils were observed as shallow as 6 feet. Bedrock to the west ranged from 8 to 15 feet below grade. North of the substation equipment, in LaGrange Street, tar saturated soils were observed as shallow as 4 feet below grade, and appear to continue intermittently to bedrock which ranges from 8 to 15 feet below grade. North of LaGrange Street, on the Reid Petroleum property, no NAPL saturated soils were observed, but blebs were observed, generally from 7-8 feet below grade, with one boring where blebs were observed from 6 to 10.5 feet below grade.

NAPL from the overburden has moved downward into dolomite bedrock immediately below impacted overburden. After moving vertically through the upper bedrock layers, MGP tar has accumulated in the upper shale layer and has migrated in this layer to the north and west of the site. The tar in the shale layer has reached the Barge Canal, where the tar discharges slowly in a series of seeps in the bare bedrock walls of the canal. The discharge points are above water during the winter, when the canal is lowered, and under water during the summer.

Some tar has also migrated through the bedrock into an unlined, city-owned sewer tunnel located between the site and the Barge Canal. Tar was observed at an access shaft due west of the site and also in the tunnel wall near the tar seeps.

Surface Soil

Surface soil PAH levels ranged from 23 to 51 mg/kg. These levels, while above rural background, are consistent with PAH levels which are commonly found adjacent to heavily trafficked, urban roadways.

Surface soil will be addressed as a consequence of addressing subsurface soils.

Subsurface Soil

Subsurface soil PAH levels ranged from non-detect to 1,759 mg/kg. Subsurface soil levels of BTEX compounds ranged from non-detect to 181 mg/kg. Subsurface soil contamination was co-located with areas where there was visual evidence of waste material.

Groundwater

Groundwater BTEX levels ranged from non-detect to 22,000 µg/l. Significant groundwater contamination was observed in the overburden, and at several elevations in the bedrock.

Soil Vapor

On-site soil vapor samples found BTEX compounds present at levels of 118 micrograms per cubic meter (µg/m3).

Soil vapor BTEX was observed below nearby homes at levels of 29 to 79 µg/m3. These levels would not be expected to have a significant effect on the indoor air. Indoor air was also sampled, and compounds were present at levels consistent with homes not affected by environmental contamination.

Surface Water and Sediment

The section of the Barge Canal adjacent to the site is a man-made cut through bedrock. There is relatively little sediment present at the bottom of the canal. However, immediately below the tar seeps, there is an accumulation of rockfall and dirt at the base of the canal wall. Visual evidence of MGP tar (sheen and NAPL) was observed in this material, which will be considered sediment for this discussion. Sediment PAH levels in the area immediately adjacent to this material were moderately elevated (36.1 mg/kg). Sediments upstream of the site related contamination and on the opposite bank were below the screening level of 4 mg/kg. During the summer navigation season, the area is under several feet of water.

PAHs levels in sediment below the locks were also elevated, but it is not possible at this time to associate these results with this site. PCB contamination was also detected in this vicinity, at levels which represent a much greater environmental concern. PCBs were not used in the manufactured gas processes and this area of the canal will be evaluated independently of this site by the Department.

Despite the widespread contamination of groundwater near the site, no site related VOCs or SVOCs were detected in surface water samples.

2.2 Summary of Human Exposure Pathways

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the human exposure pathways can be found in Section 6 of the RI report. An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: [1] a contaminant source, [2] contaminant release and transport mechanisms, [3] a point of exposure, [4] a route of exposure, and [5] a receptor population.

The source of contamination is the location where contaminants were released to the environment (any waste disposal area or point of discharge). Contaminant release and transport mechanisms carry contaminants from the source to a point where people may be exposed. The exposure point is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (e.g., ingestion, inhalation, or direct contact). The receptor population is the people who are, or may be, exposed to contaminants at a point of exposure.

An exposure pathway is complete when all five elements of an exposure pathway exist. An exposure pathway is considered a potential pathway when one or more of the elements currently does not exist, but could in the future.

Site-related contamination has impacted soils and groundwater both on-site and off-site, canal sediments in areas near coal tar seeps on the canal wall, and a large, city-owned sewer tunnel

located to the west of the site. In addition, MGP-related contamination from the site has been identified in soil vapor.

Site workers who dig or enter any excavations at the site could potentially be exposed to coal tar, and contaminated soils, soil vapor, and groundwater through incidental inhalation and/or dermal contact. The same potential routes of exposure exist for utility workers who may dig or enter any excavations or underground structures offsite where contamination is present. The area is supplied by public water, so exposure to groundwater contamination via drinking water is not likely. Due to the presence of extensive electrical and natural gas infrastructure on the site, there is no likelihood that the site will undergo a different use.

2.3 Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts include existing and potential future exposure pathways to fish and wildlife receptors, as well as damage to natural resources such as aquifers and wetlands.

The Fish and Wildlife Impact Analysis, which is included in the RI report, presents a detailed discussion of the existing and potential impacts from the site to fish and wildlife receptors. The following environmental exposure pathways and ecological risks have been identified:

- MGP tar is present on the wall of the Barge Canal and in rockfall debris immediately below. When it is disturbed, the rockfall debris creates sheens on the water surface, which is a violation of New York State Ambient Water Quality Standards. Although tar is not flowing in measurable quantities, it is clear that tar is still moving slowly through the bedrock and into the canal. This results in potential impacts to wildlife living and/or feeding in the Canal.
- Site contamination has also impacted the groundwater resource in both the upper, unconsolidated aquifer and the underlying bedrock aquifer, both at the site and in the area to the north and west, between the site and the canal.

3.0 Design Basis

The following section first describes the elements of the design basis that apply to all phases of the remedial design. The specific design basis for each phase of the work is then described.

3.1 Common design basis elements

3.1.1 Remedial goals

The remedial goals for the Site have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. As stated in the ROD, "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. The 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." (NYSDEC, 2010).

In accordance with the ROD(s), the remediation goals for this Site are:

<u>Groundwater</u>

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

<u>Soil</u>

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.
- Prevent migration of contaminants that would result in groundwater or surface water contamination.
- Prevent impacts to biota from ingestion/direct contact with impacted soil.

<u>Sediment</u>

- Prevent direct contact with contaminated sediments.
- Prevent releases of contaminant(s) from sediments that would result in surface water levels in excess of (ambient water quality criteria).
- Prevent impacts to biota from ingestion/direct contact with impacted sediments.
- Prevent resuspension/transportation of impacted sediments.

Further, the remediation goals for the Site include attaining to the extent practicable:

- Ambient groundwater quality standards.
- Recommended soil cleanup objectives in 6 NYCRR Subpart 375-6 - Remedial Program Soil Cleanup Objectives.

3.1.2 Site remedy

To achieve the remedial goals, the NYSDEC, in consultation with the New York State Department of Health (NYSDOH), has selected the following remedial approach for the Site (see Figure 3):

- Remedial design program to provide necessary details for construction, operation, maintenance, and monitoring of the selected remedy.
- Relocation of the Control House and 12kV switchgear from the western portion of the site to the eastern portion of the site.
- Excavation and removal of impacted soils west of the existing substation and parts of LaGrange Street.
- Installation of an overburden NAPL collection trench along the north and west sides of the existing substation.
- Installation of a geomembrane cap overlain with crushed stone above portions of the site.
- Installation of approximately 400 linear feet (LF) of grout wall within the bedrock down gradient of the overburden NAPL collection trench and approximately 200 LF of grout wall within the bedrock along the nearby Barge Canal in the vicinity of seeps recorded during investigation work.
- Installation of a subsurface barrier on the south and east sides of the site.
- Installation of NAPL collection wells both at onsite and offsite locations.
- Excavation and removal of impacted sediments from the Barge Canal.

3.1.3 Property access

The majority of the work will take place on NYSEG property however some work will be conducted within the NYSDOT/New York State Canal Corporation (NYSCC) right-of-way as well as within the City of Lockport's roadway (i.e., LaGrange Street). NYSEG and AECOM will attain all necessary permits to perform work within these areas. A temporary traffic control plan and restoration plan will be developed for work in LaGrange Street. This plan will be reviewed and accepted by the New York State Department of Transportation and the City of Lockport prior to site mobilization. In addition, a plan for remediation work within the Barge Canal will be reviewed and accepted by the United States Army Corp of Engineers (USACE) and the NYSCC prior to site mobilization.

3.1.4 Utilities

The selected remedial contractor (or AECOM during the grout wall pilot test) will coordinate with Dig Safely New York to identify and verify the location of subsurface utilities within the work limits. Following mark-out, proposed boring or excavation locations will be staked out to ensure that the locations will be free and clear of underground utilities. During the excavation work, the utilities located on LaGrange Street may need to be relocated or protected to allow access of excavation equipment. Utility relocation and protection will be addressed within the remedial design.

3.1.5 Environmental monitoring and controls

Environmental controls will ensure that the work activities do not spread impacted soils and MGP waste outside the impacted areas and maintain the protection of human health and the environment throughout the remedial operations. These items will be covered in more detail in the Transportation Plan, CAMP, HASP, and OVDCP for the Site. These items will be submitted as appendices to the 100% design phase report.

3.1.6 Green Remediation

NYSDEC DER-31: Green Remediation (DER-31; NYSDEC, 2010b) provides some examples of best practices and techniques that could be applied during all phases of remediation (see Attachment 1 of DER-31). In addition, NYDEC expects that the techniques identified below will be implemented at sites unless a site-specific evaluation demonstrates impracticability or favors an alternative green approach:

Practice/Technique	Potential Benefits[1]	Applicable to this Remedy
Use renewable energy where possible or purchase Renewable Energy Credits (RECs)	Reduce/supplement purchased energy use	X
Use of remediation technologies with an intermittent energy supply (i.e., energy use during peak energy generation only)	Reduce energy use	
Incorporate green building design	Reduce future use impacts	
Reuse existing buildings and infrastructure to reduce waste	Reduce waste and material use	X
Reuse and Recycle construction and demolition (C&D) debris and other materials (i.e., grind waste wood and other organics for on-site use)	Reduce waste and material use	X
Design cover systems to be usable (i.e., habitat or recreation)	Reduce construction impacts of future development	X
Reduce vehicle idling	Reduce air emissions and fuel use	X
Use of Low Sulfur Diesel Fuel (LSDF) or alternate fuels (i.e., biodiesel or E85)	Reduce air emissions	X
Sequence work to minimize double-handling of materials	Reduce construction impacts	X
Use energy efficient systems and office equipment in the job trailer	Reduce energy use	X

1. Potential benefits listed are not all inclusive and will vary dependent upon the site and implementation of the practice or technique.

Detailed plans and specifications for the entire remedy will be prepared in accordance with DER-31 as part of the design activities. DER-31 compliant practices and requirements will be clearly identified and provided to NYSDEC in the 50% and 100% design submittals. In addition, DER-31 reporting requirements will be further defined and provided to NYSDEC in the 50% and 100% design submittals.

3.2 Design basis

3.2.1 Pre-design investigation

During pre-design activities, the following information will be collected to aid in the final design:

- Existing site survey information.
- Grout wall pilot information providing insight in to the material requirements and feasibility of the remedy as outlined in the Grout Wall Pilot Study Work Plan.

The Grout Wall Pilot Study Work Plan is provided in Appendix A. This document describes the rationale of the treatability testing, the parameters to be tested, and test methods to be used. The goal of the Grout Wall Pilot Study is to determine the material requirements and feasibility of the grout wall remedy.

3.2.2 Site preparation

The Site will be prepared for the required remedial actions and restoration work. The Site preparation activities include: mobilization; sampling of the soils to be excavated for waste disposal characterization; installation of security fencing; installation of erosion and sedimentation controls; installation of temporary site facilities; surveying to establish baseline conditions and grades; utility location, protection, and relocation if necessary; relocation of existing structures, such as the Control House and 12 kV switchgear, and implementation of traffic controls.

Any monitoring wells that will be damaged during the remedy implementation will be abandoned per the NYSDEC regulations during the site preparation activities. Documentation required for the abandonment and removal of these wells will be included in the remedial design.

Engineering controls to control odors, erosion, and storm water will be mobilized, setup and installed prior to the start of intrusive activities.

3.2.3 Excavation

Excavation and removal of approximately 4,000 CY of soil will be conducted in the onsite area west of the existing substation. Onsite excavation limits will be horizontally bound by the property boundary and will include removal of soils west of the existing substation only. Vertical excavation limits will continue until bedrock is encountered or confirmatory samples indicate the presence of clean soils per the requirements of DER-10. Onsite excavation will occur to depths up to 19 feet below ground surface (bgs) requiring excavation protection. Details of the excavation protection will be included in the remedial design. Dewatering of onsite excavation area soils may be required and will be detailed in the remedial design.

Excavation and removal of approximately 3,200 CY of soil will be conducted within LaGrange Street located north of the site. Horizontal limits of excavation will extend to the property boundaries located on LaGrange Street or until clean material is encountered. Vertical excavation limits will continue until bedrock or clean material is encountered. Excavation limits defined by the presence of clean material will require confirmation sampling per the requirements of DER-10. Excavation within LaGrange Street will occur to depths up to 11 feet bgs requiring excavation protection and dewatering of soils. Details of the excavation protection and dewatering of soils within LaGrange Street will be provided as part of the remedial design.

Excavation design within LaGrange Street must account for the presence of above and below ground utilities, access to offsite properties from LaGrange Street by property owners, and the presence of nearby structures to the excavation area. Excavation materials will be pre-characterized in-situ during remedial activities prior to disposal offsite. Additional information regarding pre-characterization sampling procedures will be provided as part of the Remedial Design and will comply with the requirements of DER-10.

Excavated materials below the cleanup criteria established in the ROD may be reused as backfill within the onsite property boundary. If soils are stockpiled onsite they will be contained in lined and bermed areas and covered to control odor and/or dust. Backfill soils will meet the requirements of DER-10. Environmental controls (i.e., odor/dust controls and erosion and sediment controls) will be utilized during excavation activities. Noise and/or vibration monitoring may be determined necessary and detailed in the remedial design. A Transportation Plan will be developed as part of the remedial design that details the partial or complete closing of LaGrange Street. The Transportation Plan will be submitted to NYSDOT and the City of Lockport for review.

Detailed plans and specifications for the excavation process will be prepared as part of the design activities and will be provided to NYSDEC in the 50% and 100% design submittals.

3.2.4 Overburden NAPL Collection Trench

An overburden NAPL collection trench will be installed along the eastern border of the onsite excavation and along the southern border of the excavation within LaGrange Street. The basis of design of the overburden NAPL collection trench is to create a means to control the lateral migration of NAPL into previously excavated backfill and to provide a means of capture for what is presumed to be the most mobile NAPL onsite. The type of backfill and other design features (i.e., the membrane cap and overburden wall) will be taken into consideration during the design of the overburden NAPL collection trench.

Detailed plans and specifications for the overburden NAPL collection trench installation process will be prepared as part of the design activities and will be provided to NYSDEC in the 50% and 100% design submittals.

3.2.5 Geomembrane Cap Installation

A geomembrane cap will be installed over exposed soils onsite East and South of the substation footers to the best extent practical. The design basis of the geomembrane cap is to eliminate onsite exposure to potentially impacted materials and minimize surface water infiltration into impacted soils to remain onsite. The geomembrane will be overlain with a minimum of 12 inches of crushed stone per the requirements of the ROD. Site hydrogeology, geology, and the design of the overburden wall will be considered in the geomembrane cap design. Additional material (i.e., sand) may be necessary to protect the geomembrane from puncture.

Per the requirements of the ROD, additional soils within the vicinity of the holder that exhibit total PAHs above 500 mg/kg and exhibit a sheen will be removed and disposed of offsite. Environmental controls (i.e., odor/dust controls and erosion/sediment controls) will be utilized during intrusive activities associated with the geomembrane cap installation and removal of the holder.

The relocation of the Control House will be considered during the design of the geomembrane. Portions of the eastern-most at grade holder may be removed or protected to facilitate the relocation of the Control House.

Detailed plans and specifications for the geomembrane cap installation process will be prepared as part of the design activities and will be provided to NYSDEC in the 50% and 100% design submittals.

3.2.6 Grout Wall Installation

The design basis for the installation of an onsite bedrock grout wall is to create a means of controlling the lateral migration of mobile NAPL offsite through the fractured Dolomite and Burleigh hill bedrock (both highly permeable). The onsite grout wall would traverse the northern and western borders of the onsite property boundary. The permeable bedrock ranges from 65 to 110 feet thick. The material requirements and feasibility of creating a barrier within the permeable bedrock will be evaluated as part of the Grout Wall Pilot Study Work Plan (Appendix B). NAPL recovery wells will be installed upgradient of the onsite grout wall at 25 foot spacings, at maximum length, to allow collection of NAPL halted by the grout wall. The design basis of the NAPL recovery wells upgradiant of the onsite grout wall is to prevent lateral migration of NAPL above or around the grout wall once halted.

The design basis for the installation of an offsite bedrock grout wall is the same as that of the onsite bedrock wall with the additional consideration of the adjacent Canal. The Canal face at the proposed grout wall location is composed of fractured Dolomite. The integrity of the Canal face, the migration of NAPL into the Canal, and utility locations will be considered during the design of the wall. NAPL recovery wells will be installed upgradient of the onsite grout wall at 25 foot spacings, at maximum length, to allow collection of NAPL halted by the grout wall. The design basis of the NAPL recovery wells upgradiant of the onsite grout wall is to prevent lateral migration of NAPL above or around the grout wall once halted.

Detailed plans and specifications for the grout wall installation process will be prepared as part of the design activities and will be provided to NYSDEC in the 50% and 100% design submittals.

3.2.7 Onsite Overburden Wall Installation

The design basis for the installation of an onsite overburden wall is to create a means to reduce the lateral migration of onsite NAPL offsite while allowing for the flow of groundwater onsite. Site topography and existing structures will be taken into consideration during the design of the onsite overburden wall.

Detailed plans and specifications for the grout wall installation process will be prepared as part of the design activities and will be provided to NYSDEC in the 50% and 100% design submittals.

3.2.8 Sediment Removal

Removal of 1,200 CY of sediment will be removed in the Barge Canal. Removal limits will be horizontally bound by the limits shown in the ROD and FS and vertical limits bound by competent bedrock is encountered. Removal of the sediment will occur during when the Barge Canal is not open and water levels are low. A coffer dam or similar structure will be designed to prevent water from

entering into the excavation area. Provisions shall be made during the remedial design to remove visually impacted sediment that resides slightly beyond the limits proposed in the ROD and FS. Bypass pumping will also be included as part of the remedial design. Sediment removal shall not occur until all upgradient remediation has occurred and observations indicate that NAPL seeps from the Barge Canal face have ceased.

3.2.9 Utility relocation

During the excavation work, the overhead electrical lines along LaGrange Street and onsite will be affected. The overall plan and specific phasing for the most cost effective and efficient manner to deal with these utilities will be completed during the Remedial Design.

3.2.10 On-site waste management

To the extent possible, all excavated soils and spoil material will be loaded directly into trucks for off-site transportation to a NYSEG-approved disposal facility. However, because of construction sequencing, off-site disposal facility scheduling issues, and waste characterization procedures, and in order to consolidate large amounts of waste material for bulk truck shipments, it may be necessary to store waste material on-site prior to loading and shipment. In addition, materials that appear to be reusable may be stockpiled and evaluated for reuse on-site. In these instances, excavated soil will be transported by loader or on-site haul truck from the excavation areas to the stockpile area. To the extent practicable stockpile areas will be located over areas to be excavated, negating the need for liners and berms. If stockpile areas are placed in non-impacted or restored areas, berms and liners will be used to protect underlying materials from becoming impacted. The design will include the provision that all stockpiled soils be protected with soil erosion controls and dust controls. Impacted soils will be staged in bermed areas to collect runoff and dewatered fluids (constructed soil staging areas with gravity sumps) and covered/anchored properly to control odor. If necessary, material stockpiles will be sprayed with odor suppressing foam and covered to mitigate the potential for odors in the surrounding community.

While large debris is not anticipated, if large boulders or concrete are excavated, they may require decontamination to meet facility acceptance requirements. Decontamination will take place using brushes, steam cleaners, and/or pressure washers. Residues from decontamination operations will be collected and managed with impacted soils. Excavation debris may potentially be decontaminated and sent to an off-site facility for disposal. Decontamination water, as well as residuals from dewatering activities will be temporarily stored in appropriate tanks prior to treatment and management in the temporary water treatment system or transported to an appropriate off-site disposal facility as required.

The composition of the excavated soils are assumed to meet the requirements of "*Management Of Coal Tar Waste and Coal Tar Contaminated Soils and Sediment*" [(DER-4), NYSDEC, 2002], and can be managed as solid wastes at permitted off-site disposal facilities. Excavation below the water table will be necessary. Therefore, the design will address soil dewatering requirements including use of a staging area with a gravity sump to collect fluids, or local dewatering to draw groundwater levels below the excavation limit, with appropriate water management. If required, the soils will be amended with a facility accepted drying agent such as cement kiln dust or absorbent polymer to facilitate transport to the off-site disposal facility (Quick lime or lime kiln dust greater than 50% available CaO and MgO is no longer acceptable to the NYSDEC for this purpose). Sediment dewatering requirements are similar to those discussed above.

3.2.11 Waste characterization

All wastes at the Site that have been impacted by MGP residues will be classified as non-hazardous industrial waste unless they are determined to exhibit the characteristics of ignitability, corrosivity, reactivity, or toxicity characteristics leaching procedure (TCLP) benzene, as determined by laboratory testing. If they do exhibit one or more of these characteristics, they will be classified as hazardous wastes. The exception to this will be soils that exhibit only the TCLP benzene characteristic which will be sent for thermal treatment – such soils will be designated as Conditionally Exempt MGP Remediation Waste per "*Management of Coal Tar Waste and Coal tar Contaminated Soils and Sediment From Former Manufactured Gas Plants*" (DER-4; NYSDEC, 2002). Soils will be characterized for waste disposal prior to excavation.

3.2.12 Off-site transportation

Excavated materials will be transported off site in dump trucks to a disposal facility permitted to accept such material. Transportation of impacted materials from the Site will be performed in accordance with all regulatory requirements and in accordance with the Transportation Plan (with a trucking route) provided by the Engineer as part of the final design documentation.

All haul trucks will have poly bed liners that fully line the bed of the truck and can be overlapped to cover the top of the load to manage odors during transportation. All loads must also be tarped; no mesh covers will be allowed. Depending on loading practices full decontamination of trucks may be required prior to leaving the site. However, the design will specify that the vehicles will be loaded in such a way as to avoid contamination of their exteriors including tires.

Waste shipments will be documented using the required waste manifests. Other materials that have no specific documentation requirements will be documented using waste tracking forms, bills of lading, and receipts. All shipments of waste from the Site will be documented describing the type and amount of material and the receiving facility.

3.2.13 Excavation dewatering and water management

Any construction water that is generated during the remedial action, including decontamination water and storm water that comes in contact with open excavations will be collected and transported to an off-site wastewater treatment and disposal facility licensed to accept such material or treated onsite and discharged to the Barge Canal or local PTW in accordance with requirements of a State Pollution Discharge Elimination System (SPDES) Permit to be obtained as necessary.

3.2.14 Site restoration

Following all remedial activities, the affected areas will be backfilled to finish grade with clean imported fill or reusable on-site materials, subject to the NYSDEC approval. A backfill and grading plan, as well as detailed specifications for fill materials will be presented in the 100% design submittal. All disturbed areas will be re-graded to match the surrounding areas prior to site restoration and in compliance with the site's storm water pollution prevention plan (SWPPP).

Frac tanks may be necessary on site for water management purposes. Surface drainage will be evaluated as part of the restoration design and will include consideration for additional runoff created as a result of the onsite cap.

3.2.15 Odor, vapor, and dust control

Odor, vapor, and dust control will be conducted for this project due to the sensitive location of the Site and immediate proximity to residential and commercial buildings.

A variety of engineering controls will be available to control odors, vapors, and dust. Those controls will include, but will not necessarily be limited to, wetting soils with water to control dust, limiting the size of excavations, covering contaminated soils with plastic sheeting or foam, and spraying soils with Biosolve™.

3.2.16 Air monitoring

Community and work zone air monitoring will be performed per the NYSDOH and the Occupational Safety and Health Administration (OSHA) requirements, and according to the site-specific HASP (to be generated by the selected Contractor) and CAMP (to be provided following completion of the 50% design). The contaminants of concern are VOCs and particulates.

Community air monitoring will be continuous during activities capable of generating dust or releasing odors or vapors, such as site clearing, soil erosion fencing installation, excavation and handling of impacted soils, grout wall installation, recovery well installation, and backfilling and grading. Monitoring will be periodic during non-intrusive activities such as mobilization and site clearing.

Summaries of all air monitoring data will be provided on a weekly basis to facilitate the transfer of information related to protection of the local community.

3.2.17 Noise and vibration evaluation

The planned remediation activities have the potential to generate noise and vibrations. The potential for noise and vibration impacts associated with the remediation process will be evaluated as part of the design.

3.2.18 Erosion and sediment control

The remediation activities will disturb an area greater than one acre in size. Therefore, the SPDES General Construction Stormwater Permit GP—0-08-001 from Construction Activity (GP-02-01, April 2008) will be required. Erosion will be prevented and sediment will be controlled during all site earthwork activities in accordance with the applicable New York State guidance. Storm water run-off will be controlled in a manner to prevent contact with impacted soils. Any storm water that does contact impacted soils will be collected and transported off-site to an approved water handling facility or to the on-site water treatment plant. Hay bales, silt fence, stone, and/or rip rap will be used as necessary to prevent erosion of exposed soils. The erosion control structures will be inspected a minimum of once per week and after significant rainfall events, greater than ½ inch per day. Additional erosion control materials will be kept on site to immediately repair any deficiencies that are discovered during the inspections.

On-site decontamination pads will be used to remove mud from truck tires and prevent tracking of mud and impacted soil onto the streets. Detailed plans and specifications for erosion and sediment control will be provided with the 100% design submittal.

3.2.19 Decontamination

During and upon completion of remediation activies, decontamination of equipment will be performed in order to prevent contaminated material from being spread off site during waste hauling activities,

and to prevent the spreading of impacted material to un-impacted areas of the site. Trucks used for transport of excavated material will be decontaminated using dry decontamination methods (i.e., removal of loose material with a broom or brush) to limit the volume of decontamination water which will require treatment and disposal. These methods, along with parking of trucks on plastic sheeting during loading, will effectively prevent the spread of contaminated materials onto roadways during transport to disposal facilities. Decontamination of the earth-moving and drilling equipment will occur at the completion of their respective phase of work and prior to the handling of clean backfill or mobilization off site. The method of equipment decontamination will consist of pressure washing to remove any impacted soil. Decontamination water generated during cleaning of tools and equipment will be collected in on-site surge tanks and disposed of at an approved water handling facility or treated on-site. Water generated from decontaminating personnel will be minimal due to the availability of disposable personal protective equipment (PPE) such as Tyvek coveralls, booties, and nitrile gloves. The volume of decontamination water generated from personnel decontamination is assumed to be negligible compared to equipment decontamination water, stormwater removal, and dewatering activities in the disturbed areas of the Site.

4.0 Permitting and Regulatory Requirements

4.1 Permitting

In addition to performance requirements established to ensure that the design of the remedial action meets the remedial action objectives set in the ROD (NYSDEC, 2009), the design will also be prepared to meet permitting and other regulatory requirements of local, state, and federal laws and regulations. As specified in Appendix 7B of the DER-10 Technical Guidance for Site Investigation and Remediation (NYSDEC, May 2010), the NYSDEC may grant exemption from most state permits required for completion of this remedial action, provided the substantive requirements of the permit programs are followed. The remediation activities are located within a Municipal Storm Sewer Sanitary System (MS4) Region. Therefore, the SPDES General Construction Stormwater Permit GP—0-08-001 from Construction Activity (GP-0-10-001, January 2010) will be required. Additionally the work to be completed in the Right-of-Way of US Route 78 will require a Highway Work Permit obtained through NYSDOT. The Engineer will obtain all required permits prior to the mobilization of the Contractor.

4.2 Regulatory requirements

Compliance with regulatory requirements applicable to this work was discussed in Section 3, including the following work activities:

- Wastewater handling, treatment, and discharge requirements;
- Hazardous and non-hazardous waste management; and,
- Air quality maintenance and monitoring.

A contingency plan will be developed and submitted as an addendum following completion of the 50% design. The contingency plan will be implemented if any element of the RD Work Plan fails to achieve any of its objectives or otherwise fails to protect human health. Additionally, a CPP will also be developed to incorporate appropriate activities outlined in 6 NYCRR Part 375 (NYSDEC, 2006) and any subsequent revisions thereto.

4.2.1 Occupational safety and health regulations

Regulations promulgated by OSHA specify health and safety requirements for work procedures at all work places, and specifically, at construction sites and hazardous waste sites.

Industry standards for work at hazardous waste sites presented in 29 CFR 1910.120 describe specific requirements, including the following:

- Preparation of a site-specific HASP;
- Training and medical monitoring of personnel who may be exposed to hazardous substances; and,
- Air monitoring, respiratory protection and PPE.

A site-specific HASP will be produced by the Contractor prior to any remedial activity and submitted to the NYSDEC. Procedures outlined in the site-specific HASP will provide requirements for daily health and safety review meetings, proper use of safety equipment, proper mechanical equipment use, and

other policies. At a minimum, the PPE to be worn on site will include safety glasses, hard hat, and steel-toed shoes or boots. The subjects covered in the HASP will include:

- Health and safety risk analysis;
- PPE;
- OSHA air monitoring and action levels;
- Site control;
- Decontamination;
- Emergency response plan;
- Lockout/tagout;
- Heavy equipment operations;
- Excavation and trenching;
- Material safety data sheets; and,
- Health and safety records and reports.

4.3 Transportation requirements

The federal Department of Transportation (DOT) has developed requirements that regulate the transportation of hazardous materials by road and rail. Among the hazardous materials identified in these regulations are coal tar distillates. In addition, as discussed above, hazardous waste regulations specify that shipments of hazardous wastes must meet certain requirements presented in the DOT regulations. Specific requirements for hazardous material shipments include the following:

- Shipping papers must include a description of hazardous materials included in the shipment along with the DOT designated identification number and hazard class. Hazardous wastes may not be shipped without a manifest (49 CFR 172.200).
- Each container, package, or vehicle containing a hazardous material must be marked or labeled with the DOT shipping name, technical name, identification number, and hazard class (49 CFR 172.300 and .400).
- Each vehicle or container containing a hazardous material must be appropriately placarded (49 CFR 172.500).
- When hazardous materials are transported, emergency response information must be available at the point of loading, unloading, and during transport.

Truck routes to and from the Site will comply with the Transportation Plan that will be developed as part of the Remedial Design.

5.0 Quality Assurance Procedures

5.1 General quality assurance procedures

The following quality assurance procedures and tests apply to the all portions of the remedy:

- Submittal by the Contractor of weigh tickets for all earthen materials transported to or from the Site;
- Submittal by the Contractor, prior to the work, of sieve analyses for all imported earthen materials;
- Evaluation by the Engineer of the Contractor's proposed borrow source(s) for imported earthen materials. The Contractor will provide to the Engineer analytical data indicating that imported material is non-contaminated;
- Surveying of the work limits; and
- Field verification by the Engineer of excavation, grout wall, and placed material depths, areas, and volumes.

5.1.1 Grout wall quality assurance

Water Pressure Testing shall be completed in accordance with the procedure developed during the pilot study and shall be further specified within the 100% design submittal.

6.0 Remedial Design Deliverables

The design will consist of the following documents to be submitted for the NYSDEC review:

- RDWP (this document).
- 50% Remedial Design submittals.
- 100% Remedial Design submittals and associated supporting documents.

6.1 Design deliverables

The anticipated list of drawings for the 100% design is:

- Title Sheet and Index
- Legend and General Notes
- Existing Conditions, Extent of Pre-Excavation, and Extent of ISS
- Site Preparation, and Erosion and Sediment Control (Site layout and infrastructure)
- Phase 1 Excavation Plan
- Phase 1 Regrading Plan
- Transportation Plan
- Utility Relocation Plan
- Erosion and Sediment Control Details (silt fence, construction entrance, stockpiling, and decontamination pad construction)
- Phase II Excavation and Sheet Piling Limits
- Phase II Excavation Cross Sections
- Phase II Excavation and Sheet Piling Details
- Traffic Routing Plans and Details
- Groundwater Treatment System Process and Instrumentation Diagram
- Overburden Collection Trench Plan
- Overburden Collection Trench Section and Details
- Overburden Subsurface Barrier Plan
- Overburden Subsurface Barrier Section and Details
- Grout Wall Injection Location and Details
- Bedrock NAPL Collection Wells Locations
- Bedrock NAPL Collection Wells Details
- Site Restoration and Grading
- Restoration Cross Sections

This list is preliminary and subject to change as the design process proceeds.

7.0 Public Information

NYSEG intends to keep the City of Lockport and its residents informed through implementation of a Citizens Participation Plan (CPP), which will be submitted to the NYSDEC with the 100% design documents. The CPP will, at a minimum, identify interested stakeholders and outline a mechanism for keeping them informed regarding the status of the project.

8.0 Schedule

The anticipated schedule for the PDI, design, and implementation of the remedy is shown in Figure 4. Updates to this schedule will be submitted to the NYSDEC periodically when and if changes occur.

9.0 References

New York State Department of Environmental Conservation (NYSDEC) and New York State Electric and Gas (NYSEG) Administrative Order on Consent (#D0-0002-9309), March 1994. The consent order requires the responsible party to implement a full remedial program for 33 former MGP sites across the State, including the Cortland-Homer Site. NYSDEC,1994.

NYSDEC, 2002. DER-4, Management of Coal Tar Waste and Coal Tar Contaminated Soils and Sediment from former MGPs (TAGM – 4061), January.

NYSDEC 2006. NYCRR PART 370 – 374 and PART 376 Environmental Remediation Programs.

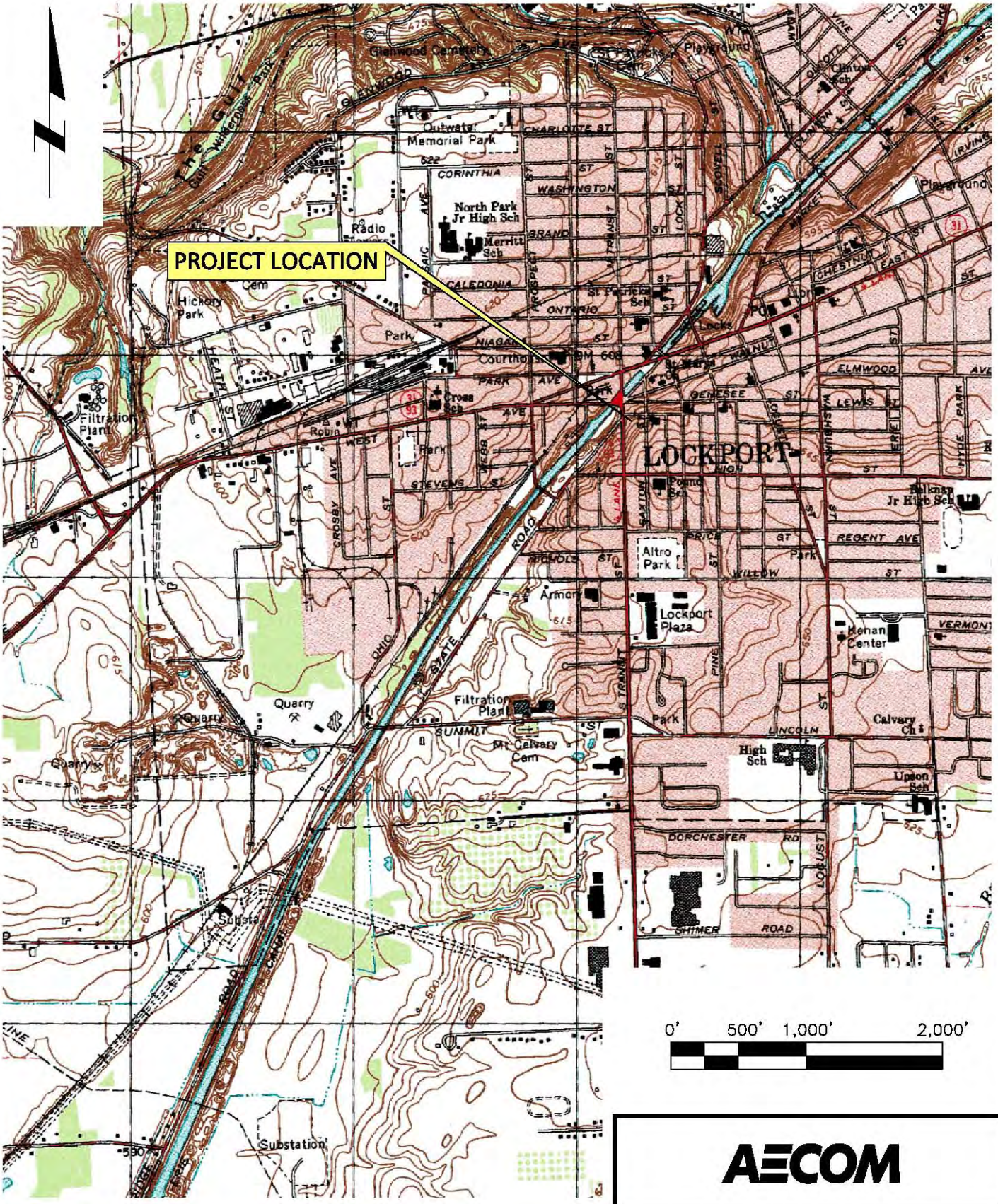
NYSDEC, 2006. 6 NYCRR PART 375 Environmental Remediation Programs Subparts 375-1 to 375-4 & 375-6, December.

NYSDEC, 2009. Record of Decision – NYSEG Lockport Transit Street MGP Site, Lockport, Niagara County, New York, Site No. 9-32-098. March.

NYSDEC, 2010. DER-10, Technical Guidance for Site Investigation and Remediation, May.

NYSDEC, 2010b. DER-31, Green Remediation, September.

Figures



REFERENCE: BACKGROUND IMAGE SHOWN TAKEN FROM NEW YORK STATE GIS CLEARINGHOUSE

AECOM

FORMER TRANSIT STREET MGP SITE

SITE LOCATION PLAN

NEW YORK STATE ELECTRIC & GAS
LOCKPORT, NEW YORK

FILE NAME:	DRN	PROJECT NO.	DATE	FIGURE NO.
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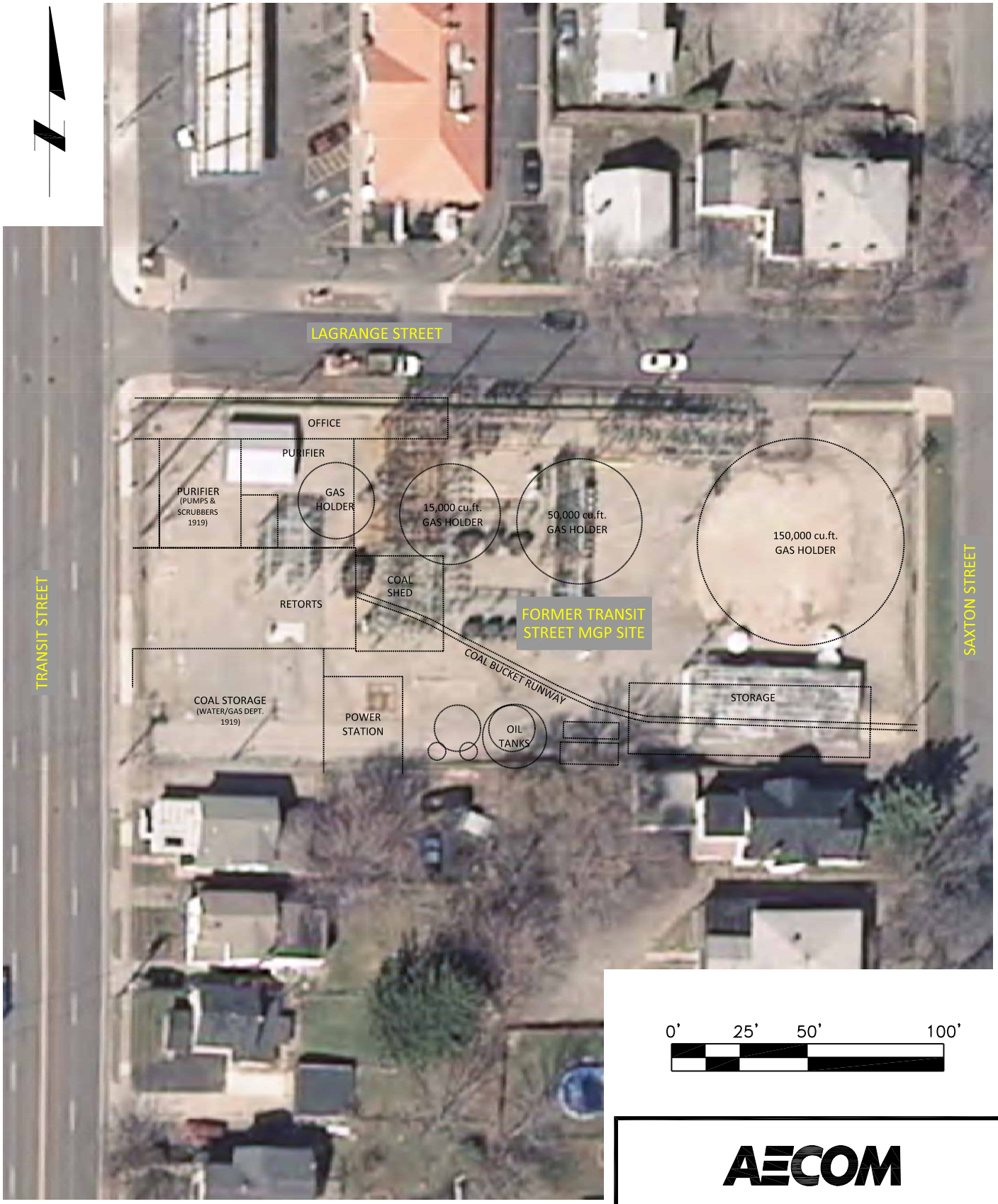

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REFERENCE: BACKGROUND IMAGE SHOWN TAKEN FROM NEW YORK STATE GIS CLEARINGHOUSE

LEGEND

FORMER MGP OPERATION STRUCTURES

AECOM

FORMER TRANSIT STREET MGP SITE

HISTORIC SITE LAYOUT

NEW YORK STATE ELECTRIC & GAS
LOCKPORT, NEW YORK

FILE NAME:	DRN	PROJECT NO.	DATE	FIGURE NO.
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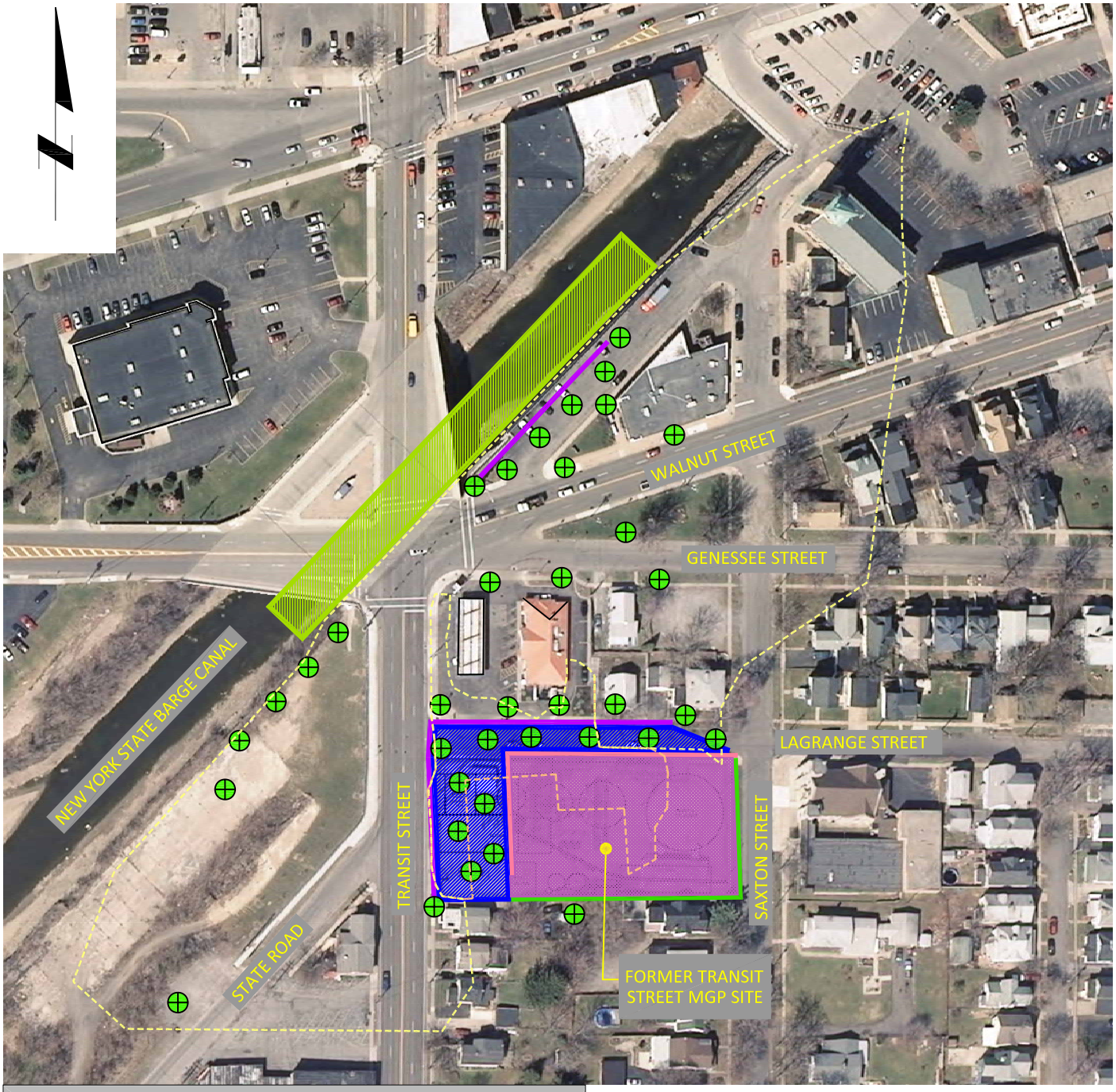

LEGEND

- APPROXIMATE MGP IMPACTED OVERBURDEN SOIL LIMITS
- APPROXIMATE MGP IMPACTED BEDROCK LIMITS
- PROPOSED EXCAVATION AREA BOUNDARY
- PROPOSED SEDIMENT REMOVAL AREA BOUNDARY
- PROPOSED AREA OF CAPPED SOILS
- PROPOSED GROUT WALL LOCATION
- PROPOSED SUBSURFACE BARRIER LOCATION
- PROPOSED COLLECTION TRENCH LOCATION
- PROPOSED BEDROCK WELL LOCATION

0' 75' 150' 300'

MAPPING REFERENCE:

1) BACKGROUND IMAGE SHOWN TAKEN FROM NEW YORK STATE GIS CLEARINGHOUSE

2) LEGEND ITEMS DIGITIZED FROM RECORD OF DECISION, DATED MARCH 2009

AECOM

FORMER TRANSIT STREET MGP SITE

RECORD OF DECISION PROPOSED REMEDIAL ACTIONS

NEW YORK STATE ELECTRIC & GAS
LOCKPORT, NEW YORK

FILE NAME:	DRN	PROJECT NO.	DATE	FIGURE NO.
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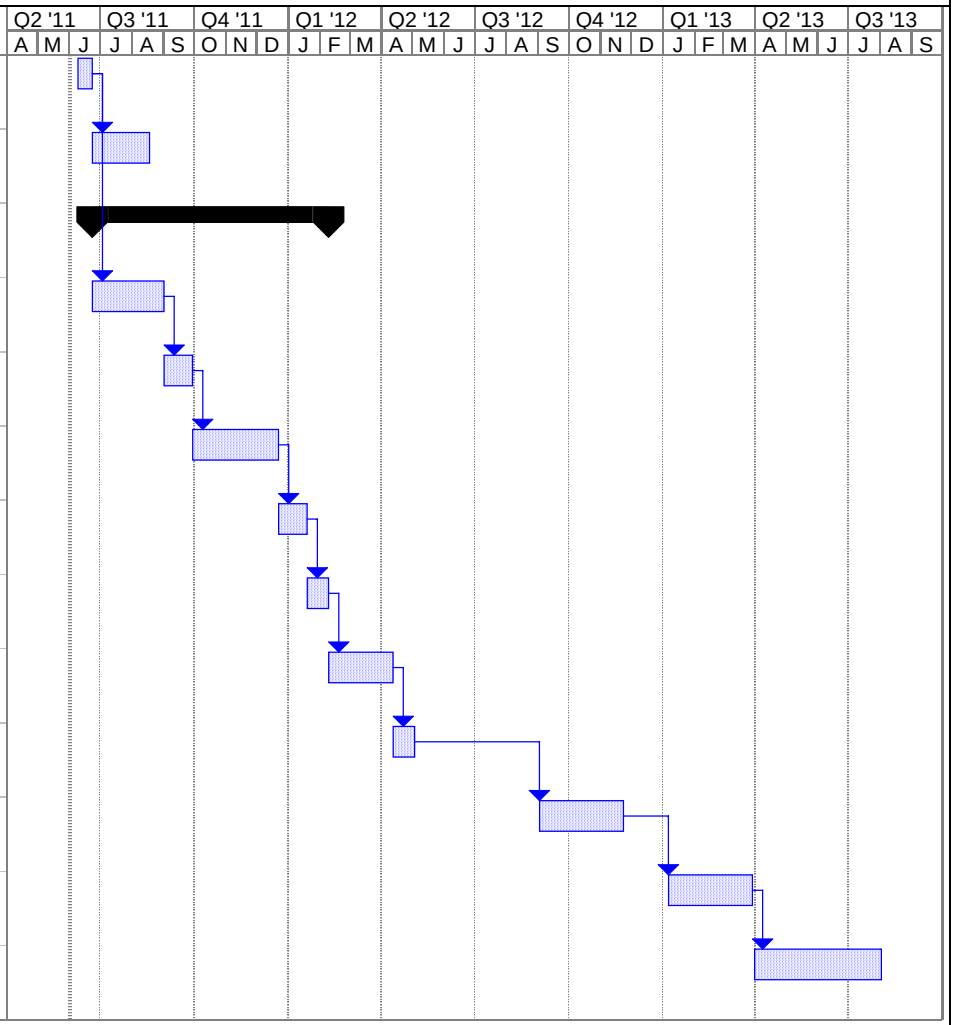
Figure 4
Remedial Design Schedule
Lockport Transit Street Former MGP Site

ID	Task Name	Duration	Start	Finish
1	Final Remedial Design Work Plan	10 days	Fri 6/10/11	Thu 6/23/11
2	Grout Wall Treatability Study	40 days	Fri 6/24/11	Thu 8/18/11
3	**Remedial Design**	**165 days**	**Fri 6/24/11**	**Thu 2/9/12**
4	50% Remedial Design	50 days	Fri 6/24/11	Thu 9/1/11
5	NYSDEC Comments	20 days	Fri 9/2/11	Thu 9/29/11
6	100% Remedial Design	60 days	Fri 9/30/11	Thu 12/22/11
7	NYSDEC Comments	20 days	Fri 12/23/11	Thu 1/19/12
8	Final Design and Bid Package	15 days	Fri 1/20/12	Thu 2/9/12
9	Contractor Bidding	45 days	Fri 2/10/12	Thu 4/12/12
10	Selection of Contractor	15 days	Fri 4/13/12	Thu 5/3/12
11	Phase 1 Remedial Action	60 days	Mon 9/3/12	Fri 11/23/12
12	NYSEG Relocation of Switchgear	60 days	Mon 1/7/13	Fri 3/29/13
13	Phase 2 Remedial Action	90 days	Mon 4/1/13	Fri 8/2/13



Remedial Design Schedule
Date: Wed 6/1/11

Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline

Appendix A

Grout Wall Pilot Study Work Plan

AECOM Environment

Prepared for:
New York State Electric and Gas Corp
18 Link Drive
P. O. Box 5224
Binghamton, NY 13902

Prepared by:
AECOM
Latham, NY
Project 60194949
June 2011

Appendix A

Grout Wall Pilot Study Work Plan
Lockport Transit Street Former MGP Site
Lockport, New York
NYSDEC Site # 9-32-098

Final

AECOM Environment

Prepared for:
New York State Electric and Gas Corp
18 Link Drive
P. O. Box 5224
Binghamton, NY 13902

Prepared by:
AECOM
Latham, NY
Project 60194949
June 2011

Appendix A

Grout Wall Pilot Study Work Plan
Lockport Transit Street Former MGP Site
Lockport, New York
NYSDEC Site # 9-32-098

Final

Prepared By: Carsten Floess, P.E.

Reviewed By: Scott Underhill, P.E.

Contents

List of Figures

Appendix

1.0 Introduction

This Grout Wall Pilot Study (Pilot Study) Work Plan presents the rationale, methods, and anticipated results for the field-scale testing of a grout wall injection program at the Lockport Transit Street former MGP site (Site) located in Lockport, New York.

1.1 Overview of Pilot Scale Study Activities

The following activities will be performed for the pilot study:

- Drilling of the primary pilot test grout holes;
- Water pressure testing of pilot test grout holes;
- Grouting of the primary pilot test grout holes;
- Repeat at intermediate pilot test hole(s) as necessary until permeability in new test hole has been substantially reduced; and
- Reporting of results.

1.2 Background and Treatability Study Rationale

The Record of Decision (ROD) for the Site (NYSDEC, 2009) requires that a grout wall be constructed to isolate tar in the bedrock from migrating off-site and to the canal wall. Grout will be injected into the bedrock fractures through a row of grout holes. Upon hardening, the grout will prevent the migration of nonaqeuous phase liquids (NAPL) in the bedrock. Recovery wells will be installed upgradient of the grout wall to capture remaining NAPL.

Specifically, the ROD specifies '*approximately 400 linear feet of grout wall [to be] constructed in the bedrock downgradient of the interceptor trench. It will extend from 1 to 2 feet above the overburden/bedrock interface to an approximate depth of 75 feet to control migration of NAPL through the bedrock.*' In addition, the ROD requires that the 'bedrock grouting will require further evaluation and pilot testing to refine techniques, materials, monitoring, and implementability." The objective of this pilot study is to evaluate grout wall implementability at the site and develop a grout wall design that meets the objective of the ROD.

2.0 General Field Guidelines and Activities

2.1 Site Hazards

Potential on-site surface hazards, such as sharp objects, overhead power lines, energized areas, and building hazards will be identified prior to initiation of the fieldwork. Generally, potential hazards at the Site will be identified during a site reconnaissance by the project team on the first day of the field activities.

2.2 Underground and Overhead Utilities

Underground and overhead utilities, including electric lines, gas lines, storm and sanitary sewers, and communication lines will be identified prior to initiation of drilling and other subsurface work. Underground utility location will be accomplished as follows:

- All boring locations will be flagged or marked out with white paint.
- Dig Safely of New York (800) 272-4480 will be contacted to initiate the locating activities. New York State law requires that Dig Safely of New York be notified at least two working days, and not more than 10 working days, before subsurface work is conducted.
- Companies with subsurface utilities present will locate and mark out all subsurface utility lines.
- Precautions regarding safe distance from the overhead electrical lines will be reviewed and equipment offset distances flagged and marked out in accordance with the NYSEG guidance.

2.3 Air Monitoring

Community air monitoring requires real-time monitoring for volatile organic compounds (VOCs), and particulates (i.e., dust), at the downwind perimeter of each designated work area when certain activities are in progress at the Site. The community air monitoring is intended is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigation work activities.

Since intrusive activities at the site will consist of only of drilling, the real-time monitoring of the on-site workers will be used for community air monitoring.

VOC monitoring will be performed using a field photo-ionization detector (RAE Systems MiniRAE^{TM} or equivalent) located within the work zone. If the concentration of total VOCs exceeds 5 parts per million (ppm) above background, then work activities will be temporarily halted. If the total VOC level then decreases below 5 ppm over background, work activities will resume. If the total VOC levels persist at levels in excess of 5 ppm, work activities will be halted, the source of the vapors identified, and corrective actions taken to abate the emissions until the concentrations drop below the action levels.

2.4 Investigation-derived Waste Management

All investigation-derived waste (IDW) generated during the pilot study will be collected in properly labeled 55-gallon drums. Drill cuttings will be contained in 55-gallon drums. Drums of soil will be labeled as “pending analysis – investigation-derived residual – soil from drill cuttings” for proper disposal.

All personal protective equipment (PPE) will be placed in 55-gallon drums for proper disposal.

All IDW will be stored in the secured portion of the site pending disposal.

2.5 Site Survey

Following completion of the grout pilot test, all boring locations will be surveyed by AECOM using a portable global positioning system (GPS) unit.

3.0 Bedrock Grout Wall Treatability Study Program

3.1 Grout Wall Background

Conceptually, the bedrock grout wall will be constructed using conventional cement grouting techniques, similar to those used to construct cutoff barriers under dams. This involves drilling, (water) pressure testing, and pressure grouting of boreholes positioned along the cutoff alignment. The split spacing or closure method will be used, whereby closure of hole spacing is continued until the desired degree of watertightness is achieved. In accordance with current state-of-the-practice, pressure testing and grouting will be performed in stages, using thick, stable grout mixes and moderate to high grout injection pressures.

3.1.1 Grout Effectiveness

The effectiveness of grouting is based on the inferred permeability of the grout wall barrier. A practical method to evaluate permeability is to measure the quantity of water taken in grout holes during pressure tests. Water takes can be measured using "Lugeon" units, where 1 Lugeon equals a water take of 1 liter / meter of grout hole / minute, at an injection pressure of 10 bars (150 psi). The Lugeon value is prorated if injection pressures less than 10 bars are used. A general equation for computing Lugeon values using English units is:

Lugeon value = gallons per minute per foot of hole / 11.43 / test pressure in psi

According to Houlsby (1977), grout curtains under dams are typically constructed to achieve a permeability of 1 to 5 Lugeons. (1 Lugeon is equivalent to a hydraulic conductivity of approximately 1×10^{-5} cm/s.) For this project, a targeted permeability of 1 to 5 Lugeons is appropriate. One goal of the pilot study is to determine the practical lower Lugeon value that can be achieved using conventional cement grouting techniques.

3.1.2 Grout Mix

Portland cement grout will be used for the pilot study. The fineness of the cement relates to its ability to penetrate rock fractures. Type III cement is finer than other cements such as Type I and Type II cements, and therefore has greater ability to penetrate fractures (Weaver & Bruce, 2007). (Note that the Blaine fineness of Types I and II cement is about 3,700 cm2/g, whereas the Blaine fineness of Type III cement is about 5,400 cm2/g.)

A small percentage of bentonite is a common grout ingredient, where high strength is not essential. Bentonite is reported to reduce grout bleed, and improve grout stability and penetrability. However, it also increases grout cohesion and viscosity. Bentonite is typically added at a ratio to cement of about 2 to 5 percent, by weight (Weaver & Bruce, 2007).

Grouts can be fabricated using a variety of other ingredients, including fly ash, ground blast furnace slag, silica fume, fillers, and chemical additives, such as plasticizers. For the pilot study, a simple cement-bentonite grout will be used. A goal of the pilot study will be to determine the effectiveness of cement-bentonite grout in achieving acceptably low Lugeon values.

The following grout mixes are proposed. Since cement will be furnished in bags, grout will be batched by volume, wherein each 94-lb bag of cement is considered to have a volume of 1.0 cf. Type I/II or Type III cement will be used for grout mixes.

A. 2:1 water:cement, plus bentonite at 2± lbs bentonite per bag of cement.

B. 1:1 water:cement, plus bentonite at 2± lbs bentonite per bag of cement.

C. 0.8:1 water:cement, plus bentonite at 2± lbs bentonite per bag of cement.

3.1.3 Grout Mixing

Grout will be mixed using a high-speed, high-shear mixer, sometimes known as “colloidal” or “semi-colloidal” mixers. On completion of mixing, grout will be temporarily stored in an agitator, which keeps the grout particles in suspension, and keeps thick, thixotropic grouts fluid until ready for use. A dipstick will be used in the agitator tank to measure grout volumes.

Moyno type pumps will be used to pump the grout into grout holes.

3.1.4 Grout Holes Inclination

Grout holes should be oriented so as to maximize the number of fractures intersected. In this case, because fractures are largely near-horizontal, vertical grout holes will be used for the pilot study.

3.1.5 Number of Rows

No significant head difference across the grout curtain exists (unlike high head dams); therefore, a single row grout curtain will be used for the pilot study. A goal of the pilot study is to confirm that a single row grout curtain is adequate.

3.2 Drilling

Based on site constraints and access, the pilot study will be performed along the proposed bedrock grout wall alignment on the west side of the site parallel to Transit Street (Figure A1). To the extent practicable, the bedrock grout wall created in the pilot study will be incorporated into the final remedy.

The ground surface in the area of the pilot study is approximately elevation of 600 feet with the top of rock at an approximate elevation of 588 feet (12 feet of overburden). Grout holes will be drilled from the surface and, in accordance with the ROD, extend to a depth of 75 feet below grade; therefore, grout holes will typically extend through about 12 feet of overburden and 63 feet into bedrock. The bedrock within this zone comprises approximately 20 feet of dolomite, followed by about 40 feet of Burleigh Hill shale, followed by Lewiston shale, which is categorized as having lower permeability. The grout curtain is indicated to toe into the lower permeability Lewiston shale. The top of the Lewiston shale is approximately at elevation 530 feet.

Drilling with water is generally considered best, relative to flushing cuttings out of boreholes and minimizing risk of clogging cracks/fractures and preventing entry of grout (Houlsby, 1990). Either percussion or rotary drilling is acceptable, provided that water is used as the drilling fluid. Air tends to force cuttings into fractures, an undesirable situation, potentially preventing entry of grout.

The size of the drill hole is not critical, and a nominal minimum diameter of 1.5 to 2 inches is anticipated, depending on available equipment. At completion of drilling, the grout hole should be thoroughly flushed, to the extent practicable, to remove debris and cuttings.

For the pilot study program, AECOM has teamed with Nothnagle Drilling, Inc., who has experience in rock cutoff grouting in similar bedrock formations in western New York State.

The ROD indicates that the grout curtain will extend 2 feet above top of rock. Because the grout wall alignment is located in areas where impacted soil will be excavated to top of rock, this short extension of the rock grout wall can be constructed in the excavation using a short concrete wall or similar means. Therefore, the pilot study will be limited to bedrock grouting only.

3.3 Pilot Test Sequencing

First, primary grout test holes will be installed, water pressure tested (see Section 3.3.2), and grouted (see Section 3.3.3). Upon completion of the primary grouting, a secondary pilot test hole will be installed intermediate between the primary grout holes. This hole will also be water pressure tested and then grouted. If the water pressure test shows significant reduction in permeability as measured by the decrease in Lugeons from the first two holes, then the radial influence of the grout wall will be greater than 20 feet and the pilot test will cease. The goal is to achieve a targeted permeability of 1 to 5 Lugeons. If neither the targeted permeability nor reduction is met, then the third pilot hole will be grouted. A fourth pilot test hole will be installed between the first and third and the procedure repeated. The proposed details of the pilot test holes are shown on Figure A2 with a conceptual section shown in Figure A3.

3.3.1 Pilot Test Hole Staging

Typical stage lengths in each pilot test hole may vary from about 10 to 30 feet, generally increasing in length with depth. This procedure provides better control of grout pressures and also allows one to adjust grout mixes depending on the results of water pressure tests (i.e., use thicker mixes in stages with high Lugeon values, and thinner mixes in stages with low Lugeon values).

The upper stage will extend through the dolomite to the top of the shale. The second and third stage will correspond with the upper and lower portions of the Burleigh Hill Shale. If the permeability of the Burleigh Hill shale appears consistent, the second and third stages may be combined and grouted as a single stage. Figure A3 shows the conceptual staging approach.

Upstage grouting with packers will be used. With this method, the lowest stage is grouted first, followed by grouting of subsequent stages, working upwards.

3.3.2 Water Pressure Tests

Water pressure tests will be performed in stages as discussed above. All water pressure tests will be performed at a pressure of 15 psi, regardless of depth. All tests will be 15 minutes. The general procedure includes these steps:

1. Set packers.
2. Connect water lines and gradually open valve and increase water pressure to 15 psi.
3. When the test pressure has been reached, start timer and simultaneously read (or zero) water meter.
4. Measure water takes at 5, 10, and 15 minutes.
5. For each 5-minute test interval, record result as a Lugeon value. Neglect hydrostatic correction for water table.

3.3.3 Grout Testing

Grouting will be performed in stages, starting at the bottom using the upstage method. Grout stages will correspond to the water pressure test stages previously completed.

Appropriate starting grout mixes will be based on the results of water pressure tests, with thinner mixes used where water takes are low (and fractures are fine) and thicker mixes used where water takes are high (and fractures are wider). The intent is to use the thickest mix practicable, with the aim of getting as much cement into the rock fractures as fast as possible. The following preliminary starting mix guideline (water to cement ratio by volume) will be used and may be adjusted in the field as necessary: for Lugeon values below 25 a ratio of 2:1 water to cement; for Lugeon above 25, a ratio of 1:1 water to cement.

Grouting will be continued until refusal (i.e., the packered pilot test hole stage can no longer accept grout at the proposed injection pressure). If refusal occurs in less than 30 minutes, a thinner starting mix will be used the next time. If grout takes equal or exceed water takes in the first 30 minutes, or if grouting continues for more than 60 minutes without reduction in take, the grout will be thickened. Grout pressure should correspond to 1 psi per foot of depth below the rock surface to the bottom of the grout stage. The general procedure includes these steps:

1. Set packers.
2. Select initial grout mix.
3. Select maximum grout pressure (1 psi per foot of depth below top of rock to bottom of stage).
4. Connect grout lines and gradually open valve and increase grout pressure to the design pressure. Check for leaks.
5. When the test pressure has been reached, start timer and simultaneously read grout tub dip stick.
6. Read grout takes at approximately 15 minutes intervals.
7. Review grout takes and adjust grout mix if appropriate.
8. Continue grouting until refusal, than hold grout pressure for an additional 15 minutes.
9. Move to next upward stage. Continue grouting (no waiting period between stages).

4.0 Reporting of Results

The results of the treatability testing will be provided in a letter report to the NYSDEC and will be included as an appendix to the remedial design report. The letter report will include an evaluation of the effectiveness of the grout barrier and to verify the suitability of cement grouting at this site. The analysis will also include spacing of the grout holes and procedures for final design and construction of the grout curtain.

5.0 References

Houlsby, A.C.,1997. *Engineering of Grout Curtains to Standards,* Journal of the Geotechnical Division, American Society of Civil Engineers, Vol. 103, No. GT9, September.

Houlsby, A.C., 1990. *Construction and Design of Cement Grouting: A Guide to grouting in Rock Foundations,* John Wiley & Sons, Inc.

NYSDEC, 2009. Record of Decision – NYSEG Lockport Transit Street MGP Site, Homer, Lockport County, New York, Site No. 9-32-098. March.

Weaver, K.D., and Bruce, D.A., 2007. *Dam Foundation Grouting,* American Society of Civil Engineers.

Figures

0' 25' 50' 100'

REFERENCE: BACKGROUND IMAGE SHOWN TAKEN FROM NEW YORK STATE GIS CLEARINGHOUSE

AECOM

FORMER TRANSIT STREET MGP SITE

PROPOSED ALIGNMENT OF GROUT WALL PILOT STUDY

NEW YORK STATE ELECTRIC & GAS
LOCKPORT, NEW YORK

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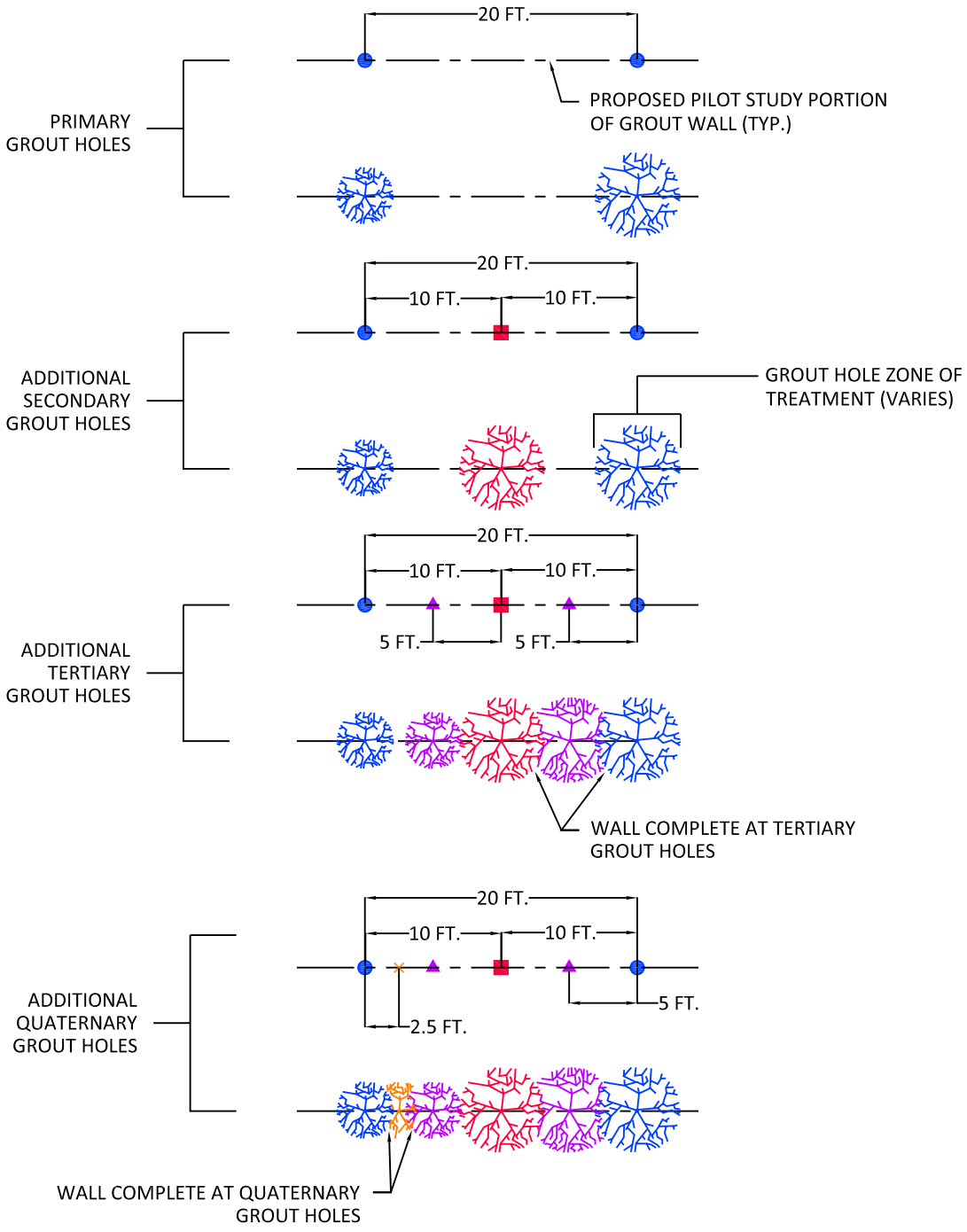

DETAIL

NOT TO SCALE

LEGEND

- PRIMARY GROUT HOLES
- SECONDARY GROUT HOLES
- TERTIARY GROUT HOLES
- QUATERNARY GROUT HOLES

AECOM

FORMER TRANSIT STREET MGP SITE

PROPOSED DETAIL OF GROUT WALL PILOT STUDY

NEW YORK STATE ELECTRIC & GAS
LOCKPORT, NEW YORK

FILE NAME:	DRN	PROJECT NO.	DATE	FIGURE NO.
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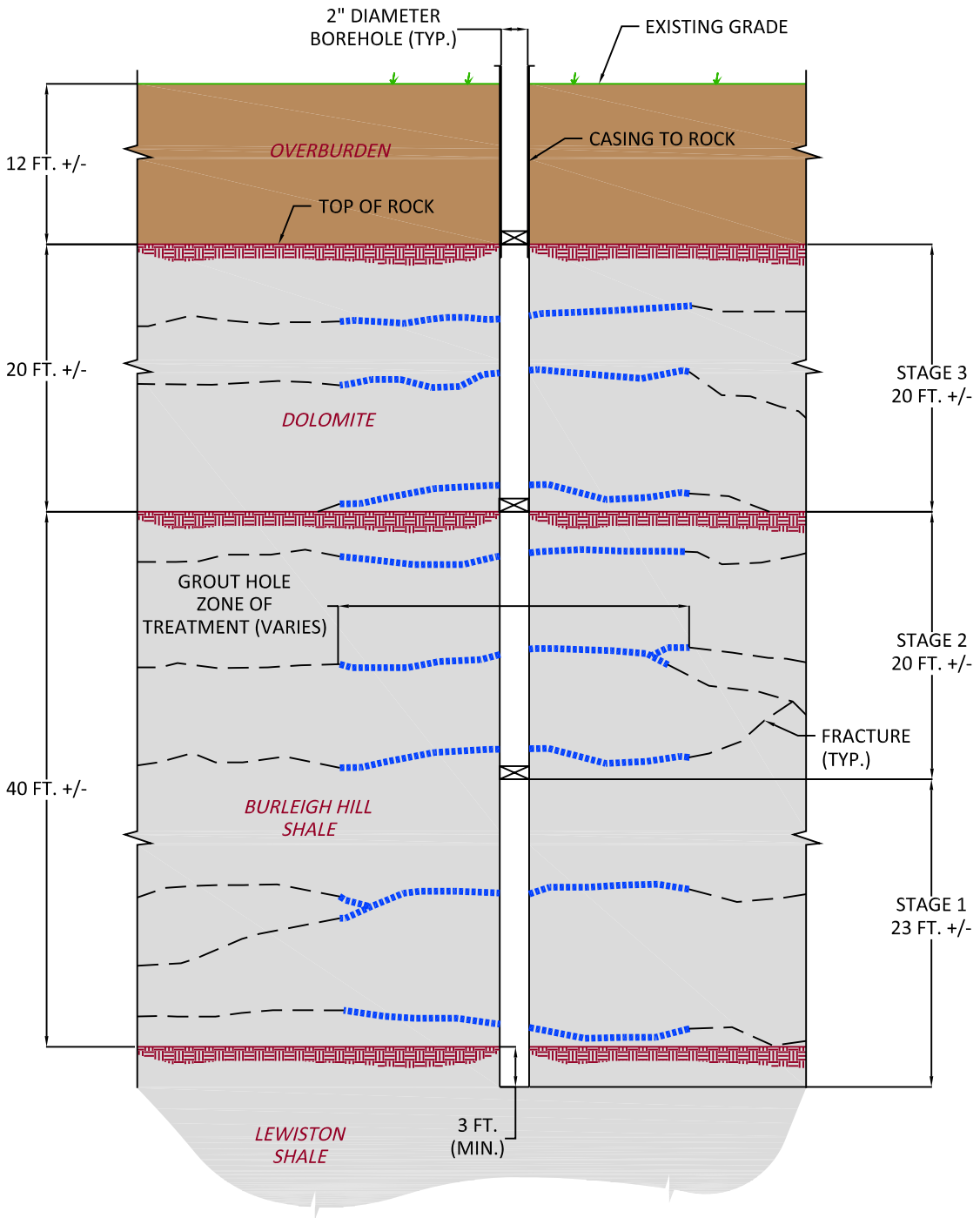

SECTION

NOT TO SCALE

AECOM

FORMER TRANSIT STREET MGP SITE

PROPOSED SECTION OF GROUT WALL PILOT STUDY

NEW YORK STATE ELECTRIC & GAS
LOCKPORT, NEW YORK

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AECOM Environment

Prepared for:
New York State Electric and Gas Corp
18 Link Drive
P. O. Box 5224
Binghamton, NY 13902

Prepared by:
AECOM
Latham, NY
Project 60194949
June 2011

Appendix A1

Health and Safety Plan
Lockport Transit Street Former MGP Site
Lockport, New York
NYSDEC Site # 9-32-098

Final

AECOM Environment

Prepared for:
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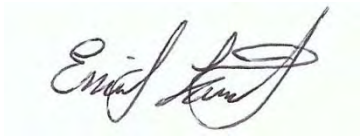
18 Link Drive
P. O. Box 5224
Binghamton, NY 13902

Prepared by:
AECOM
Latham, NY
Project 60194949
June 2011

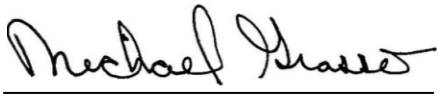
Appendix A1

Health and Safety Plan
Lockport Transit Street Former MGP Site
Lockport, New York
NYSDEC Site # 9-32-098

Final



Prepared By: Emily Laity



Reviewed By: Michael Grasso, CIH
District Health and Safety Manager

Contents

List of Attachments

1.0 Introduction

This Health and Safety Plan (HASP), including Attachment A, provides a site specific description of the levels of personal protection and safe operating guidelines expected of each employee or subcontractor associated with the environmental services being conducted in accordance with Section VII of the Order on Consent (Index Number DO-0002-9309, see Appendix A) between New York State Electric & Gas Corporation (NYSEG) and the New York State Department of Environmental Conservation (NYSDEC), and the Record of Decision Amendment (ROD) for the site dated December 2010. This HASP also identifies site specific chemical and physical hazards known to be associated with the work activities addressed in this document.

Any additional safety information that may be generated to address any activities or changes in site conditions that may occur during field operations will be provided as attachments to this document. Once generated, information will be inserted in Attachment A and reviewed/acknowledged by field personnel prior to initiating the associated work.

1.1 General

The provisions of this HASP are mandatory for all AECOM personnel engaged in fieldwork associated with the environmental services being conducted for the NYSEG assigned project. A copy of this HASP and the AECOM Consolidated U.S. Operations Safety, Health & Environmental Manual shall be maintained on site and available for review at all times. Record keeping will be maintained in accordance with this HASP and the applicable Safety, Health, and Environmental (SH&E) Procedures. In the event of a conflict between this HASP and federal, state, and local regulations, workers shall follow the most stringent/protective requirements.

1.2 Organization of this Document

Work activities to be performed will consist of the completion of a Grout Wall Treatability Study (see Section 2.0 for details). To maximize the usability of this HASP for all workers supporting the site activities, the document is organized to separately address each of these activity groups. Therefore this HASP is organized as follows:

- Section 2.0 provides an overall description of the project site, including site history and known environmental conditions. This section also provides a brief overview of the planned work operations addressed in this HASP.
- Section 3.0 provides health and safety requirements of general applicability for all on-site operations.
- Sections 4.0 addresses site specific health and safety training and requirements applicable to the overall scope of work and site operations.
- Section 5.0 includes a specific description of the work activities, personnel training/qualification requirements, assessment of work hazards and identification of applicable preventive measures, and identification of job-specific personal protective equipment requirements.
- Section 6.0 specific emergency response procedures and emergency contact information for the site.

2.0 Site Information and General Scope Of Work

AECOM will conduct environmental services at the Lockport Transit Street Manufactured Gas Plant (MGP) located at the intersection of Transit Street, Lagrange Street and Saxton Street in the City of Lockport, Niagara County, New York. Work will be performed in accordance with the applicable Remedial Design Work Plan developed for this work assignment. Deviations from the listed work plans will require that a Safety Professional review any changes made to this HASP, to ensure adequate protection of personnel and other property.

2.1 Site Information

2.1.1 General Description

AECOM Technical Services Northeast Inc. (AECOM) will perform a Grout Wall Treatability Study at the former Lockport Transit Street MGP (the "Site") on behalf of NYSEG. The Site (NYSDEC Site # 9-32-098) is located at the intersection of Transit Street, Lagrange Street and Saxton Street in the City of Lockport, Niagara County, New York.

2.1.2 Site Background/History/Nature of Contamination at the Site

The MGP operated from 1851 until 1927, producing a combustible gas that was delivered through pipes to local homes and businesses, in the same manner that natural gas is delivered today. At first, the gas was produced by heating coal ("coal carbonization"). Sometime around 1914, the plant also began using a second method known as the "carbureted water gas" process, which involved the use of petroleum products for gas making. The waste materials from these two processes are distinct but broadly similar, with the principal waste being a dark, oily waste commonly known as coal tar. For discussion purposes, tars produced by both processes are referred to as "MGP tar" or nonaqueuous phase liquids (NAPL).

The principal waste product produced at the former MGP site was MGP Tar, which is an oily, dark colored liquid with a strong, objectionable odor. Unlike most materials labeled as "tar", this is not a semi-solid, viscous material but has a physical consistency similar to motor oil, which enables it to move through the subsurface MGP Tar is referred to as a dense non-aqueous phase liquid or DNAPL since it is heavier than water and will not readily dissolve in water. When released into the subsurface, it will sink through the groundwater until it reaches some less permeable material which it cannot penetrate. It can, under certain conditions, move laterally away from the point where it was initially released.

The tar contains high levels of volatile and semi-volatile organic compounds (VOCs and SVOCs). The principal MGP Tar VOCs are benzene, toluene, ethylbenzene, and xylenes. These compounds, collectively known as BTEX, are slightly soluble in water. Groundwater which comes into contact with tar or tar-contaminated soils will become contaminated with BTEX compounds. This contaminated groundwater can then move through the subsurface along with the ordinary groundwater flow.

SVOCs are a group of compounds known as polycyclic aromatic hydrocarbons, commonly abbreviated as PAHs. PAH compounds are generally less soluble than BTEX, and are consequently less likely to dissolve in groundwater. This makes PAH compounds less mobile in

the subsurface, so the highest levels of PAHs are normally found in close proximity to the tar from which they are derived.

2.1.3 General Scope of Work

The scope of this project is to complete a Grout Wall Pilot Test to support the design of a grout wall in the bedrock. The following field activities to be performed during the Grout Wall Pilot Test include:

- Oversight of bedrock grout injection boring installation – Up to six 6-inch bedrock grout injection borings will be installed to a depth of 75-ft below ground surface;
- Oversight of the injection of cement-bentonite mixture into each injection boring (anticipated volume is 300 gallons per boring); and,
- Surveying – The locations and elevation of the PDI sample locations will be surveyed by AECOM.

3.0 Project Health And Safety Organization

In exercising its responsibility for site safety management, AECOM will appoint personnel to fill the following safety-related positions.

- Health and Safety Coordinator – Emily Laity
- Project Manager – Scott Underhill
- Site Manager – Emily Laity (Field Staff)

See Standard HASP for site safety management responsibilities, authority, and qualification requirements.

4.0 Site Specific Safety Requirements

The following site specific requirements pertain to all work activities to be conducted at the project site, irrespective of specific work tasks or operations.

4.1 Site-Specific Safety Training

All personnel performing field activities at the site will be trained in accordance with SH&E 114, Safety Training Programs. For this project, training will also include the requirements specified in the following:

- SH&E 112 Respiratory Protection Program
- SH&E 115 Hazard Communication Program
- SH&E 202 Safety Meetings

In addition to the general health and safety training programs, personnel will be:

- Instructed on the contents of applicable portions of this HASP and any supplemental health and safety information developed for the tasks to be performed.
- Informed about the potential routes of exposure, protective clothing, precautionary measures, and symptoms or signs of chemical exposure and heat stress.
- Made aware of task-specific physical hazards and other hazards that may be encountered during site work. This includes any client-specific required training for health and safety.
- Made aware of fire prevention measures, fire extinguishing methods, and evacuation procedures.

The site-specific training will be performed prior to the worker performing the subject task or handling the impacted materials and on an as-needed basis thereafter.

At the start of each work day the Site Manager or designated alternate will conduct a tailgate safety meeting. The tailgate safety meeting will include all AECOM personnel and subcontractors, and any other approved project oversight. This meeting will include a discussion of the work activities planned for that day, discussion of previous experiences/problems performing this work, and other safety requirements pertinent to the work activities (e.g., special PPE requirements). This meeting can also be used for discussion of previous safety difficulties and corrective measures, as well as training on general safety topics. All personnel assigned to work at the site each day are required to attend the tailgate safety meeting. Documentation of each meeting will be provided using AECOM's Tailgate Safety Meeting form. The SSO will maintain copies of this documentation on site for the duration of the project.

4.2 HAZWOPER Training

Personnel performing work at the job site must be qualified as HAZWOPER workers (unless otherwise noted in specific THAs), and must meet the medical monitoring and training requirements specified in the following safety procedures:

- SH&E 108 Medical Monitoring and Surveillance
- SH&E 109 Hearing Conservation Program

- SH&E 111 Employee Exposure Monitoring Program
- SH&E 112 Respiratory Protection Program
- SH&E 113 Personal Protective Equipment (PPE)
- SH&E 115 Hazard Communication Program
- SH&E 301 Hazardous Waste Operations (HAZWOPER)

Personnel must have successfully completed training meeting the provisions established in 29 CFR 1910.120 (e)(2) and (e)(3) (40-hour initial training). As appropriate, personnel must also have completed annual refresher training in accordance with 29 CFR 1910.120 (e)(8); each person's most recent training course must have been completed within the previous 365 days. Personnel must also have completed a physical exam in accordance with the requirements of 29 CFR 1910.120 (f), where the medical evaluation includes a judgment of the employee's ability to use respiratory protective equipment and to participate in hazardous waste site activities. These requirements are further discussed in SH&E 301, Hazardous Waste Operations (HAZWOPER).

If site monitoring procedures indicate that a possible exposure has occurred above the OSHA permissible exposure limit (PEL), employees may be required to receive supplemental medical testing to document specific to the particular materials present (SH&E 108, Medical Monitoring and Surveillance).

4.3 Overall Site Control and Security

The work site is located on commercial property. No permanent work trailer will be constructed for site work. Based on the scope of the work, no fencing will be installed; however, traffic cones will be put in place around the work area during daily operations if work occurs within or adjacent to the street or sidewalk. No excavations from test pitting activities will be left open overnight unless appropriate site security measures (cones/caution tape) can be put in place.

Site communication will be established daily during the daily safety meetings.

4.4 Hazardous, Solid, or Municipal Waste

If hazardous, solid and/or municipal wastes are generated during any phase of the project (e.g. drill cuttings/purge water), the waste shall be accumulated, labeled, and disposed of in accordance with applicable Federal, State, and/or local regulations and SH&E 601, Hazmat Shipping.

4.5 Working in Parking Lots and Roadways

During work in parking lots and roadways, all personnel will wear a type II DOT reflective vest. The work areas will be cordoned off with cones.

4.6 General Site Maintenance

The Site will be maintained in a professional manner at all times during construction. The site will be neat, kept clean, and appear organized during construction operations.

4.7 Confined Space Entry

Confined Spaces will be identified by and the PM and/or Site Manager during the duration of the project. No confined spaces requiring entry are known to be located in the work area. If identified, the PM and Site Manager will identify potential hazards associated with each individual confined space in accordance with SH&E 118, Confined Space Entry. All employees will be made aware of confined

spaces and their associated hazards. Only trained AECOM personnel will be allowed to enter a confined space. Confined space entry procedures and training requirements are listed in SH&E 118 and will be followed for any confined space entry.

4.8 Client Specific Safety Requirements

All AECOM employees and contractors or subcontractors who will be performing work inside the perimeter fence of NYSEG's Transit Street electrical substation while any part or portion of the substation is energized will be required to attend Substation Safety training provided by NYSEG.

5.0 Site Activities

This group of activities will encompass tasks required to complete a pre-design investigation (PDI).

5.1 Description of Work Activities

5.1.1 Grout Wall Drilling, Packer Testing, and Grout Installation

The proposed scope of work includes installation of grout borings using wet rotary or percussion drilling methodology with water flush to a final depth of 75-ft. The boring will be flushed with water to remove soil cuttings and debris and the water and soil from the boring will be collected and placed into drums. During drilling cuttings will be screened for VOCs using a photoionization detector (PID). Water pressure testing with packers will then occur in stages at a pressure of 15 pounds per square inch (psi) for 15 minutes. Cement-bentonite grout will then be mixed grout will be injected into the boring in stages. Grout stages will correspond to the water pressure test stages and grouting of each stage shall continue until refusal. The ratio of water to cement will depend of the result of the packer test. Grout mixes will be thickened or thinned as needed depending on site conditions. If grout refusal occurs in less than 30 minutes, a thinner starting mix shall be used for the next stage. If grout takes equal or exceed water takes in the first 30 minutes, or if grouting continues for more than 60 minutes without reduction in take, the grout shall be thickened. The grout will set overnight and then drilling and grouting of secondary grout holes will occur using the same procedure. Tertiary and quaternary grout holes will be completed as needed during the Grout Wall Treatability Study.

Soil cuttings produced during these activities will be drummed and soil samples will be analyzed for TCLP benzene, PCBs, and reactivity if purifier waste is determined to be present. Soil samples will be collected by gloved hand and material will be placed in laboratory-supplied jars. Drill cuttings at zones of anticipated impact will be containerized for later characterization and disposal. Water produced during these activities will be drummed and water samples will be analyzed for total benzene and for total cyanide if purifier waste is determined to be present. AECOM personnel will oversee the drilling subcontractor and locate all borings and wells.

The Drilling SOP (SH&E 403) and the Drilling THAs included in Appendix A will be followed.

5.1.2 Surveying

AECOM will provide non-intrusive land surveying services to survey the locations and elevations of the test borings installed during the Grout Wall Treatability Study. The surveyed data will be incorporated into the existing base maps.

5.1.3 Additional Work Activities

The following additional tasks will also be performed as necessary in support of planned site activities:

Equipment Decontamination: AECOM and subcontractor personnel will perform decontamination of equipment used to perform work within controlled work areas.

Investigative-Derived Waste (IDW) Management: IDW will be collected and categorized as non-hazardous or hazardous. Potentially hazardous IDW (purge water, and decontamination fluids, and soil cuttings [if any]) will be tested and disposed off-site. Potentially hazardous IDW waste will be staged onsite, and then delivered to an IDW storage facility for processing. Non-hazardous IDW (normal trash) will be disposed of in a timely fashion during fieldwork.

5.2 Worker Qualifications and Training

All employees will have OSHA 40-hr HAZWOPER certifications with annual refresher training. Lead field staff will also have OSHA 10-hour Supervisor training.

5.3 Task Identification and Hazard Assessment

5.3.1 Task Identification

The following tasks are associated with the above activities:

- Grout Wall Pilot Test Drilling (includes drilling, grout injection, and IDW handling)

A task hazard analysis (THA) has been prepared for each of these tasks, and can be found in Attachment A. Each THA specifies the scope of activities, identifies the related hazards and specifies appropriate health and safety procedures and mitigation measures, as well as any additional requirements (e.g., monitoring procedures) specific to the work being performed.

5.3.2 Hazard Assessment

The hazards associated with individual tasks are specified in each THA. Each THA is located in Attachment A.

Exposure to Environmental Contaminants

The following is a discussion of the hazards presented to worker personnel during this project from on-site chemical hazards known or suspected to be present on site. Hazards associated with chemical products brought to the site during work operations are addressed separately, under the Hazard Communication process described in Section 4.3.

Exposure symptoms and applicable first aid information for each suspected site contaminant are listed in the MSDS sheets in Appendix C.

Volatile Organic Compounds (VOCs)

The VOCs associated with MGP wastes include benzene, toluene, ethylbenzene and xylenes. Exposure to the vapors of BTEX above their respective OSHA permissible exposure limits (PELs) may produce irritation of the mucous membranes of the upper respiratory tract, nose and mouth. Overexposure may also result in the depression of the central nervous system. Symptoms of such exposure include drowsiness, headache, fatigue and drunken-like behaviors. Prolonged overexposure to benzene vapors has detrimental effects on the blood-forming system ranging from anemia to leukemia.

The PEL for benzene is 1 ppm, as an 8-hour, time-weighted average (TWA). The American Conference of Governmental Industrial Hygienists (ACGIH) recommends a threshold limit value (TLV) of 0.5 ppm. The OSHA PEL for ethylbenzene is 100 ppm. The PEL for toluene is 200 ppm. However, the ACGIH recommends a TLV of 50 ppm for toluene. Xylene is a flammable, colorless liquid with an OSHA PEL of 100 ppm as an 8-hour TWA. Inhalation of xylene vapors above the PEL may result in motor activity changes, irritability and drunken-like behaviors. Xylene vapors are also irritating to the eye.

Polycyclic Aromatic Hydrocarbons

Typical coal gasification byproduct (coal tar) constituents are referred to as polycyclic aromatic hydrocarbon (PAH) compounds. PAH compounds are a family of multiple ring aromatic compounds commonly found in fossil fuels and formed from the incomplete combustion of organic materials. Repeated contact with PAH compounds may cause photosensitization of the skin, producing skin burns after subsequent exposure to ultra-violet light. Certain PAHs as a group are considered potential human carcinogens (CaPAH). OSHA regulates PAHs as coal tar pitch volatiles (CTPV) and has established a PEL for CTPV of 0.2 mg/m3, as an 8-hr TWA.

Of the PAH compounds typically present at MGP sites, naphthalene is typically present at higher concentrations than the other compounds. Naphthalene is easily detected due to its characteristic moth-ball like odor. The inhalation of high concentrations of naphthalene vapor may result in nausea, vomiting, abdominal pain and irritation of the bladder. Prolonged overexposure may result in renal shut down. The OSHA PEL for naphthalene, as an 8-hr TWA, is 10 ppm.

Purifier Box Waste

Blue staining is the characteristic associated with the presence of oxide box wastes (ferrocyanide). Therefore, the presence of this material is very easily identified during field investigations. The cyanides associated with oxide box wastes are present in a form that is generally unavailable or complexed with metals such as iron, which makes the cyanide more stable. Thus, the reported effects of free cyanide are not applicable. OSHA has not established a PEL for ferro/ferri cyanide compounds. Similarly, the ACGIH has not recommended a TLV for these compounds.

Metals

Lead is typically found at MGP sites and is associated with ash-like materials. In general, the inhalation of metal dusts is irritating to the upper respiratory tract and nasal mucous membranes. Most metal dusts cause dermatitis and/or eye irritation. The early symptoms of lead poisoning, as a result of overexposure (either through ingestion or inhalation) include fatigue, sleep disturbance, headache, aching bones and muscles, digestive irregularities, abdominal pains, and decreased appetite. Chronic overexposures to lead affect the central nervous system and male and female reproductive systems. Lead has also been identified as a fetotoxin. The OSHA PEL for inorganic lead is 50 µg/m3.

Dust

Dust generated during coring or cutting of concrete, boring, or excavations can be hazardous to the respiratory system and irritating to the eyes. Dust can also carry the contaminants of concern potentially exposing workers by skin contact and inhalation. The ACGIH has established an eight-hour exposure limit for dust at 3 mg/m3. The concentrations of the chemicals of concern in the soil are low enough that inhalation of dust would not by itself be an exposure hazard. However contamination of skin and clothing can provide additional exposures. Therefore the generation and contact with dust should be minimized.

Water or other methods should be used to control dust during dusty operations; however care must be used to prevent electrical shock if electric tools are used in the same area. If dusts become irritating and engineering controls such as the application of water cannot be used, respirators should be donned as discussed in Section 7.

Summary of Hazardous Properties of Potential Contaminants

Chemical Name	PEL[1]	TLV[2]	VP[3]	VD[4]	SG[5]	SOL[6]	FP[7]	LEL[8]	UEL[9]
Benzene	1	0.5	75	2.8	0.88	<1	12	1.2	7.8
Toluene	200	50	21	4	0.87	<1	40	1.1	7.1
Ethyl Benzene	100	100	7	4	0.87	<1	55	0.8	6.7
Xylene	100	100	9	4	0.86	<1	81	1.1	7.0
Lead	50 µg/m^3	50 µg/m^3	NA	NA	11.3	NA	NA	NA	NA

[1] Permissible Exposure Limit in ppm
[2] Threshold Limit Value in ppm
[3] Vapor Pressure in mm Hg
[4] Vapor Density (air = 1)
[5] Specific Gravity (water = 1)
[6] Solubility in Water in %
[7] Flash Point in F
[8] Lower Explosive Limit in % by volume
[9] Upper Explosive Limit in % by volume
NA = Not Applicable
? = Not known
C = Ceiling limit not to be exceeded

Exposure to Physical Hazards

The work activities above present the following physical hazards to personnel:

- Biological hazards (poisonous plants, insects)
- Slips, Trips, Falls (uneven surfaces, marshy environments)
- Heat Stress (overexposure to heat, sun)
- Severe Weather (Thunder and lightning)
- Hazardous Noise (heavy equipment, treatment system)
- Buried Utilities (Infrastructure)
- Heavy Equipment operation (drill rig, excavator)
- Heavy Lifting (pumps, generators, etc.)
- Residential Hazards during Vapor Intrusion Evaluation (poor lighting in basements, stacked storage, protruding objects, etc.)
- Flying debris from drilling/hammering

Protective measures for the hazards associated with each work task are described in the individual THAs.

Biological Hazards

Wild animals, such as snakes, raccoons, squirrels, and rats not only can bite and scratch, but can carry transmittable diseases (e.g., rabies).

Insects such as mosquitoes, ticks, bees, and wasps, can carry harmful diseases. Mosquitoes can potentially carry and transmit the West Nile Virus. Ticks can transmit Lyme disease or Rocky Mountain Spotted Fever. Bees and wasps can sting by injecting venom, which causes some

individuals to experience anaphylactic shock (extreme allergic reaction). If bitten by insects, see a doctor if there is any question of an allergic reaction.

Plants such as poison ivy and poison oak can cause severe rashes on exposed skin. Be careful where you walk, wear long pants, and minimize touching exposed skin with your hands after walking through thickly vegetated areas until after you have thoroughly washed your hands with soap and water.

5.4 Task-Specific Operational Safety Procedures

The following safety procedures are applicable to the work activities described in this Section. The specific procedures applicable to each work task are specified in each THA.

5.4.1 AECOM Safety Procedures

The following AECOM Safety Procedures are applicable to the work activities addressed in this Section:

- SH&E 109, Hearing Conservation
- SH&E 113, Personal Protective Equipment
- SH&E 115, Hazard Communication Program
- SH&E 116, Driver And Vehicle Safety
- SH&E 124, Heat Stress Prevention Program
- SH&E 201, General Safety Rules
- SH&E 202, Safety Meetings
- SH&E 204, Task Hazard Analyses
- SH&E 207, Subcontractor Safety, Health & Environmental Procedures
- SH&E 301, Hazardous Waste Operations (HAZWOPER)
- SH&E 310, Overhead Electrical Lines
- SH&E 403, Drilling
- SH&E 404, Manual Lifting
- SH&E 406, Drum Sampling
- SH&E 513, Heavy Equipment
- SH&E 517, Traffic Safety
- SH&E 601, Hazardous Materials Shipping

5.4.2 Supplemental Safety Procedures

Hazardous Noise Environments

Working around large equipment often creates excessive noise. The effects of noise can include physical damage to the ear, pain, and temporary and/or permanent hearing loss. Workers can also be startled, annoyed, or distracted by noise during critical activities.

AECOM has compiled noise monitoring data which indicates that work locations within 25 feet of operating heavy equipment (drill rigs) can result in exposure to hazardous levels of noise (levels greater than 90 dBA). Accordingly, all personnel are required to use hearing protection (ear plugs or

ear muffs, minimum noise reduction rating of 25 dB) within 25 feet of any operating piece of heavy equipment.

The site-specific training will be performed prior to the worker performing the subject task or handling the impacted materials and on an as-needed basis thereafter. Training will be conducted by the SSO (or his/her designee) and will be documented on the form attached to SH&E 202, Safety Meetings.

5.5 Work Area Control

In addition to the general controls specified in Section 4.3, the following work area controls will be implemented:

Hot Work Areas: Although not anticipated during this investigation, any welding, cutting, and other hot work operations performed by AECOM or its subcontractors will require notification to the Site Supervisor and SSO prior to the start of the work. A hot work permit may also be required (See SH&E 411 Welding, Cutting, and Other Hot Work.).

5.6 Personal Protective Equipment

All work activities associated with the scope of activities addressed in this Section can be performed using Level D, consisting of:

TYPE	MATERIAL	ADDITIONAL INFORMATION
Minimum PPE:		
Safety Vest	High-visibility	Type II, reflective tape and visible from all sides
Boots	Leather	ANSI approved safety toe
Safety Glasses		ANSI Approved
Hard Hat		ANSI Approved
Work Uniform		No shorts/cutoff jeans or sleeveless shirts
Additional PPE:		
Hearing Protection	Ear plugs/muffs	In hazardous noise areas
Leather Gloves		If working with sharp objects or powered equipment.
Prot. Chemical Boots		Required for any potential exposure to free product.

5.7 Decontamination

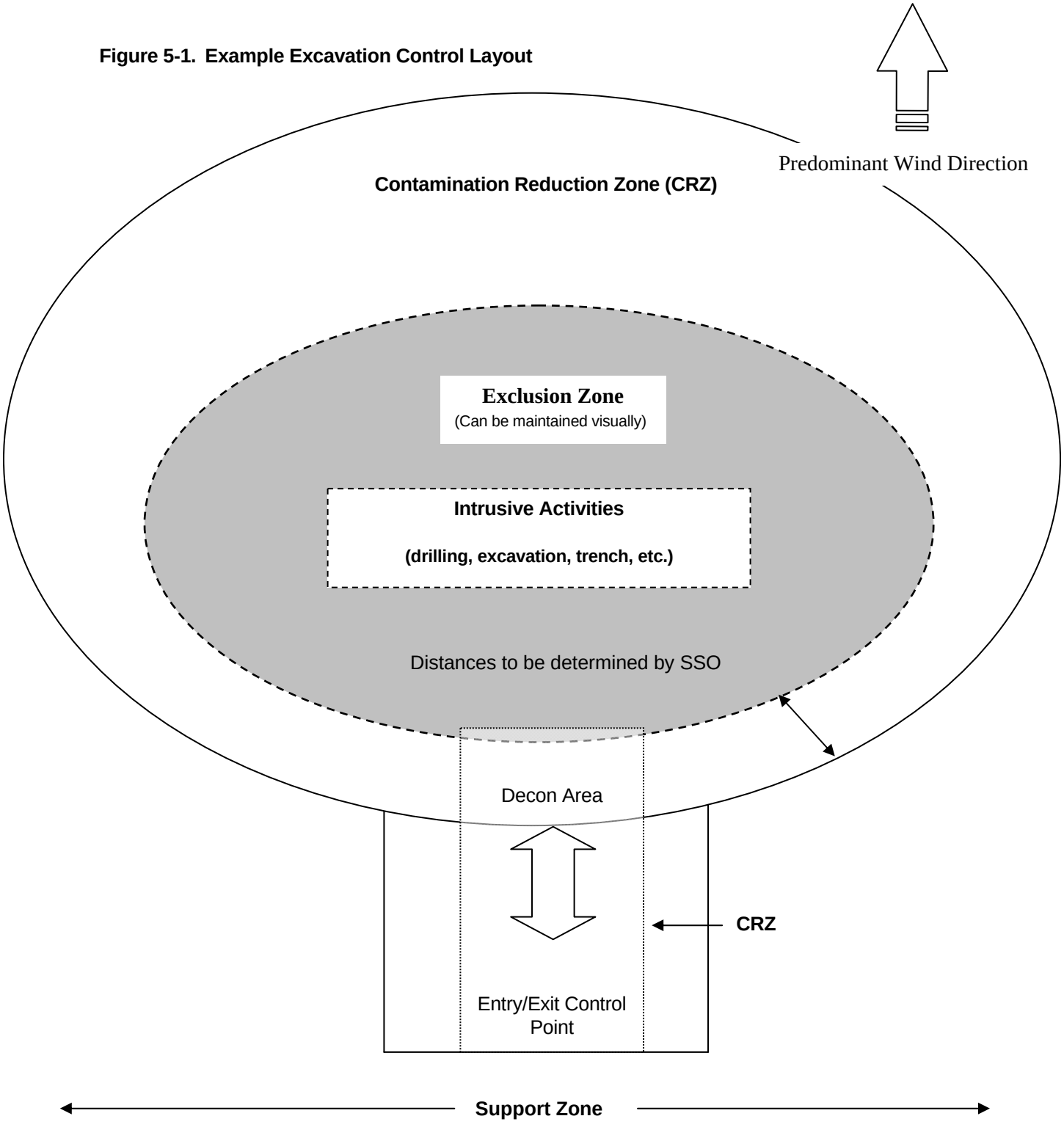
No personal decontamination is required for the scope of this work.

All heavy equipment exiting any HAZWOPER Exclusion Zone (e.g. drill rig augers) will be properly decontaminated on the main decontamination pad using a high-pressure washer and other proper equipment, (i.e. brushes, detergent). Should equipment become heavily soiled, then the use of a water sprayer and/or scrapers and brushes shall be used before being decontaminated. In general, the high pressure washer will be used for cleaning equipment: every effort will be made to remove adhering material with brushes and the sprayer. This decontamination of heavy soils will be performed

over contaminated soil areas and the water will collected on poly sheeting. The pressure washer will be high pressure low volume washer to minimize the amount of waste water generated.

All equipment will be inspected prior to being demobilized from the project site.

Figure 5-1. Example Excavation Control Layout



5.8 Occupational Exposure Monitoring

Monitoring shall be performed within each HAZWOPER work area on site in order to detect the presence and relative levels of toxic substances. The data collected throughout monitoring shall be used to determine the appropriate levels of PPE. Monitoring shall be conducted as specified in each THA as work is performed.

5.8.1 General Requirements

Table 5-1 specifies the real-time monitoring equipment which will be used in HAZWOPER work areas for this project.

Table 5-1: Investigation Monitoring Parameters and Equipment

Instrument	Manufacturer/Model*	Substances Detected
PID	MiniRae 2000 or equivalent	VOCs
Dust Monitor	PDR 1000	Dust

5.8.2 Health and Safety Action Levels

An action level is a point at which increased protection is required due to the concentration of contaminants in the work area or other environmental conditions, the concentration level (above background level) and the ability of the PPE to protect against that specific contaminant determine each action level. The action levels are based on concentrations in the breathing zone.

If ambient levels are measured which exceed the action levels in areas accessible to unprotected personnel, necessary control measures (barricades, warning signs, and mitigative actions, etc.) must be implemented prior to commencing activities at the specific work area. Personnel should also be able to upgrade or downgrade their level of protection with the concurrence of SSO.

Reasons to upgrade:

- Known or suspected presence of dermal hazards.
- Occurrence or likely occurrence of gas, vapor, or dust emission.
- Change in work task that will increase the exposure or potential exposure to hazardous materials.
- Monitoring information.

Reasons to downgrade:

- New information indicating that the situation is less hazardous than was originally suspected.
- Change in site conditions that decrease the potential hazard.
- Change in work task that will reduce exposure to hazardous materials.
- Monitoring information.

5.8.3 Monitoring Equipment Calibration

All instruments used will be calibrated at the beginning of each work shift, in accordance with the manufacturer's recommendations. If the owner's manual is not available, the personnel operating the equipment will contact the applicable office representative, rental agency or manufacturer for technical guidance for proper calibration. If equipment cannot be pre-calibrated to specifications, site operations

requiring monitoring for worker exposure or off-site migration of contaminants will be postponed or temporarily ceased until this requirement is completed.

5.8.4 Personal Sampling

Should site activities warrant performing personal sampling to better assess chemical exposures experienced by AECOM employees, the PM and an AECOM Safety Professional (CIH) will be responsible for specifying the monitoring required. Within five working days after the receipt of monitoring results, the CIH will notify each employee, in writing, of the results that represent that employee's exposure. Copies of air sampling results will be maintained in the project files. Any personal sampling will be performed according to SH&E 111, Employee Exposure Monitoring Program.

Should site activities warrant, AECOM subcontractor(s) may also need to implement employee exposure monitoring measure per their own monitoring program requirements. The subcontractor is to notify AECOM that personal sampling is needed prior to commencing sampling.

5.8.5 Work Zone Exposure Monitoring

Specific work zone air monitoring for VOCs and total suspended particulates (dust) will be conducted where intrusive operations are occurring as indicated in the THAs. VOC monitoring will be accomplished using the PID that will be used to screen site soils. Total suspended particulates will be monitored within the work zone with a separate dust meter. Periodic instant readings will be taken at 30 minute intervals at the location of the intrusive activities and recorded in a log.

Table 5-2. Remediation Monitoring Action Levels

PARAMETER	MONITORING INTERVAL	RESPONSE LEVEL (above background)	RESPONSE
VOCs	30 minutes	5 ppm	**Stop work, evaluate control measures, and implement corrective action.**
Dust	30 minutes	150 µg/m^3	**Stop work, evaluate control measures, and implement corrective action.**

6.0 Community Air Monitoring Program

Direct measurement of VOCs and total suspended particulates (dust) released during the investigation will be measured as described in Section 2.3 of the Grout Wall Treatability Study Work Plan.

7.0 Emergency Response Planning

7.1 Emergency Action Plan

The potential for an emergency to occur is remote however; basic emergency actions are necessary should such critical situations arise. Site specific emergency action procedures will be provided within this HASP.

Prior to the start of site operations or if daily operations dictate, the PM or the Site Manager shall notify all personnel working on the site any site-specific information regarding evacuations, muster points, communication, and other site-specific emergency procedures.

All visitors and site personnel will be briefed on daily operations and safety policies and procedures prior to entering work areas.

AECOM will immediately contact local emergency services by calling 911 in the event of an emergency.

The following types of events are considered by AECOM to be site specific emergencies:

- Significant physical injury or illness (requiring local EMS response)
- Large fire (cannot extinguish with nearby fire extinguisher)
- Excavation collapse
- Chemical spill or release
- Heavy equipment accident
- Vehicular or traffic accident

The following actions should be taken in response to physical injury or illness emergencies:

- Remain calm. Proceed to muster location if capable. Notify Site Manager or PM immediately. If not capable, remain in place and notify Site Manager or co workers of your location via mobile phone or hand held radio.
- Site Manager or appropriate field personnel will visually and verbally assess the situation. If local EMS response is needed, Site Manager or field personnel will coordinate and contact. If only First Aid is needed, certified site personnel will perform. (Reference SH&E 205 Emergency Action Planning and Prevention)
- If necessary, the Site Manager or field personnel will immediately contact site representation other than AECOM regarding emergency. If emergency affects existing site operations, AECOM will coordinate with site representation and proceed with response actions. If emergency does not affect existing site operations, AECOM will continue to elicit emergency services assistance and provide notification after the emergency is under control.
- Once the emergency is under control, AECOM Accident/Incident reporting procedures per SH&E 101 Injury, Illness, and Near Miss Reporting will be initiated.

The following actions should be taken in response to all other site specific emergencies:

- Evacuate area if necessary and capable to muster location
- Assess yourself and co-workers for injury
- Notify Site Manager or PM immediately. If not capable, remain in place and notify Site Manager or co workers of your location via mobile phone or hand held radio.
- Site Manager or appropriate field personnel will visually and verbally assess the situation. If local EMS response is needed, Site Manager or field personnel will coordinate and contact. If only First Aid is needed, certified site personnel will perform. (Reference SH&E 205 Emergency Action Planning and Prevention)
- If necessary, the Site Manager or field personnel will immediately contact site representation other than AECOM regarding emergency. If emergency affects existing site operations, AECOM will coordinate with site representation and proceed with response actions. If emergency does not affect existing site operations, AECOM will continue to elicit emergency services assistance and provide notification after the emergency is under control.
- Once the emergency is under control, AECOM Accident/Incident reporting procedures per SH&E 101 Injury, Illness, and Near Miss Reporting will be initiated.

7.2 Incident Reporting

All incidents that occur on-site during any field activity will be promptly reported to the SSO and the PM in accordance with AECOM Safety Procedure SH&E 101, Injury, Illness, and Near-Miss Reporting. AECOM will also report any injuries to NYSDEC.

If any AECOM employee is injured and requires medical treatment, the PM will contact AECOM's Incident Reporting Line at (800) 348-5046 immediately. The PM will initiate a written report, using the Supervisor's Report of Incident form (see SH&E 101) and instructions.

If any employee of a subcontractor is injured, documentation of the incident will be accomplished in accordance with the subcontractor's procedures; however, copies of all documentation (which at a minimum must include the OSHA Form 301 or equivalent) must be provided to the SSO within 24 hours after the accident has occurred.

7.3 Emergency Contacts

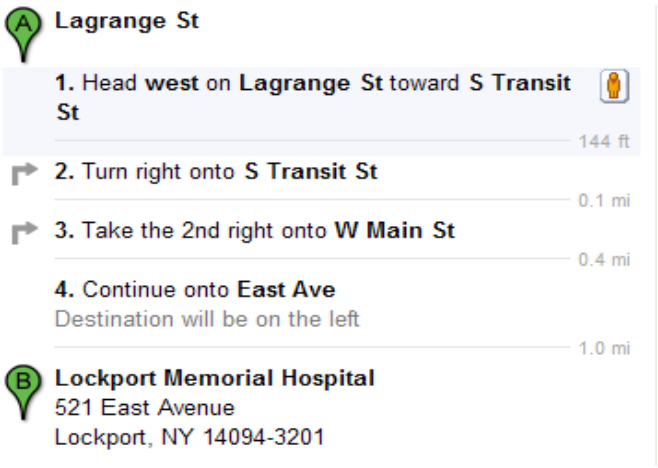
AECOM will utilize the following Emergency Contact List provided below to contact other parties regarding site specific emergencies and non-emergencies when necessary. This Emergency Contact List will be posted in all field trailers near telephone locations and hard copies will also be provided to all field personnel and subcontractors working on site.

Also provided is a Hospital Route Map and directions to the closest hospital with emergency facilities. In the event of a serious injury, do not transport the victim to the hospital. Allow EMS to provide first response and proper transport to the closest medical facility. If first aid is administered on site by qualified site personnel and the injury has been controlled, but it is determined that the injury needs further medical attention the victim can be transported by site personnel to the hospital identified in this HASP.

Table 7-1. Emergency Contacts

Emergency Coordinators/Key Personnel			
Name	**Title/Workstation**	**Telephone Number**	**Cellular Phone**
Scott Underhill	Project Manager	518-951-2208	518-396-7638
Michael Grasso	District SHE Manager	607-282-0175	607-282-0175
Phil Platcow	Regional SHE Manager	617-371-4461	617-899-5403
Incident Reporting	AECOM Corporate Safety Administrator	800-348-5046	
Tracy Blazicek	NYSEG – Project Manager	607-762-8839	607- 237-5325
Organization / Agency			
Name			**Telephone Number**
Site Emergency			911
Lockport Fire Department (non-emergency), Lockport Fire District			716-439-6724
Lockport Police Department (non-emergency)			716-439-6689
Eastern Niagara Hospital 521 East Avenue, Lockport, NY 14094-3201			(716) 514-5700
Poison Control Center (Upstate NY Poison Control)			800-222-1222
NYS DEC Spill Reporting			800-457-7362
National Response Center			800-424-8802
Work Care North, CN (AECOM Medical Consultant)			510-748-6900/ 888-449-7787
Title 3 Hotline			800-535-0202
Public Utilities			
Dig Safely New York			800-962-7962

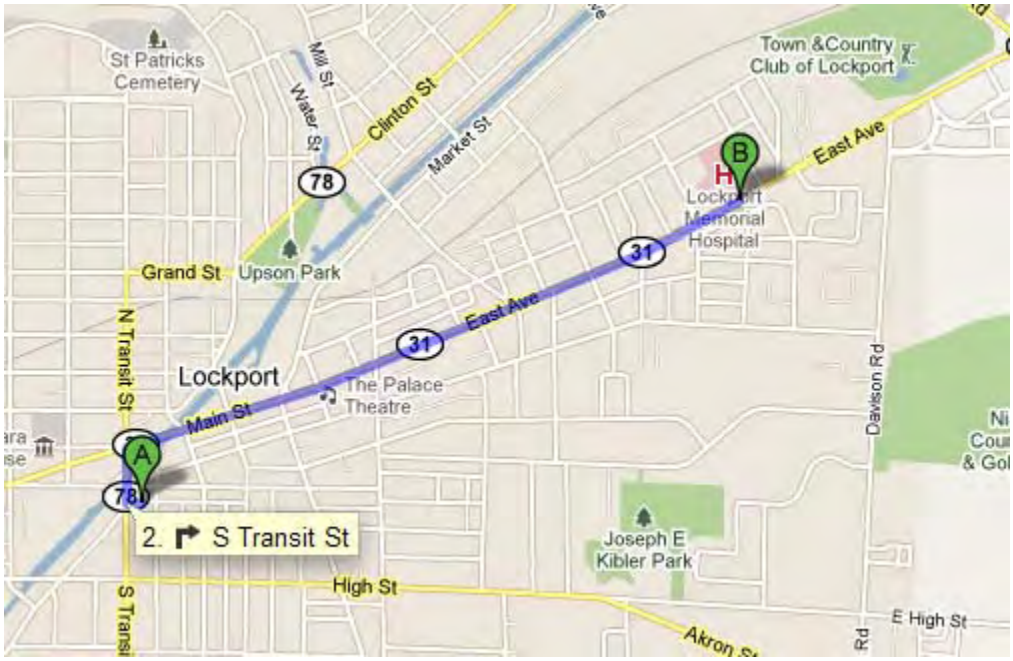
Figure 7-1. Hospital Route/Detail Map



Lagrange St

1. Head **west** on **Lagrange St** toward **S Transit St**
144 ft
2. Turn right onto **S Transit St**
0.1 mi
3. Take the 2nd right onto **W Main St**
0.4 mi
4. Continue onto **East Ave**
Destination will be on the left
1.0 mi

Lockport Memorial Hospital
521 East Avenue
Lockport, NY 14094-3201



8.0 Personnel Acknowledgement

By signing below, the undersigned acknowledges that he/she has read and reviewed the AECOM Site-Specific Health and Safety Plan for the Cortland-Homer former MGP site. The undersigned also acknowledges that he/she has been instructed in the contents of this document and understands the information pertaining to the specified work, and will comply with the provisions contained therein.

PRINT NAME	SIGNATURE	ORGANIZATION	DATE

Attachment A

Task Hazard Analysis

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: NYSEG Lockport	Project Number: 60194949	Client: NYSEG
	Supervisor: Scott Underhill	Project Manager: Scott Underhill	Location: Transit Street, Lockport, NY
	THA Developed By: Emily Laity		Date: June 2011
TASK HAZARD ANALYSIS	Task Name: Drilling - Wet Rotary or Percussion with Packer Testing	Regularity of Task: One-time ☐ Routine ☐	

	Job Event Sequence *(List the major steps of the individual task)*	Hazards *(List primary hazards)*	Hazard Classification (*before controls*) Severity	Likelihood	Risk Level	Hazard Classification	Controls *(List controls that AECOM will implement)*
1	Check the weather	Unexpected storm - lightling, rain	1	2	2	Low	• check local weather forecast • monitor changing conditions and communication among team members and subcontractors. • Discuss weather in tailgate safety meeting. At the first signs of lightning, thunder of other indications of a storm, stop work and take shelter. Do not resume work until 30 minutes have passed without signs of a storm.
2	Conduct tailgate safety meeting and site walk	Electrical hazards, Biological hazards, slips, trips, falls, Heat and Cold Stress, Dehydration	1	3	3	Low	• Review electrical hazards daily and have all site personnel complete site specific electrical safety meeting before working at an active substation. • Check immediate area for potential hazards such as poison ivy, spiders, wasps, sankes, etc. Use bug repelllent and sunscreen as necessary. • Inspect areas before driving and/or walking. Identify possible hazards such as holes, obstructions protruding from the ground or debris that may be scattered on the ground. Contact site manager immediately and do not proceed if any conditions are observed that could make driving/walking in the area unsafe and that cannot be fixed with the equipment or personnel onsite. • Use this opportunity to begin hydrating yourself. Being thirsty is a sign of dehydration (warning you that you are already dehydrated) • Know the signs of heat and cold stress. Take precautions to avoid them. Wear clothing appropriate for the weather conditions. Take breaks as recommended. Monitor self and other workers.

3	Drilling Operations	Operation of Drill Rig/Rotating Equipment	4	3	12	Medium	• Training in operation of equipment. • Use of hearing protection. • Daily safety meetings/reminders • Location and testing of emergency stop (daily). • Wheel chocks shall be used. • Establish good communication with ground personnel, eye contact and/or radios. • Reflective orange safety vests are secured when worn by personnel operating rotating equipment. • Isolation of work area as needed. • No loose clothing or articles in vicinity of rotating equipment during operation. • The lift and swing path of a crane/equipment will be watched and maintained clear of obstructions • Fire extinguishers will be available in or near all mechanical lifting devices as appropriate. • No person shall climb the drill mast while tools are rotating; and • No person shall climb the drill mast without the use of ANSI-approved fall protection (approved belts, lanyards and a fall protection slide rail) or portable ladder that meets the requirements of OSHA standards. • No person besides the drillers should pass directly behind the rig while in operation. • Inspect all hydraulic hoses and lines for cracks, bulges and general wear and tear. DO not uses the machine if any of this is identified. • Identify pinch points before beginning any task.
4		Lifting	2	3	6	Medium	• Use proper lifting methods – use legs to lift, not the back. • Get help in lifting and controlling loads. • Establish and maintain clear work area/path. • Inspect footing prior to lifting. • Get help when lifting heavy objects. • Avoid manual handling of heavy objects. Utilize mechanical methods when possible (e.g., drum dolly, hydraulic equipment, liftgates, etc.).
5		Tools	2	2	4	Low	• Training, use of protective (leather) gloves and eye protection. • Daily inspection prior to use of tools. • Review manual/instructions for proper tool usage. • Usage of the right tool for the right job.
6		Overhead/Underground Utilities	4	2	8	Medium	• Check for overhead utilities before raising mast • Contact appropriate utility companies for underground utility locates prior to drilling (when appropriate) • Inspect all on-site borehole locations with National Grid Site Supervisor for utility clearances prior to drilling

7		Exposure to Potential Contaminants	2	2	4	Low	• Use of impermeable clothing and gloves. • Use of air monitoring instruments to detect airborne contaminants in the breathing zone. • Following personal hygiene procedures to prevent ingestion of contaminants. • Drum soil cuttings and wastewater.
8	Motor Vehilces and Heaving Equipment	Injury to Personnel and/or damage to property	3	2	6	Medium	• Riding on or in equipment without seats and seat belts is prohibited. • Personnel are to wear orange/yellow reflective vests to maximize visibility. • Vehicle/equipment operators are to be aware of personnel in the work area. • Limit personnel in the work are to those required to perform the work. • Ground personnel are to establish eye contact with operators prior to approaching equipment or entering the work area. • The wheels of any trucks being loaded or unloaded will be chocked to prevent movement. Outriggers will be extended on a flat, firm surface during operation.
9		Moving parts and pinch points	2	2	4	Low	• Work at a safe distance from moving parts of the drill rig. • Ensure that equipment guards (whip guards) are in place and secure. • Ensure that personnel are aware of and familiar with the potential hazards of rotary equipment being used. • Keep hands and loose clothing away from the arm of the rig to which casing is attached. • Do NOT cross between the rig and the casing supply. Only the drillers should be directly behind the rig. • Personnel will not be carried on lifting equipment, unless it is specifically designed to carry passengers with the exception of waste truck lift
10	Performing Packer Testing	Pressurized Gas Cylinders, lifting equip, pinch points	3	2	6	Medium	• Use proper care and handling when using compressed air cylinders. Make sure cylinders are secure, and transport and use in an upright position. • Check all fittings and hoses for signs of wear and tear. Do not use and equip. that might be damaged. • Monitor regulator pressure during packer inflation. • Use proper lifting procedures by bending and lifting with legs and not with back • Identify pinch points before beginning any task. Use leather gloves over nitrile gloves when handling equipment to prevent hand slipping

11	Breakdown of Equipment	Contaminants, cuts, pinch points, striking others	2	2	4	Low	• Always wear nitrile gloves when handling equipment. • Use leather gloves over your nitrile gloves to breakdown equipment to help grip and prevent cuts or hands slipping and losing control of equipment. • When disconnecting equipment, be aware that it may be diffictult to twist. When possible, ask for assistances. • Before disassembling tools, look around and ensure proper clearance. Identify and communicate to other workers withing striking distance.
12	Decontamination Procedures	high pressure water, Exposure to potential contaminants	2	2	4	Low	• Spray wand away from people and keep hands and feet away from discharge. • Perform decontamination on decon pad. Collect water on poly and transfer to drums for storage. • Wear proper PPE when using a pressures washer (safety glasses or faceshield, raingear or Tyvek to help prevent potentail contaminants from spraying.
13	Demobilize from site	Vehicle hazards, fixed facilities	3	2	6	Medium	• Stow all materials in vehicle porperly, and ensure equipment is properly stored/secured in the vehicle. Do not leave any equipment loose in the cab or bed of the truck as it can cause property damage or injuries to others of yourself by falling off the vehicle. • When parked near a fixed facilty (buildings, montiroing well, bollards, etc...) evaluate and plan route pror to mobilization/demobilization. Use the budy system when backing-up vehicles.
14					0		
15					0		
16					0		
17					0		

Hazard Classification Guidelines

Severity

1 Remote potential for injury, property damage/$ loss, or env damage

2 Potential for minor first aid injury, property damage/$ loss, or environmental damage

3 Potential for moderate personnel injuries, including medical treatment, property damage/$ loss, environmental damage, or negative public impact

4 Potential for a serious injury, major property damage/$ loss, serious impact to the environment, and public health

5 Catastrophic damage to people, property/equipment, environment, or public health

Likelihood of Occurrence

1 Very unlikely

2 Unlikely

3 Likely

4 Very likely

5 Certain

Hazard Classification Matrix

Likelihood \ Severity	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Risk Level: Low, Medium, High

Risk Level = Likelihood x Severity

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: NYSEG Lockport	Project Number: 60194949	Client: NYSEG
	Supervisor: Scott Underhill	Project Manager: Scott Underhill	Location: Transit Street, Lockport, NY
	THA Developed By: Emily Laity		Date: June 2011

SUMMARY OF CONTROLS

Task Name: Drilling - Wet Rotary or Percussion with Packer Testing

Regularity of Task: One-time ☐ Routine ☑

Personal Protective Equipment (*check all that apply*)

- ☑ CSA/ANSI Safety-Toed Boots (Leather or Rubber)
- ☑ CSA/ANSI Safety Glasses or Goggles
- ☑ CSA/ANSI-approved Hard Hat
- ☑ CSA/ANSI Type II/III Reflective Traffic Safety Vest
- ☑ Hearing Protection
- ☐
- ☐
- ☐
- ☐
- ☐

Air Monitoring (reference HASP monitoring plan)

☐ No air monitoring required ☑ Air monitoring required (*see procedures below*)

Parameter	Location/Monitoring Interval	Response/Action Levels	Response Activity
VOCs by PID	BZ, 30 min	5ppm	Stop work, evaluate control measures, and implement corrective action.

Required Training (associated with this THA)	Key SOPs (associated with this THA)		Client & Other Requirements
1 40 hr Hazwoper training	S3NA-309-PR Mobile or Heavy Equipment	S3NA-511-PR Heat Stress Prevention	Site Specifice Electrical Safety Training must be completed by all AECOM workers and subcontractors prior to work activities.
2 Electrical Safety Training (NYSEG site specific training)	S3NA-308-PR Manual Lifting, Field	S3NA-519-PR Respiratory Protection Program	
3	S3NA-405-PR Drilling and Boring		
4	S3NA-406-PR Electrical Lines, Overhead		
5	S3NA-502-PR Benzene		
6	S3NA-510-PR Hearing Conservation Program		

Acknowledgement / Signatures

Project Manager / Supervisor (signature): Date:

Name	Signature	Company	Date	Name	Signature	Company	Date

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: NYSEG Lockport	Project Number: 60194949	Client: NYSEG
	Supervisor: Scott Underhill	Project Manager: Scott Underhill	Location: Transit Street, Lockport, NY
	THA Developed By: Emily Laity		Date: June 2011
EMERGENCY RESPONSE PLAN	Task Name: Drilling - Wet Rotary or Percussion with Packer Testing	Regularity of Task: One-time ☐	Routine ☐

Check-in Procedures

Check-in Times	Check-in Person	Phone Number	Cell Phone Number
Alternate:			

Emergency Coordinators / Key Personnel

Name	Title	Phone Number	Cell Phone Number
	On-site First Aid Attendant		
Scott Underhill	Project Manager	518-951-2308	518-396-7638
	Site Supervisor		
Michael Grasso	Regional SH&E Manager	607-282-0175	607-282-0175
	Incident Reporting Line (BY THE END OF THE SHIFT)	1.800.348.5046	
Tracy Blazicek	Client Contact	607-762-8839	607-237-5325

Emergency Agencies / Public Utilities

Name	Type	Details	Phone Number
Lockport Police Department	Police		716-439-6689
Lockport Fire Department	Fire		911 or 716-439-6724 (non-emergency)
	Ambulance		911
Eastern Niagara Hospital	Nearest Hospital / Clinic	521 East Avenue, Lockport, NY 14094-3201	716-514-5700
Upstate NY Poison Control	Poison Control Center		1-800-222-1222
NYS DEC Spill Reporting	Pollution / Environmental		1-800-457-7362

Emergency Equipment & Supplies

- ☑ First Aid Kit - Type:
- ☐ Blankets / Survival:
- ☑ Fire Extinguishers Type:
- ☑ Communication Device
- ☐ Vehicle Safety Equipment
- ☑ Eye Wash
- ☑ Spill Kit
- ☐ Other:

Other Emergency Plan Details

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: NYSEG Lockport	Project Number: 60194949	Client: NYSEG
	Supervisor: Scott Underhill	Project Manager: Scott Underhill	Location: Transit Street, Lockport, NY
	THA Developed By: Emily Laity		Date: June 2011
TASK HAZARD ANALYSIS	Task Name: Grout Injections Proceedures	Regularity of Task: One-time ☐ Routine ☑	

	Job Event Sequence *(List the major steps of the individual task)*	Hazards *(List primary hazards)*	Hazard Classification (*before controls*) Severity	Likelihood	Risk Level	Hazard Classification	Controls *(List controls that AECOM will implement)*
1	Check the weather	Unexpected storm - lightling, rain	1	2	2	Low	• check local weather forecast • monitor changing conditions and communication among team members and subcontractors. • Discuss weather in tailgate safety meeting. At the first signs of lightning, thunder of other indications of a storm, stop work and take shelter. Do not resume work until 30 minutes have passed without signs of a storm.
2	Conduct tailgate safety meeting and site walk	Electrical hazards, Biological hazards, slips, trips, falls, Heat and Cold Stress, Dehydration	1	3	3	Low	• Review electrical hazards daily and have all site personnel complete site specific electrical safety meeting before working at an active substation. • Check immediate area for potential hazards such as poison ivy, spiders, wasps, sankes, etc. Use bug repelllent and sunscreen as necessary. • Inspect areas before driving and/or walking. Identify possibly hazards such as holes, obstructions protruding from the ground or debris that may be scattered on the ground. Contact site manager immediately and do not proceed if any conditions are observed that could make driving/walking in the area unsafe and that cannot be fixed with the equipment or personnel onsite. • Use this opportunity to begin hydrating yourself. Being thirsty is a sign of dehydration (warning you that you are already dehydrated) • Know the signs of heat and cold stress. Take precautions to avoid them. Wear clothing appropriate for the weather conditions. Take breaks as recommended. Monitor self and other workers.

3	Setting up Grout mixer	Lifting, using tools	2	2	4	Low	• Use proper lifting methods – use legs to lift, not the back. Avoid manual handling of heavy objects. Utilize mechanical methods when possible (e.g., drum dolly, hydraulic equipment, etc.). • Ensure tool users have proper training in the tool/equipment being used. Use protective (leather) gloves and eye protection. • Daily inspection prior to use of tools. • Review manual/instructions for proper tool usage. • Usage of the right tool for the right job.
4	Mixing Grout	Moving parts and pinch points, Lifting, Dust	3	2	6	Medium	• Ensure that personnel are aware of and familiar with the potential hazards of the grout mixer being used. • Identify pinch points, and be aware of moving parts on the mixer. Keep hands and loose clothing away from moving parts. Work at a safe distance. • Use proper lifting methods – use legs to lift, not the back. Avoid manual handling of heavy objects. Utilize mechanical methods when possible (e.g., drum dolly, hydraulic equipment, etc.). • Dust particles may become airborne during mixing activities. FI dust becomes excessive, use a dust mask. Perform monitoring for high dust levels.
5	Injecting Grout	Pressurized Gas Cylinders	3	2	6	Medium	• Use proper care and handling when using compressed air cylinders. Make sure cylinders are secure, and transport and use in an upright position. • Check all fittings and hoses for signs of wear and tear. Do not use and equip. that might be damaged. • Monitor regulator pressure during packer inflation. • Identify pinch points before beginning any task. Use leather gloves over nitrile gloves when handling equipment to prevent hand slipping.
6	Cleanup/Decontamination	high pressure water, Exposure to potential contaminants	2	2	4	Low	• Spray wand away from people and keep hands and feet away from discharge. • Perform decontamination on decon pad. Collect water on poly and transfer to drums for storage. • Wear proper PPE when using a pressures washer (safety glasses or faceshield, raingear or Tyvek to help prevent potential contaminants from spraying.
7					0		
8					0		
9					0		
10					0		
11					0		

S3NA-209-FM TASK HAZARD ANALYSIS

12					0		
13					0		
14					0		
15					0		
16					0		
17					0		

Hazard Classification Guidelines

Severity

1 Remote potential for injury, property damage/$ loss, or env damage

2 Potential for minor first aid injury, property damage/$ loss, or environmental damage

3 Potential for moderate personnel injuries, including medical treatment, property damage/$ loss, environmental damage, or negative public impact

4 Potential for a serious injury, major property damage/$ loss, serious impact to the environment, and public health

5 Catastrophic damage to people, property/equipment, environment, or public health

Likelihood of Occurrence

1 Very unlikely

2 Unlikely

3 Likely

4 Very likely

5 Certain

Hazard Classification Matrix

Likelihood \ Severity	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Risk Level
Low
Medium
High

Risk Level = Likelihood x Severity

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: NYSEG Lockport	Project Number: 60194949	Client: NYSEG
	Supervisor: Scott Underhill	Project Manager: Scott Underhill	Location: Transit Street, Lockport, NY
	THA Developed By: Emily Laity		Date: June 2011

SUMMARY OF CONTROLS

Task Name: Grout Injections Proceedures

Regularity of Task: One-time ☐ Routine ☑

Personal Protective Equipment (*check all that apply*)

- ☑ CSA/ANSI Safety-Toed Boots (Leather or Rubber)
- ☑ CSA/ANSI Safety Glasses or Goggles
- ☑ CSA/ANSI-approved Hard Hat
- ☑ CSA/ANSI Type II/III Reflective Traffic Safety Vest
- ☑ Hearing Protection
- ☐ dust masks (as needed)
- ☐
- ☐
- ☐
- ☐

Air Monitoring (reference HASP monitoring plan)

☐ No air monitoring required ☑ Air monitoring required (*see procedures below*)

Parameter	Location/Monitoring Interval	Response/Action Levels	Response Activity
VOCs by PID	BZ, 30 min	5ppm	Stop work, evaluate control measures, and implement corrective action.

Required Training (associated with this THA)	Key SOPs (associated with this THA)		Client & Other Requirements
1 40 hr Hazwoper training	S3NA-309-PR Mobile or Heavy Equipment	S3NA-511-PR Heat Stress Prevention	Site Specifice Electrical Safety Training must be completed by all AECOM workers and subcontractors prior to work activities.
2 Electrical Safety Training (NYSEG site specific training)	S3NA-308-PR Manual Lifting, Field	S3NA-519-PR Respiratory Protection Program	
3	S3NA-405-PR Drilling and Boring		
4	S3NA-406-PR Electrical Lines, Overhead		
5	S3NA-502-PR Benzene		
6	S3NA-510-PR Hearing Conservation Program		

Acknowledgement / Signatures

Project Manager / Supervisor (signature): Date:

Name	Signature	Company	Date	Name	Signature	Company	Date

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: NYSEG Lockport	Project Number: 60194949	Client: NYSEG
	Supervisor: Scott Underhill	Project Manager: Scott Underhill	Location: Transit Street, Lockport, NY
	THA Developed By: Emily Laity		Date: June 2011
EMERGENCY RESPONSE PLAN	Task Name: Grout Injections Proceedures	Regularity of Task: One-time ☐	Routine ☐

Check-in Procedures

Check-in Times	Check-in Person	Phone Number	Cell Phone Number
Alternate:			

Emergency Coordinators / Key Personnel

Name	Title	Phone Number	Cell Phone Number
	On-site First Aid Attendant		
Scott Underhill	Project Manager	518-951-2308	518-396-7638
	Site Supervisor		
Michael Grasso	Regional SH&E Manager	607-282-0175	607-282-0175
	Incident Reporting Line (BY THE END OF THE SHIFT)	1.800.348.5046	
Tracy Blazicek	Client Contact	607-762-8839	607-237-5325

Emergency Agencies / Public Utilities

Name	Type	Details	Phone Number
Lockport Police Department	Police		716-439-6689
Lockport Fire Department	Fire		911 or 716-439-6724 (non-emergency)
	Ambulance		911
Eastern Niagara Hospital	Nearest Hospital / Clinic	521 East Avenue, Lockport, NY 14094-3201	716-514-5700
Upstate NY Poison Control	Poison Control Center		1-800-222-1222
NYS DEC Spill Reporting	Pollution / Environmental		1-800-457-7362

Emergency Equipment & Supplies

- ☑ First Aid Kit - Type:
- ☐ Blankets / Survival:
- ☑ Fire Extinguishers Type:
- ☑ Communication Device
- ☐ Vehicle Safety Equipment
- ☑ Eye Wash
- ☑ Spill Kit
- ☐ Other:

Other Emergency Plan Details

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: NYSEG Lockport	Project Number: 60194949	Client: NYSEG
	Supervisor: Scott Underhill	Project Manager: Scott Underhill	Location: Transit Street, Lockport, NY
	THA Developed By: Emily Laity		Date: June 2011
TASK HAZARD ANALYSIS	Task Name: IDW Handling	Regularity of Task: One-time ☐ Routine ☐	

	Job Event Sequence *(List the major steps of the individual task)*	Hazards *(List primary hazards)*	Hazard Classification (*before controls*) Severity	Likelihood	Risk Level	Hazard Classification	Controls *(List controls that AECOM will implement)*
1	Collecting Soil cuttings and water in drums	Exposure to potential contamination	2	2	4	Low	• Use of impermeable clothing and gloves. • Use of air monitoring instruments to detect airborne contaminants in the breathing zone. • Following personal hygiene procedures to prevent ingestion of contaminants.
2	Moving drums to staging area	vehicles, lifting, pinch points	3	2	6	Medium	• Ensure drums are properly lidded and sealed before transporting or moving • Avoid manual handling of heavy objects such as drums filled with soil or water. Utilize mechanical methods when possible (e.g., drum dolly, hydraulic equipment, lift gates, etc.). Make sure drums are secure before moving or lifting via mechanical means. • Identify pinch points during lifting and placing drums keep fingers and hands free from between drums. • Use the buddy system when moving and backing vehicles or equipment while moving drums.
3	Sampling drums for Analysis	Exposure to potential contamination	1	1	1	Low	• Use of impermeable clothing and gloves. • Use of air monitoring instruments to detect airborne contaminants in the breathing zone. • Following personal hygiene procedures to prevent ingestion of contaminants.
4					0		
5					0		
6					0		
7					0		
8					0		
9					0		
10					0		
11					0		

S3NA-209-FM TASK HAZARD ANALYSIS

12					0		
13					0		
14					0		
15					0		
16					0		
17					0		

Hazard Classification Guidelines

Severity

1 Remote potential for injury, property damage/$ loss, or env damage

2 Potential for minor first aid injury, property damage/$ loss, or environmental damage

3 Potential for moderate personnel injuries, including medical treatment, property damage/$ loss, environmental damage, or negative public impact

4 Potential for a serious injury, major property damage/$ loss, serious impact to the environment, and public health

5 Catastrophic damage to people, property/equipment, environment, or public health

Likelihood of Occurrence

1 Very unlikely

2 Unlikely

3 Likely

4 Very likely

5 Certain

Hazard Classification Matrix

Likelihood \ Severity	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Risk Level
Low
Medium
High

Risk Level = Likelihood x Severity

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: NYSEG Lockport	Project Number: 60194949	Client: NYSEG
	Supervisor: Scott Underhill	Project Manager: Scott Underhill	Location: Transit Street, Lockport, NY
	THA Developed By: Emily Laity		Date: June 2011

SUMMARY OF CONTROLS

Task Name: IDW Handling

Regularity of Task: One-time ☐ Routine ☑

Personal Protective Equipment (*check all that apply*)

- ☑ CSA/ANSI Safety-Toed Boots (Leather or Rubber)
- ☑ CSA/ANSI Safety Glasses or Goggles
- ☑ CSA/ANSI-approved Hard Hat
- ☑ CSA/ANSI Type II/III Reflective Traffic Safety Vest
- ☐
- ☐
- ☐
- ☐
- ☐
- ☐

Air Monitoring (reference HASP monitoring plan)

☑ No air monitoring required ☐ Air monitoring required (*see procedures below*)

Parameter	Location/Monitoring Interval	Response/Action Levels	Response Activity
VOCs by PID	BZ, 30 min	5ppm	Stop work, evaluate control measures, and implement corrective action.

Required Training (associated with this THA)	Key SOPs (associated with this THA)		Client & Other Requirements
1 40 hr Hazwoper training	S3NA-309-PR Mobile or Heavy Equipment	S3NA-511-PR Heat Stress Prevention	Site Specifice Electrical Safety Training must be completed by all AECOM workers and subcontractors prior to work activities.
2 Electrical Safety Training (NYSEG site specific training)	S3NA-308-PR Manual Lifting, Field	S3NA-519-PR Respiratory Protection Program	
3	S3NA-405-PR Drilling and Boring		
4	S3NA-406-PR Electrical Lines, Overhead		
5	S3NA-502-PR Benzene		
6	S3NA-510-PR Hearing Conservation Program		

Acknowledgement / Signatures

Project Manager / Supervisor (signature): Date:

Name	Signature	Company	Date	Name	Signature	Company	Date

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: NYSEG Lockport	Project Number: 60194949	Client: NYSEG
	Supervisor: Scott Underhill	Project Manager: Scott Underhill	Location: Transit Street, Lockport, NY
	THA Developed By: Emily Laity		Date: June 2011
EMERGENCY RESPONSE PLAN	Task Name: IDW Handling	Regularity of Task: One-time ☐ Routine ☐	

Check-in Procedures

Check-in Times	Check-in Person	Phone Number	Cell Phone Number
Alternate:			

Emergency Coordinators / Key Personnel

Name	Title	Phone Number	Cell Phone Number
	On-site First Aid Attendant		
Scott Underhill	Project Manager	518-951-2308	518-396-7638
	Site Supervisor		
Michael Grasso	Regional SH&E Manager	607-282-0175	607-282-0175
	Incident Reporting Line (BY THE END OF THE SHIFT)	1.800.348.5046	
Tracy Blazicek	Client Contact	607-762-8839	607-237-5325

Emergency Agencies / Public Utilities

Name	Type	Details	Phone Number
Lockport Police Department	Police		716-439-6689
Lockport Fire Department	Fire		911 or 716-439-6724 (non-emergency)
	Ambulance		911
Eastern Niagara Hospital	Nearest Hospital / Clinic	521 East Avenue, Lockport, NY 14094-3201	716-514-5700
Upstate NY Poison Control	Poison Control Center		1-800-222-1222
NYS DEC Spill Reporting	Pollution / Environmental		1-800-457-7362

Emergency Equipment & Supplies

- ☑ First Aid Kit - Type:
- ☐ Blankets / Survival:
- ☑ Fire Extinguishers Type:
- ☑ Communication Device
- ☐ Vehicle Safety Equipment
- ☑ Eye Wash
- ☑ Spill Kit
- ☐ Other:

Other Emergency Plan Details

Appendix A1

Health and Safety Plan

Appendix B

Record of Decision

Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

NYSEG Lockport Transit Street MGP Site
Lockport (c), Niagara County, New York
Site Number 932098

March 2009

New York State Department of Environmental Conservation
David Patterson, *Governor* Alexander B. Grannis, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

NYSEG Lockport Transit Street MGP Site
Lockport (c), Niagara County, New York
Site No. 932098

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedy for the NYSEG Lockport Transit Street MGP site. The selected remedial program was chosen in accordance with the New York State Environmental Conservation Law 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 NYSEG Lockport Transit Street MGP inactive hazardous waste disposal site, and the public's input to the Proposed Remedial Action Plan (PRAP) 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.

Assessment of the Site

Actual or threatened releases of hazardous waste constituents from this site, if not addressed by implementing the response action selected in this ROD, presents a current or potential significant threat to public health and/or the environment.

Description of Selected Remedy

Based on the results of the Remedial Investigation and Feasibility Study (RI/FS) for the NYSEG Lockport Transit Street MGP site and the criteria identified for evaluation of alternatives, the Department has selected excavation of the most heavily impacted area (the "source area"), a barrier to eliminate the discharge of MGP Tar into the canal, containment of the contamination which can not be reasonably excavated, and a series of wells to remove otherwise inaccessible non-aqueous phase liquid (NAPL).
The components of the remedy are as follows:

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

2. Relocation of the Control House and 12 kV switchgear from the western portion of the site to the eastern portion of the site to allow excavation in that area.

3. Excavation and removal of approximately 4,000 cy of material from the western side of the substation and approximately 3,200 cy of material within LaGrange Street, as shown in Figure 8. Excavated soil will be subject to stockpiling, waste characterization testing and either transported off-site to a thermal desorption facility or an appropriate landfill. Excavated soil may only be re-used on-site (not in LaGrange Ave.) as backfill material. Excavated asphalt and clean demolition debris will be recycled on-site as backfill if found to be suitable. Otherwise, it will be disposed at an appropriate landfill. Excavated areas will be backfilled and adequately compacted. Any imported backfill will meet applicable soil cleanup objectives or be otherwise acceptable to the Department (e.g. virgin, granular material from a quarry). The permeability of backfill will be considered along with the design of collection and barrier systems to address potential interactions. Paved areas will be restored to preconstruction conditions, and disrupted utilities will be restored.. Unpaved areas will have a minimum of 12" of soil cover meeting applicable soil cleanup objectives. If excavated soil is re-used on-site as backfill, a demarcation layer will be provided. The excavation will generally extend to bedrock, except for the southern-most portion where significant impacts do not appear to extend to bedrock.

4. Removal of the remaining subsurface foundation of easternmost at-grade holder. Soils in the vicinity of this holder (approximately 400 cy) which have total PAHs above 500 mg/kg and exhibit a sheen will also be removed. No NAPL saturation is anticipated in this area, and soil excavation below 4 feet is not anticipated. Excavated soil and demolition debris will be handled as describe in item 3, above.

5. An overburden NAPL collection trench will be constructed on the north and west sides of the remaining substation equipment. These will remove the most mobile NAPL and will control lateral migration of NAPL. Subsurface barriers will also be installed on the south and east sides of the NYSEG property, designed to allow groundwater flow over the barrier and while controlling lateral migration of NAPL. Barrier construction materials and techniques will be assessed during design. Material removed from the trench will be sent for off-site treatment/disposal. The groundwater flow will be assessed considering the barrier walls, collection trenches, excavation backfill, and the overburden/bedrock interactions to limit groundwater flow through the remaining source material.

6. A geomembrane cap overlain with crushed stone will cover the surface of the area shown on Figure 8, with the membrane sealed to substation equipment slabs. The cap and crushed stone will, together, be at least 12 inches thick. Sand or some other material will likely be required to protect the geomembrane from puncture.

7. Approximately 400 linear feet of grout wall will be constructed in the bedrock downgradient of the interceptor trench. It will extend from 1 to 2 feet above the overburden/bedrock interface to an approximate depth of 75 feet to control migration of NAPL through the bedrock. Bedrock grouting will require further evaluation and pilot testing to refine techniques, materials, monitoring, and implementability. NAPL recovery wells will be installed upgradient of the wall at the two endpoints of the wall, and every 25 feet (minimum) between. See Figure 8.

8. Approximately 200 linear feet of grout wall will be constructed in the bedrock, along the Canal in the vicinity of the seeps. Approximately 9 NAPL collection wells, at a spacing of 25 feet, maximum, will be installed upgradient of the grout wall to collect the NAPL being blocked by the wall and prevent it being redirected to the north or south. The number and location of NAPL recovery wells associated with this grout wall will be refined based on observation made during grout wall construction. The layout of proposed remediation in this area is shown on Figure 9. The grout wall will be placed close to the Canal face, allowing fractures between the wall and the canal face to be fully grouted. Design considerations will include Canal rock face stability, sewer tunnel location, the presence of utility lines, and horizontal grout penetration.

9. Additional NAPL collection wells will be provided between the grout wall at the site and the grout wall adjacent to the canal, located to remove the most mobile NAPL from the bedrock. Locations will be generally consistent with the feasibility study, and are shown on Figure 7. NAPL recovery will initially be performed manually. Once sustained recovery rates are established, consideration will be given to automate or enhance recovery.

10. Approximately 1,200 cy of sediment in the Barge Canal will be excavated, dewatered and/or conditioned prior to transportation off-site to a thermal desorption facility or an appropriate landfill. Sediment remediation will likely occur during the winter months when the Canal has been drained. A sediment delineation program will be conducted prior to sediment remediation. In order to prevent contamination of the canal following remediation, sediment remediation will not commence until such time in the future when on-site remediation is complete, and observations indicate that NAPL seeps from the Canal face have ceased.

11. Imposition of an institutional control in the form of an environmental easement that will require a) compliance with the approved site management plan; b) limiting the use and development of the property to commercial or industrial uses only; c) the property owner to complete and submit to the NYSDEC periodic certification.

12. Development of a site management plan to: a) address residual contaminated soils that may be excavated from the site and in adjacent areas. Excavated soil will be tested, properly handled to protect the health and safety of workers and the nearby community, and will be properly managed in a manner acceptable to the Department; b) evaluate the potential for vapor intrusion for any buildings developed on the site, including provision for mitigation of any impacts identified; c) restricting use of the property to commercial/industrial only; d) provide for sampling of groundwater and analysis for VOCs, SVOCs, and attenuation indicator parameters; and d) provide for the operation and maintenance of the components of the remedy.

    The SMP will include provisions related to remaining material on the NYSEG property, and adjacent area including along Transit Street, on the Reid Petroleum property, and within LaGrange and Transit Streets.

    Ongoing operations at the Reid Petroleum property greatly limit the ability to conduct remedial activities on the site. However, the Department recognizes that use of the Reid property may change at some future date. If such operations cease in the future, or if the

property owner proposes a change in land use which will allow excavation of MGP impacted soil, then NYSEG will submit a work plan to the Department and proceed with removal upon receipt of Department approval. Furthermore, if less extensive excavation is to be conducted on the Reid property, NYSEG will ensure that the components of the SMP were enforced, which will include managing potential exposure to contaminated soil, including procedures for soil characterization, handling, disposal, and health and safety of workers and the community. Any new construction on the Reid Petroleum site will need to be evaluated for potential soil vapor intrusion.

13. The property owner will provide a periodic certification of institutional and engineering controls, prepared and submitted by a professional engineer or such other expert acceptable to the Department, until the Department notifies the property owner in writing that this certification is no longer needed. This submittal will: (a) contain certification that the institutional controls and engineering controls put in place are still in place and are either unchanged from the previous certification or are compliant with Department-approved modifications; (b) allow the Department access to the site; and (c) state that nothing has occurred that would impair the ability of the control to protect public health or the environment, or constitute a violation or failure to comply with the site management plan unless otherwise approved by the Department.

New York State Department of Health Acceptance

The New York State Department of Health (NYSDOH) concurs that the remedy selected 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.

MAR 3 0 2009

Date

Dale A. Desnoyers, Director
Division of Environmental Remediation

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RECORD OF DECISION

NYSEG Lockport Transit Street MGP Site
Lockport (c), Niagara County, New York
Site No.9-32-098
March 2009

SECTION 1: SUMMARY OF THE RECORD OF DECISION

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected this remedy for the NYSEG Lockport Transit Street MGP Site. As more fully described in Sections 3 and 5 of this document, operations at the former manufactured gas plan (MGP) have resulted in the disposal of hazardous wastes, consisting of MGP Tar, which contains chemicals including polycyclic aromatic hydrocarbons (PAHs) and benzene, toluene, ethylbenzene, and xylene (BTEX). These wastes have contaminated the soils at the site, and have resulted in:

- a threat to human health associated with potential exposure to groundwater, soil, and sediment.

- a threat to the environment associated with potential exposure to contaminated sediment, soil and groundwater and the ongoing discharge of MGP Tar into the New York State Barge Canal.

To eliminate or mitigate these threats, the Department has selected excavation of the most heavily impacted area (the "source area"), providing a barrier to eliminate the discharge of MGP Tar into the canal, containing the contamination which is not reasonably accessible, and provide for recovery of inaccessible non-aqueous phase liquid (NAPL).

The selected remedy, discussed in detail in Section 8, is intended to attain the remediation goals identified for this site in Section 6. The remedy must conform with officially 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.

SECTION 2: SITE LOCATION AND DESCRIPTION

The NYSEG Lockport Transit Street MGP Site is located in the City of Lockport in Niagara County. The site is located on a 0.87 acre parcel, which is completely occupied by an active electrical substation. The site is bordered by Transit Street to the west, LaGrange Street to the north, and Saxton Street to the east. Residential properties abut the site to the south, and the neighborhood is generally residential to the south and east and commercial to the north and west. The site location is shown on Figure 1. The NYSEG State Road Site (Site No.9-32-109), which

was previously investigated and remediated by NYSEG is located south and west of this site and is also shown on Figure 1.

The site is covered by 10 to 20 feet of fill material and re-worked native soils. Thickness of overburden (soil above bedrock) in the investigation area ranges from 1.5 to 51 feet. The fill generally consists of silt and sand, but also includes materials such as ash, slag, and cinders. These materials are common in historic urban fill, and are not necessarily related to historic operations at the MGP site.

The fill material frequently extends downward to bedrock, but in some areas a native silty sand was noted underlying the fill. The underlying bedrock consists of dolomite and shale layers. The upper portion of the shale is fractured and relatively permeable, with horizontal bedding planes allowing the horizontal movement of groundwater and other liquids. The lower, Lewiston member of the Rochester shale is much less fractured, relatively impermeable, and is considered the hydraulic base of this formation.

The New York State Barge Canal is located about 200 feet west of the site. At this location, the canal is cut approximately 45 feet into bedrock (through the dolomite into the Lewiston member of the Rochester shale). Groundwater flows generally north and west beneath the MGP site, towards the canal. The water level in the canal is raised and lowered seasonally. While the flow direction remains toward the canal throughout the year, the gradient changes significantly with these variations in canal elevation.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

The Manufactured Gas Plant operated from 1851 until 1927, producing a combustible gas that was delivered through pipes to local homes and businesses, in the same manner that natural gas is delivered today. At first, the gas was produced by heating coal ("coal carbonization"). Some time around 1914, the plant also began using a second method known as the "carbureted water gas" process, which involved the use of petroleum products for gas making. The waste materials from these two processes are distinct but broadly similar, with the principal waste being a dark, oily waste commonly known as coal tar. For discussion purposes, tars produced by both processes are referred to as "MGP tar".

Structures present during the operation of the plant included a number of gas holders (15,000; 50,000; and 150,000 cubic feet), retorts for carbonizing the coal, tar tanks, oil tanks, a purifier house, and coal handling and storage. These buildings were demolished between 1928 and 1948. The locations of these historic structures are shown on Figure 2.

The State Road Tar Works operated from approximately 1900 to 1911 as a processing plant for tar generated at the Transit Street former MGP Site. This site was separately addressed in a Record of Decision (ROD) dated March 2007. Construction described in that ROD was

completed in May of 2008, and the required site management plan and institutional controls are being developed.

3.2: Remedial History

Previous investigations of this site include a site screening between 1982 and 1985 and additional sampling conducted from 1991 to 1995. A soil removal was performed in 1997 to remove MGP tar contaminated soils from the adjacent gas station property.

The site screening investigation included the collection of groundwater, surface water and soil samples. Borings, test pits and monitoring wells were utilized during these investigations. MGP tar was observed in former MGP structures which remain in the subsurface, and in both soil and bedrock outside these structures.

The soil removal involved the removal of tar contaminated material during a tank removal at the gas station immediately north of the site. Petroleum contamination associated with these tanks was removed by the property owner, while disposal costs for tar contaminated soil (approximately 240 tons) was paid for by NYSEG.

SECTION 4: 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. New York State Electric and Gas, the current owner and former operator of the site, is the only PRP identified for the site.

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

SECTION 5: SITE CONTAMINATION

A remedial investigation/feasibility study (RI/FS) has been conducted to evaluate potential threats to human health and the environment.

5.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. RI fieldwork was conducted between January 2005 and April 2006. The field activities and findings of the investigation are described in the RI report.

During the RI, soil borings, bedrock cores, and wells were used to delineate and characterize the soils, bedrock and groundwater in the subsurface at the site. Sediment cores were collected from the adjacent canal. Environmental samples were collected from the surface and subsurface soil, sediment, groundwater and surface water. Air samples were also collected from soil gas, indoor air and outdoor air to assess the potential for soil vapor to impact nearby buildings. These samples were analyzed for the contaminants typically found in MGP Tar and other MGP wastes.

5.1.1: Standards, Criteria, and Guidance (SCGs)

To determine whether the soil and groundwater contain contamination at levels of concern, data from the investigation were compared to the following SCGs:

- Groundwater and surface water SCGs are based on the Department's "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.

- Soil SCGs are based on the Department's Cleanup Objectives"Technical and Administrative Guidance Memorandum [TAGM] 4046 and 6 NYCRR Subpart 375-6 - Remedial Program Soil Cleanup Objectives.

- Sediment SCGs are based on the Department's "Technical Guidance for Screening Contaminated Sediments."

Based on the RI results, in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of the site require remediation. These are summarized in Section 5.1.2. More complete information can be found in the RI report.

5.1.2: Nature and Extent of Contamination

The principal waste product produced at the former MGP site was MGP Tar, which is an oily, dark colored liquid with a strong, objectionable odor. Unlike most materials labeled as "tar", this is not a semi-solid, viscous material. Rather, it has a physical consistency similar to motor oil, which enables it to move through the subsurface MGP Tar is referred to as a dense non-aqueous phase liquid or DNAPL since it is heavier than water and will not readily dissolve in water. When released into the subsurface, it will sink through the groundwater until it reaches some less permeable material which it cannot penetrate. It can, under certain conditions, move laterally away from the point where it was initially released.

The tar contains high levels of volatile and semi-volatile organic compounds (VOCs and SVOCs). The principal MGP Tar VOCs are benzene, toluene, ethylbenzene, and xylenes. These compounds, collectively known as BTEX, are slightly soluble in water. Groundwater which comes into contact with tar or tar-contaminated soils will become contaminated with BTEX compounds. This contaminated groundwater can then move through the subsurface along with the ordinary groundwater flow.

The principal MGP Tar SVOCs are a group of compounds known as polycyclic aromatic hydrocarbons, commonly abbreviated as PAHs. PAH compounds are generally less soluble than BTEX, and are consequently less likely to dissolve in groundwater. This makes PAH compounds less mobile in the subsurface, so the highest levels of PAHs are normally found in close proximity to the tar from which they are derived. The specific semivolatile organic compounds of concern in soil and groundwater are the following polycyclic aromatic hydrocarbons (PAHs):

acenaphthene	acenaphthylene	anthracene	benzo(a)anthracene
benzo(a)pyrene	benzo(b)fluoranthene	benzo(g,h,i)perylene	benzo(k)fluoranthene
dibenzo(a,h)anthracene	chrysene	fluoranthene	fluorene
indeno(1,2,3-cd) pyrene	2-methylnaphthalene	naphthalene	phenanthrene
pyrene			

In this document, PAH concentrations are referred to as either total PAHs (TPAHs). The TPAH concentration is the sum of the concentrations of each PAH listed above.

All of the BTEX and PAH contaminants which dissolve in groundwater are subject to degradation by natural processes. Common soil bacteria are capable of using these chemical compounds as a food source, converting them to carbon dioxide and water. This degradation process takes place more rapidly when abundant oxygen is present in the groundwater, and can in many cases be expedited by the introduction of additional oxygen.

Figures 3 through 6 summarize the degree of contamination for the contaminants of concern in soil, groundwater, sediment and surface water and compare the data with the SCGs for the site. The following are the media which were investigated and a summary of the findings of the investigation.

Waste Materials

MGP tar was observed in the immediate vicinity of the MGP structures, which appear to be the sources of the waste. Tar has migrated from these structures into the surrounding soils, both vertically and horizontally. Full investigation of the substation area could not be completed due to the proximity to electrical hazards, but the borings that were completed nearby found tar saturated soils starting at 3-4 feet below grade which would be expected to continue downward to bedrock approximately 15 feet below grade.

Evidence of tar migration is not seen east of this area, except for an area of shallow (<4 feet) soils with sheens and MGP odors which appear to be associated with the farthest east, at-grade holder. Bedrock was typically 20 feet below grade to the east. On the western portion of the substation, some tar was observed as shallow as 3 feet below grade, and tar saturated soils were observed as shallow as 6 feet. Bedrock to the west ranged from 8 to 15 feet below grade. North of the substation equipment, in LaGrange Street, tar saturated soils were observed as shallow as 4 feet below grade, and appear to continue intermittently to bedrock which ranges from 8 to 15 feet below grade. North of LaGrange Street, on the Reid Petroleum property, no NAPL saturated soils were observed, but blebs were observed, generally from 7-8 feet below grade, with one boring where blebs were observed from 6 to 10.5 feet below grade.

NAPL from the overburden has moved downward into dolomite bedrock immediately below impacted overburden. After moving vertically through the upper bedrock layers, MGP tar has accumulated in the upper shale layer and has migrated in this layer to the north and west of the site. The tar in the shale layer has reached the Barge Canal, where the tar discharges slowly in a series of seeps in the bare bedrock walls of the canal. The discharge points are above water during the winter, when the canal is lowered, and under water during the summer.

Some tar has also migrated through the bedrock into an unlined, city-owned sewer tunnel located between the site and the Barge Canal. Tar was observed at an access shaft due west of the site and also in the tunnel wall near the tar seeps. The extent of tar contamination is shown on Figure 3.

MGP Tar identified during the RI/FS will be addressed in the remedy selection process.

Surface Soil

Surface soil PAH levels ranged from 23 to 51 mg/kg. These levels, while above rural background, are consistent with PAH levels which are commonly found adjacent to heavily trafficked, urban roadways.

Surface soil will be addressed as a consequence of addressing subsurface soils.

Subsurface Soil

Subsurface soil PAH levels ranged from non-detect to 1,759 mg/kg. Subsurface soil levels of BTEX compounds ranged from non-detect to 181 mg/kg. Subsurface soil contamination was co-located with areas where there was visual evidence of waste material. The extent of subsurface soil contamination is shown on Figure 4. Subsurface soil contamination identified during the RI/FS will be addressed in the remedy selection process.

Groundwater

Groundwater BTEX levels ranged from non-detect to 22,000 µg/l. Significant groundwater contamination was observed in the overburden, and at several elevations in the bedrock. The extent of groundwater contamination is shown on Figure 5. Groundwater contamination identified during the RI/FS will be addressed in the remedy selection process.

Soil Vapor

On-site soil vapor samples found BTEX compounds present at levels of 118 micrograms per cubic meter ($\mu g/m^3$). Soil vapor on-site will be addressed in the remedy selection process.

Soil vapor BTEX was observed below nearby homes at levels of 29 to 79 $\mu g/m^3$. These levels would not be expected to have a significant effect on the indoor air. Indoor air was also sampled, and compounds were present at levels consistent with homes not affected by environmental contamination.

Surface Water and Sediment

The section of the Barge Canal adjacent to the site is a man-made cut through bedrock. There is relatively little sediment present at the bottom of the canal. However, immediately below the tar seeps, there is an accumulation of rockfall and dirt at the base of the canal wall. Visual evidence of MGP tar (sheen and NAPL) was observed in this material, which will be considered sediment for this discussion. Sediment PAH levels in the area immediately adjacent to this material were moderately elevated (36.1 mg/kg). Sediments upstream of the site related contamination and on the opposite bank were below the screening level of 4 mg/kg. The extent of sediment contamination is shown in Figure 6. During the summer navigation season, the area is under several feet of water.

PAHs levels in sediment below the locks were also elevated, but it is not possible at this time to associate these results with this site. PCB contamination was also detected in this vicinity, at levels which represent a much greater environmental concern. PCBs were not used in the manufactured gas processes and this area of the canal will be evaluated independently of this site by the Department.

Despite the widespread contamination of groundwater near the site, no site related VOCs or SVOCs were detected in surface water samples.

Site related impacts to sediments identified during the RI/FS will be addressed in the remedy selection process.

5.2: 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 completion of the RI/FS.

There were no IRMs performed at this site during the RI/FS. A limited soil removal was conducted by NYSEG at the gas station immediately north of the site as part of the removal of underground petroleum storage tanks, prior to the RI/FS. The soil removal is described in Section 3.2.

5.3: Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the human exposure pathways can be found in Section 6 of the RI report. An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: [1] a contaminant source, [2] contaminant release and transport mechanisms, [3] a point of exposure, [4] a route of exposure, and [5] a receptor population.

The source of contamination is the location where contaminants were released to the environment (any waste disposal area or point of discharge). Contaminant release and transport mechanisms carry contaminants from the source to a point where people may be exposed. The

exposure point is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (e.g., ingestion, inhalation, or direct contact). The receptor population is the people who are, or may be, exposed to contaminants at a point of exposure.

An exposure pathway is complete when all five elements of an exposure pathway exist. An exposure pathway is considered a potential pathway when one or more of the elements currently does not exist, but could in the future.

Site-related contamination has impacted soils and groundwater both on-site and off-site, canal sediments in areas near coal tar seeps on the canal wall, and a large , city-owned sewer tunnel located to the west of the site. In addition, MGP-related contamination from the site has been identified in soil vapor.

Site workers who dig or enter any excavations at the site could potentially be exposed to coal tar, and contaminated soils, soil vapor, and groundwater through incidental inhalation and/or dermal contact. The same potential routes of exposure exist for utility workers who may dig or enter any excavations or underground structures offsite where contamination is present. The area is supplied by public water, so exposure to groundwater contamination via drinking water is not likely. Due to the presence of extensive electrical and natural gas infrastructure on the site, there is no likelihood that the site will undergo a different use.

5.4: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts include existing and potential future exposure pathways to fish and wildlife receptors, as well as damage to natural resources such as aquifers and wetlands.

The Fish and Wildlife Impact Analysis, which is included in the RI report, presents a detailed discussion of the existing and potential impacts from the site to fish and wildlife receptors.

The following environmental exposure pathways and ecological risks have been identified:

- MGP tar is present on the wall of the Barge Canal and in rockfall debris immediately below. When it is disturbed, the rockfall debris creates sheens on the water surface, which is a violation of New York State Ambient Water Quality Standards. Although tar is not flowing in measurable quantities, it is clear that tar is still moving slowly through the bedrock and into the canal. This results in potential impacts to wildlife living and/or feeding in the Canal.

- Site contamination has also impacted the groundwater resource in both the upper, unconsolidated aquifer and the underlying bedrock aquifer, both at the site and in the area to the north and west, between the site and the canal.

SECTION 6: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The remediation goals for this site are:

Groundwater

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

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.
- Prevent migration of contaminants that would result in groundwater or surface water contamination.
- Prevent impacts to biota from ingestion/direct contact with impacted soil.

Sediment

- Prevent direct contact with contaminated sediments.
- Prevent releases of contaminant(s) from sediments that would result in surface water levels in excess of (ambient water quality criteria).
- Prevent impacts to biota from ingestion/direct contact with impacted sediments.
- Prevent resuspension/transportation of impacted sediments.

Further, the remediation goals for the site include attaining to the extent practicable:

- ambient groundwater quality standards and

- recommended soil cleanup objectives in 6 NYCRR Subpart 375-6 - Remedial Program Soil Cleanup Objectives.

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected 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. Potential

remedial alternatives for the NYSEG Lockport Transit Street MGP Site were identified, screened and evaluated in the FS report, which is available at the document repositories established for this site.

A summary of the remedial alternatives that were considered for this site is discussed below. The present worth 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.

7.1: Description of Remedial Alternatives

The following potential remedies were considered to address the contaminated surface and subsurface soils, groundwater and sediment at the site:

Alternative 1: No Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative would leave the site in its present condition and would not provide any additional monitoring or protection to human health or the environment.

Common Elements

All remedial alternatives other than "No Action" contain provisions to remove contaminated soils and/or liquid tar to various degrees, to control the mobility of any contamination that is to be left in place. All include institutional controls as well as the following common elements:

- Excavation of soil from LaGrange Street to bedrock and removal of the tar sumps located in the western portion of the site. These materials would be disposed or treated off-site at an appropriately permitted treatment or disposal facility. Subsurface utilities beneath the street would be supported and protected during excavation, or temporarily rerouted and replaced following completion. The excavation would be backfilled with clean, granular materials from a NYSDOT-approved, off-site source, and the street would be restored to service. The area of excavation is shown on Figure 7.

- Tar recovery wells would be installed between the site and the canal, to collect tar which would remain in the bedrock. NAPL recovery would initially be performed manually. If sustained recovery rates are established, consideration would be given to automating recovery with dedicated pumps on timed pumping cycles, and/or enhanced recovery methods. Approximate well locations are shown on Figure 7.

- In the area of the tar seeps in the bedrock walls of the canal, a "grout wall" would be constructed parallel to the wall along the length of the area of concern to isolate the tar in the bedrock from the canal wall. Grout would be injected into the bedrock fractures

through a row of wells. Upon hardening, the grout would block flow paths through the fractures in the bedrock, so that tar could no longer reach the wall of the canal. Tar recovery wells would be located up-gradient of this grout wall to capture the remaining tar and to control movement around the grout wall. Controls would be required to prevent the injected grout from entering either the recovery wells or the existing sewer tunnel.

- MGP tar-impacted sediments in the canal would be excavated and disposed or treated off-site at an appropriately permitted treatment or disposal facility.

- Imposition of an institutional control in the form of an environmental easement, development of a site management plan and requirements for periodic review of the site and components of the remedy would be required as further described in Section 8.

- Ongoing operations at the Reid Petroleum property limit the ability to conduct active remediation there. The Department recognizes that use of the Reid property may change at some future date. If changes in site operations or land use would allow excavation of MGP impacted soil, NYSEG would submit a work plan to the Department and proceed with removal upon receipt of Department approval. Furthermore, the Reid property and other off-site properties would be subject to the site management plan (SMP). NYSEG would ensure compliance with the components of the SMP, including: managing potential exposure to residual contaminated soil on-site and in adjacent areas, and procedures for soil characterization, handling, disposal, and health and safety of workers and the community.

Alternative 2 – NAPL Migration Barrier

Present Worth: *$6,079,000*
Capital Cost: *$4,941,000*
Annual Costs:
Years 1-30: *$74,000*

Alternative 2 would focus on controlling further movement of tar through the fill and soils above the bedrock surface. Approximately 400 linear feet of gravel interceptor trench would be constructed in the overburden at the downgradient site border to capture the tar which accumulates at the bedrock interface. A grout wall would be installed down gradient from this trench which would extend one to two feet above the top of bedrock, and 75 feet into bedrock to eliminate migration of the NAPL in bedrock below the site. NAPL recovery wells would be installed up-gradient from the grout wall to collect the most mobile NAPL from both the overburden and bedrock.

Alternative 3 – Partial Removal and NAPL Control

Present Worth: *$10,995,000*
Capital Cost: *$9,857,000*
Annual Costs:
Years 1-30: *$74,000*

This alternative would require relocation of the Control House and 12 kV switchgear from the northwestern portion of the site to the eastern portion of the site, which would allow approximately 4,000 cubic yards (cy) of source material and remnant MGP structures to be removed from the western portion of the site.

Approximately 400 linear feet of collection trench would be constructed down-gradient from the source area in the center portion of the site, which would remain under the unmoved substation infrastructure. Approximately 400 linear feet of bedrock grout curtain would be constructed downgradient of the collection trenches. The grout curtain would extend from 1-2 feet above the top of bedrock downward 75 feet into rock, and would prevent NAPL in the bedrock under the site from moving toward the Canal. NAPL recovery wells would be provided between the collection trench and the grout curtain.

Partially penetrating barrier walls would be constructed on the upgradient side of the site. These barriers would not extend to the ground surface, but would instead terminate at depth, so as to allow groundwater to flow over the wall, while effectively containing the soil contaminants and tar present below. The wall construction materials and techniques would be determined during design. The source material remaining under substation infrastructure would be covered with a low permeability cap.

Alternative 4 – Increased Removal with Containment

Present Worth: *$13,612,000*
Capital Cost: *$11,261,000*
Annual Costs:
Years 1-30: *$153,000*

Alternative 4 would remove as much source material as possible, without requiring relocation of the entire substation. Approximately 15,500 cubic yards of material would be removed. In addition to the partial relocation and excavation on the western portion of the site described in Alternative 3, additional soils would be removed to the east and south of the remaining substation infrastructure. Remaining source material would be contained on-site with approximately 500 linear feet of subsurface, vertical containment barriers and a low permeability cap. Extraction wells which would extract both NAPL and groundwater would be installed inside the contained area to provide hydraulic control. Additional NAPL recovery wells would be installed on-site into the bedrock.

Alternative 5 – Maximum Removal with Substation Relocation

Present Worth: *$25,923,000*
Capital Cost: *$25,268,000*
Annual Costs:
Years 1-30: *$43,000*

Alternative 5 would include relocation of the substation to provide access for excavation of approximately 23,800 cubic yards of material, including all remaining subsurface structures. Excavation would extend to the top of bedrock and would include all overburden within the property boundary. Excavated soil would be stockpiled and tested; soil which meets soil cleanup objectives would be used as on-site backfill. Soil not meeting criteria would be transported off-site for

treatment/disposal. Excavated areas would be backfilled and compacted to existing grade. Temporary excavation support would be required along the excavation limits. Continued monitoring would still be required since tar already in the bedrock can not be completely removed by any currently available method.

7.2 Evaluation of Remedial Alternatives

The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375, which governs the remediation of inactive hazardous waste disposal sites in New York 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.

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.

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

3. Short-term 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.

4. 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.

5. 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.

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.

7. Cost-Effectivness. 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 each alternative are presented in Table 1.

8. Land Use - The current, intended, and reasonably anticipated future use of the site are considered where restoration to pre-disposal conditions is not feasible. Preference is given to alternatives which would allow the full range of planned or anticipated uses without unreasonable use restrictions. Alternatives 2-5 would allow the site to be used for commercial/industrial purposes, which is the intended and reasonably anticipated use of the site. If residential use were proposed in the future, this change of use would have to be approved by the NYSDEC and NYSDOH. Additional soil cover would be required, and the potential for soil vapor intrusion would have to be addressed. The site management plan and environmental easement would also have to be modified.

This final criterion 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 RI/FS reports and the PRAP have been evaluated. The responsiveness summary (Appendix A) presents the public comments received and the manner in which the Department addressed the concerns raised.

In general, the public comments received were supportive of the selected remedy. Several comments were received, however, pertaining to restoration of the excavated portion of the site and access to the property adjacent to the canal.

SECTION 8: SUMMARY OF THE SELECTED REMEDY

Based on the Administrative Record (Appendix B) and the discussion presented below, the Department has selected Alternative 3: Partial Removal with NAPL Control as the remedy for this site. The elements of this remedy are described at the end of this section.

The selected remedy is based on the results of the RI, the evaluation of alternatives presented in the FS, and the analysis presented below. Alternative 3 is being proposed because, as described below, it satisfies the threshold criteria and provides the best balance of the primary balancing criteria described in Section 7.2. A detailed comparative analysis of each alternative to each criterion is provided below:

The No Action Alternative would not be protective of human health or the environment since it would not achieve the threshold criterion of protectiveness as described in Section 7. It is not considered further. Each of the remaining alternatives would be protective of human health and the environment, but would attain this protectiveness through different means.

The common elements included with Alternatives 2-5 would address the most likely exposure to utility workers by excavation of contaminated soils from LaGrange Street, where substantial amounts of NAPL saturated soils were observed. Contamination in the overburden at the Reid Petroleum property also represents an exposure risk if subsurface excavation occurs. Removal of these soils would be coordinated with the property owner to minimize disruption to the business on this property. All alternatives would rely upon institutional controls to limit exposure to contaminated groundwater, and all rely upon the same set of technologies to effectively address the potential exposures in the canal by sealing the seeps and removing the contaminated sediment. Alternative 2 would satisfy the remedy selection criteria, and would be the least expensive alternative. The analysis below compares each of the other 3 alternatives to Alternative 2 to assess whether they provide a more effective remedy.

Alternative 2 would remove 3,200 cubic yards of contaminated soils. Beyond this, the area and volume of excavation proposed increases sharply with each remedy. Alternative 3 would remove 7,200 cy, Alternative 4 would remove 18,700, and Alternative 5 would increase this figure to 27,000 cubic yards. The excavation provided in Alternative 2 represents the most heavily contaminated soil that can be removed without any disruption of the substation. This material is also closest to the canal - the principal existing exposure pathway. This contamination would also be accessible to utility workers maintaining underground utilities in LaGrange Street, so it represents the greatest risk to this exposure pathway. Closing a road and excavating beneath it would not be a simple or inexpensive task, but this excavation would be critical to an effective remedy and therefore has been included as a common element in each alternative.

Alternative 3 would additionally excavate soil on the western side of the substation which is heavily contaminated (tar saturated) and is close to potential exposure points beneath Transit Street and in the Canal. The layer of contaminated soil in this area is also relatively thin (generally less than 12 feet of soils overlie the bedrock). An analysis by NYSEG indicated that the relocation of the equipment in this area of the substation to allow this excavation would cost approximately $1,750,000. The importance of removing this source material would justify the additional cost of approximately $5,000,000.

The additional excavation proposed in Alternative 4 does not include any areas of significant tar saturation, but would remove soils where sheens were observed and where total PAHs concentrations above 500 mg/kg were reported. Excavation to the south and east would extend deeper than the excavations proposed in Alternative 3 (to the north and west). Since these areas are both less heavily contaminated and deeper than the excavation proposed in Alternative 3, the additional cost and disruption to the community would not be justified. However, the most significant contamination in this area, near the eastern-most holder, is less than 4 feet deep. Being shallow makes this material both more likely to be contacted if it remains and more easily removed. This material, which was not originally addressed in Alternative 3, would be excavated in the proposed remedy.

By relocating all substation infrastructure, Alternative 5 would allow removal of all MGP structures, including the oldest gas holders, which represent some of the heaviest contamination at the site. There is a statutory preference for removing these source areas as part of the site-wide remedy. However, this additional excavation would come at a cost of nearly $15,000,000, and would also

create significant additional disruption of the surrounding community This could be justified if it were the only way to prevent exposure and migration. However, both Alternatives 3 and 4 would provide aggressive efforts to collect NAPL and control its migration, with barrier walls, interceptor trenches and/or collection wells. These alternatives would also provide barriers to migration and exposure, both at the site and at the canal wall.

Excavated asphalt and clean demolition debris would be recycled or disposed at an appropriate landfill. Excavated soil would be subject to stockpiling, waste characterization testing and either transported off-site to a thermal desorption facility or an appropriate landfill or re-used as backfill material. No material with PAHs over 500 mg/kg or visible evidence of tar would be reused. Soil in the vicinity of subsurface utilities which could be encountered by utility workers would have to meet Soil Cleanup Objectives for commercial use. For Alternative 3, it is estimated that approximately 1,600 cy of excavated soil within LaGrange Street may be re-used as backfill material. The cost savings realized by reuse of soils would have to be balanced with the difficulties involved in additional storage and handling of materials, especially at a relatively small site. The permeability of backfill would need to be considered along with the design of collection and barrier systems to address potential interactions.

Groundwater in the bedrock would not be expected to meet groundwater quality standards in a reasonable time period, because there is no method currently available to completely eliminate the MGP tar as an ongoing source of dissolved phase contamination in the bedrock. However, it is reasonable to expect that groundwater in the overburden could achieve groundwater standards at some time in the future. Alternative 2 would not eliminate a sufficient amount of source material or otherwise change groundwater conditions to allow groundwater standards to be met in a reasonable period of time. Alternative 3 would limit groundwater movement through the source material remaining on-site. Groundwater entering the excavation area, downgradient of the overburden collection trench, would likely include some BTEX compounds. These chemicals readily biodegrade under proper conditions, including the presence of oxygen. As such, backfill would be selected which would encourage natural degradation of the BTEX compounds. Alternative 4 would prevent the migration of BTEX from the source area, and Alternative 5 would eliminate contamination from the overburden, so both would be expected to allow groundwater quality standards to be achieved in the overburden.

Alternative 3 would call for the use partially-penetrating containment walls on the upgradient side of the remaining contamination and an interceptor trench on the downgradient side. The effect that these walls, collection trenches, the backfill for the excavation, and other components of the remedy would have on groundwater flow patters would also need to be considered during the Remedial Design.

The estimated present worth cost to implement the remedy is $10,995,000. The cost to construct the remedy is estimated to be $9,857,000 and the estimated average annual costs for 30 years is $74,000.

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, maintenance, and monitoring of the remedial program.

2. Relocation of the Control House and 12 kV switchgear from the western portion of the site to the eastern portion of the site to allow excavation in that area.

3. Excavation and removal of approximately 4,000 cy of material from the western side of the substation and approximately 3,200 cy of material within LaGrange Street, as shown in Figure 8. Excavated soil will be subject to stockpiling, waste characterization testing and either transported off-site to a thermal desorption facility or an appropriate landfill. Excavated soil may only be re-used on-site (not in LaGrange Ave.) as backfill material. Excavated asphalt and clean demolition debris will be recycled on-site as backfill if found to be suitable. Otherwise, it will be disposed at an appropriate landfill. Excavated areas will be backfilled and adequately compacted. Any imported backfill will meet applicable soil cleanup objectives or be otherwise acceptable to the Department (e.g. virgin, granular material from a quarry). The permeability of backfill will be considered along with the design of collection and barrier systems to address potential interactions. Paved areas will be restored to preconstruction conditions, and disrupted utilities will be restored.. Unpaved areas will have a minimum of 12" of soil cover meeting applicable soil cleanup objectives. If excavated soil is re-used on-site as backfill, a demarcation layer will be provided. The excavation will generally extend to bedrock, except for the southern-most portion where significant impacts do not appear to extend to bedrock.

4. Removal of the remaining subsurface foundation of easternmost at-grade holder. Soils in the vicinity of this holder (approximately 400 cy) which have total PAHs above 500 mg/kg and exhibit a sheen will also be removed. No NAPL saturation is anticipated in this area, and soil excavation below 4 feet is not anticipated. Excavated soil and demolition debris will be handled as describe in item 3, above.

5. An overburden NAPL collection trench will be constructed on the north and west sides of the remaining substation equipment. These will remove the most mobile NAPL and will control lateral migration of NAPL. Subsurface barriers will also be installed on the south and east sides of the NYSEG property, designed to allow groundwater flow over the barrier and while controlling lateral migration of NAPL. Barrier construction materials and techniques will be assessed during design. Material removed from the trench will be sent for off-site treatment/disposal. The groundwater flow will be assessed considering the barrier walls, collection trenches, excavation backfill, and the overburden/bedrock interactions to limit groundwater flow through the remaining source material.

6. A geomembrane cap overlain with crushed stone will cover the surface of the area shown on Figure 8, with the membrane sealed to substation equipment slabs. The cap and crushed stone will, together, be at least 12 inches thick. Sand or some other material will likely be required to protect the geomembrane from puncture.

7. Approximately 400 linear feet of grout wall will be constructed in the bedrock downgradient of the interceptor trench. It will extend from 1 to 2 feet above the overburden/bedrock

interface to an approximate depth of 75 feet to control migration of NAPL through the bedrock. Bedrock grouting will require further evaluation and pilot testing to refine techniques, materials, monitoring, and implementability. NAPL recovery wells will be installed upgradient of the wall at the two endpoints of the wall, and every 25 feet (minimum) between. See Figure 8.

8. Approximately 200 linear feet of grout wall will be constructed in the bedrock, along the Canal in the vicinity of the seeps. Approximately 9 NAPL collection wells, at a spacing of 25 feet, maximum, will be installed upgradient of the grout wall to collect the NAPL being blocked by the wall and prevent it being redirected to the north or south. The number and location of NAPL recovery wells associated with this grout wall will be refined based on observation made during grout wall construction. The layout of proposed remediation in this area is shown on Figure 9. The grout wall will be placed close to the Canal face, allowing fractures between the wall and the canal face to be fully grouted. Design considerations will include Canal rock face stability, sewer tunnel location, the presence of utility lines, and horizontal grout penetration.

9. Additional NAPL collection wells will be provided between the grout wall at the site and the grout wall adjacent to the canal, located to remove the most mobile NAPL from the bedrock. Locations will be generally consistent with the feasibility study, and are shown on Figure 7. NAPL recovery will initially be performed manually. Once sustained recovery rates are established, consideration will be given to automate or enhance recovery.

10. Approximately 1,200 cy of sediment in the Barge Canal will be excavated, dewatered and/or conditioned prior to transportation off-site to a thermal desorption facility or an appropriate landfill. Sediment remediation will likely occur during the winter months when the Canal has been drained. A sediment delineation program will be conducted prior to sediment remediation. In order to prevent contamination of the canal following remediation, sediment remediation will not commence until such time in the future when on-site remediation is complete, and observations indicate that NAPL seeps from the Canal face have ceased.

11. Imposition of an institutional control in the form of an environmental easement that will require a) compliance with the approved site management plan; b) limiting the use and development of the property to commercial or industrial uses only; c) the property owner to complete and submit to the NYSDEC periodic certification.

12. Development of a site management plan to: a) address residual contaminated soils that may be excavated from the site and in adjacent areas. Excavated soil will be tested, properly handled to protect the health and safety of workers and the nearby community, and will be properly managed in a manner acceptable to the Department; b) evaluate the potential for vapor intrusion for any buildings developed on the site, including provision for mitigation of any impacts identified; c) restricting use of the property to commercial/industrial only; d) provide for sampling of groundwater and analysis for VOCs, SVOCs, and attenuation indicator parameters; and d) provide for the operation and maintenance of the components of the remedy.

The SMP will include provisions related to remaining material on the NYSEG property, and adjacent area including along Transit Street, on the Reid Petroleum property, and within LaGrange and Transit Streets.

Ongoing operations at the Reid Petroleum property greatly limit the ability to conduct remedial activities on the site. However, the Department recognizes that use of the Reid property may change at some future date. If such operations cease in the future, or if the property owner proposes a change in land use which will allow excavation of MGP impacted soil, then NYSEG will submit a work plan to the Department and proceed with removal upon receipt of Department approval. Furthermore, if less extensive excavation is to be conducted on the Reid property, NYSEG will ensure that the components of the SMP were enforced, which will include managing potential exposure to contaminated soil, including procedures for soil characterization, handling, disposal, and health and safety of workers and the community. Any new construction on the Reid Petroleum site will need to be evaluated for potential soil vapor intrusion.

13. The property owner will provide a periodic certification of institutional and engineering controls, prepared and submitted by a professional engineer or such other expert acceptable to the Department, until the Department notifies the property owner in writing that this certification is no longer needed. This submittal will: (a) contain certification that the institutional controls and engineering controls put in place are still in place and are either unchanged from the previous certification or are compliant with Department-approved modifications; (b) allow the Department access to the site; and (c) state that nothing has occurred that would impair the ability of the control to protect public health or the environment, or constitute a violation or failure to comply with the site management plan unless otherwise approved by the Department.

SECTION 9: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial investigation process, a number of Citizen Participation activities were undertaken to inform and educate the public about conditions at the site and the potential remedial alternatives. The following public participation activities were conducted for the site:

1. Repositories for documents pertaining to the site were established.

2. A public contact list, which included nearby property owners, elected officials, local media and other interested parties, was established.

3. A public meeting was held on March 10, 2009 to present and receive comment on the PRAP.

4. A responsiveness summary (Appendix A) was prepared to address the comments received during the public comment period for the PRAP.

Table 1
Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
Alternative 1 - No Action	$0	$0	$0
Alternative 1a - Continued Monitoring	$32,000	$74,000	$286,000
Alternative 2: NAPL Migration Barrier	$4,941,000	74,000	$6,079,000
Alternative 3:Partial Removal and NAPL Control	$9,857,000	$74,000	$10,995,000
Alternative 4 – Increased Removal with Containment	$11,261,000	$153,000	$13,612,000
Alternative 5 – Maximum Removal with Substation Relocation	$25,268,000	$43,000	$25,923,000

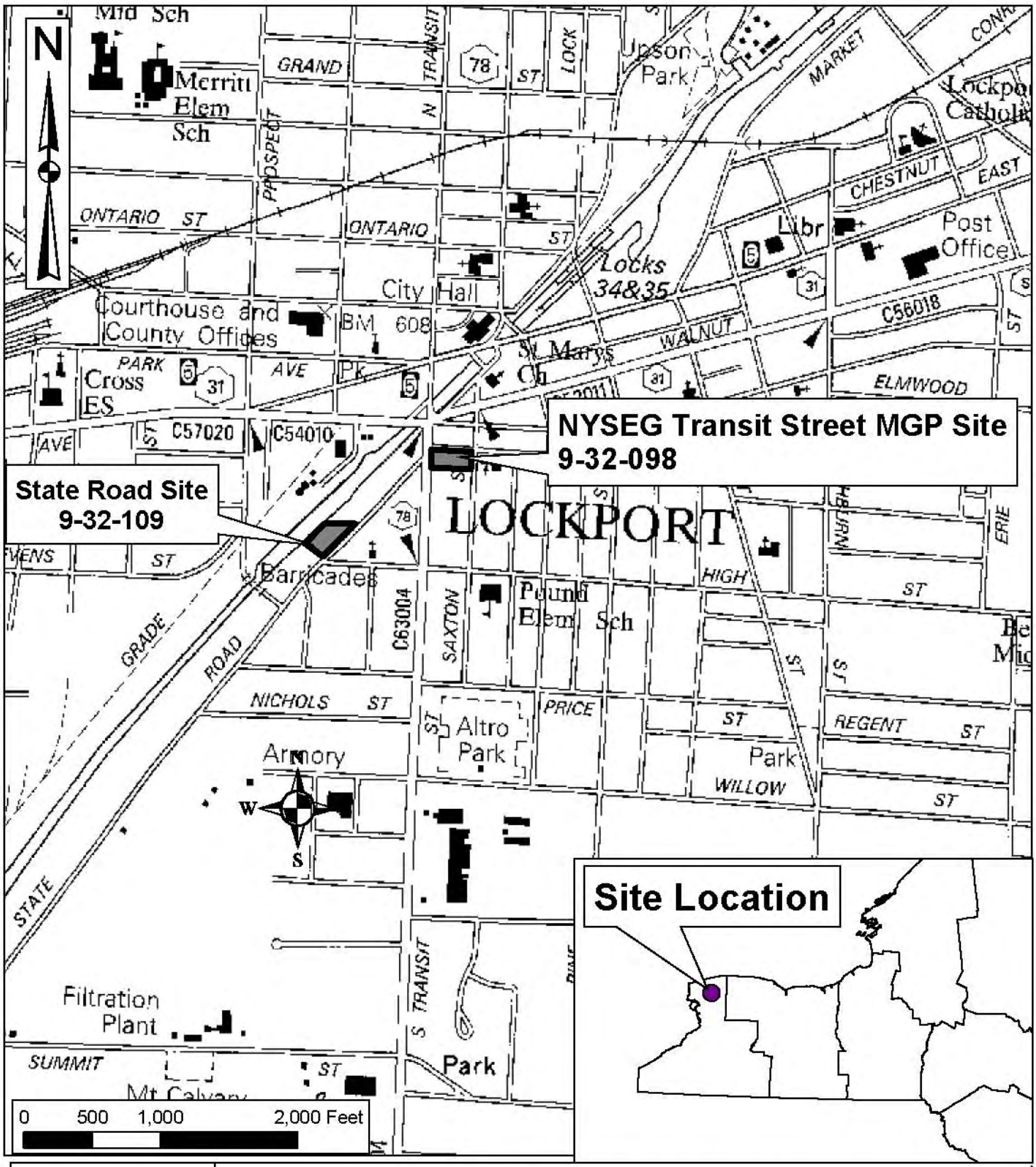
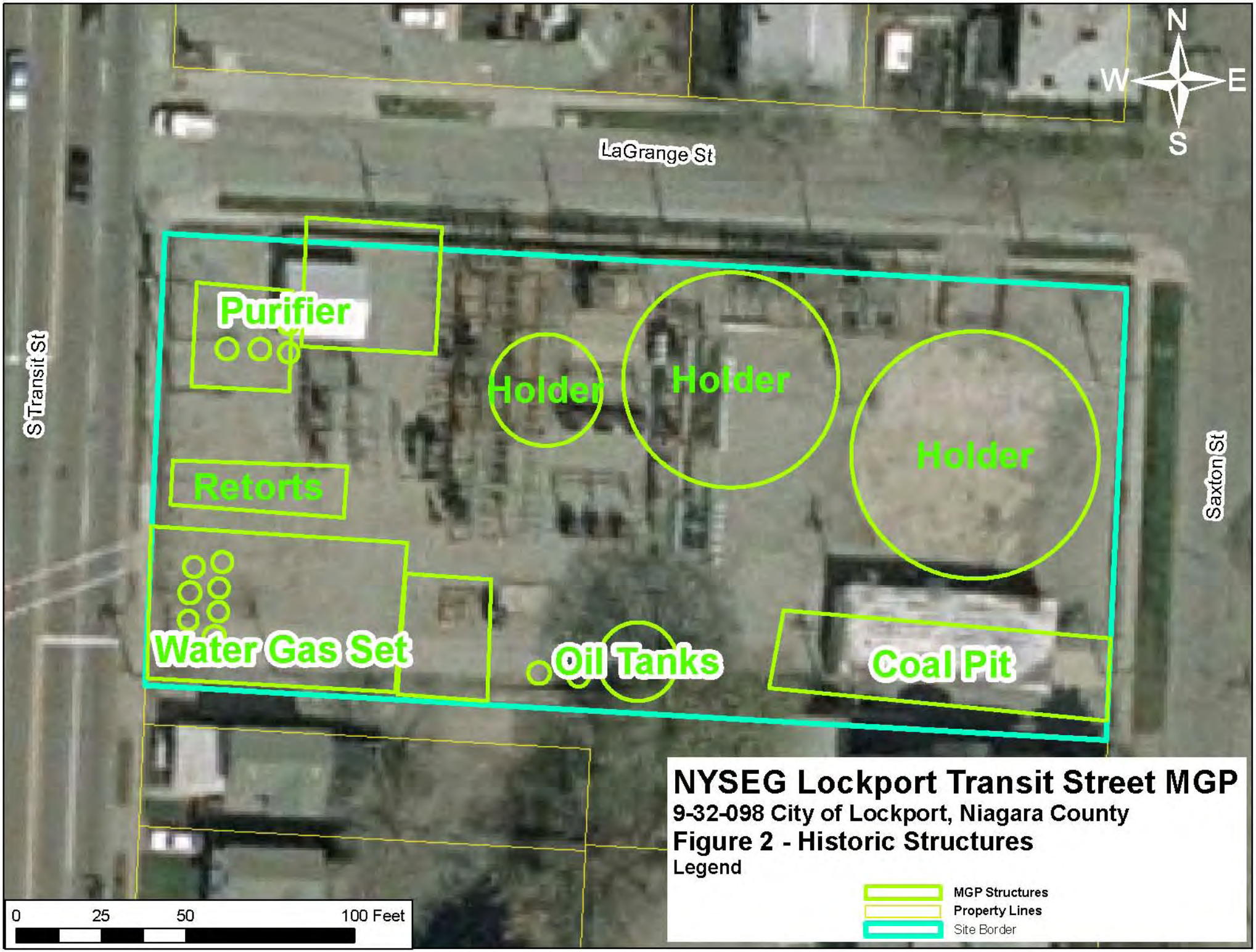


Figure 1 - Site Location Map
NYSEG Lockport Transit St. MGP Site
Site No. 9-38-098
City of Lockport, Niagara County, New York
1:11,927



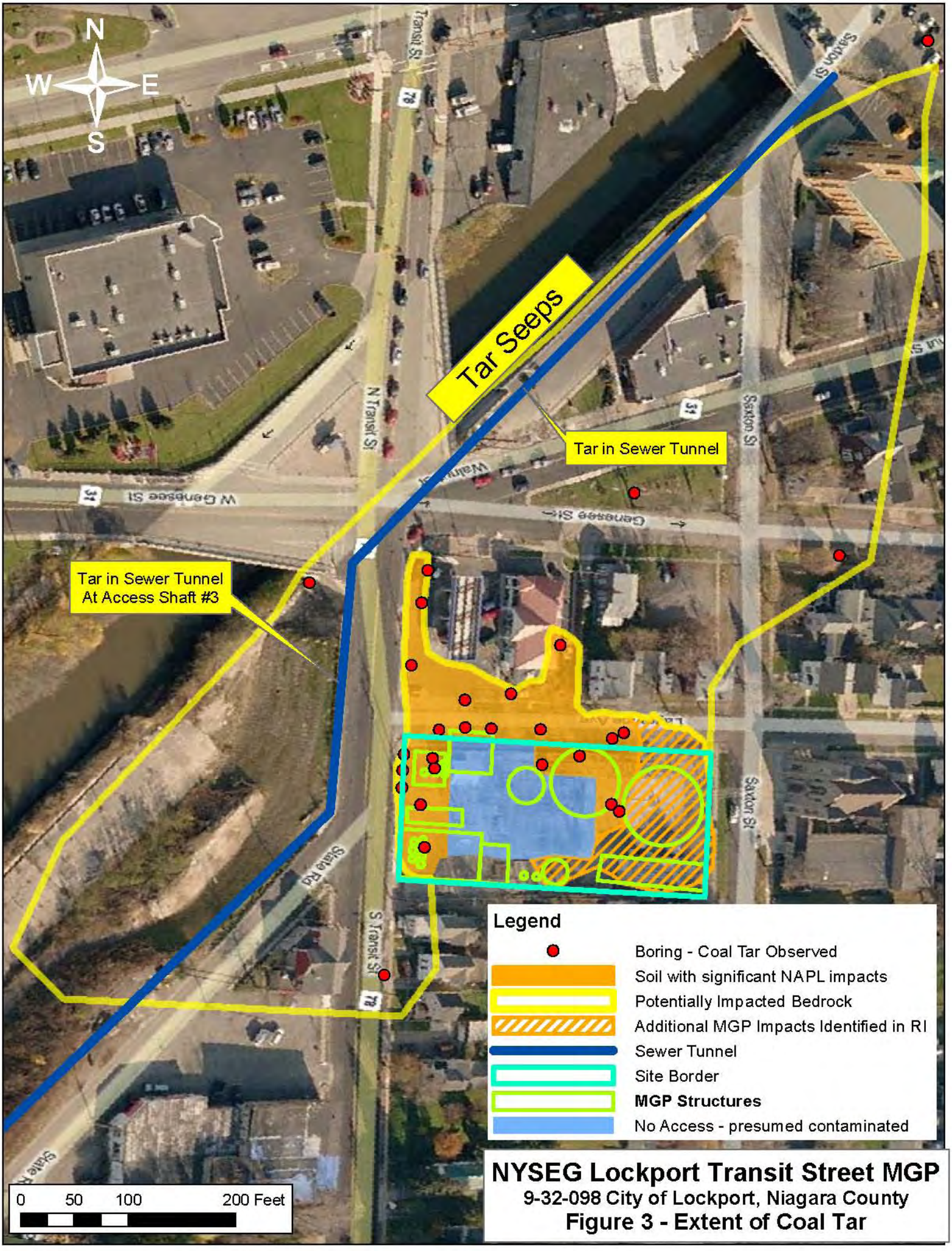
NYSEG Lockport Transit Street MGP

9-32-098 City of Lockport, Niagara County

Figure 2 - Historic Structures

Legend

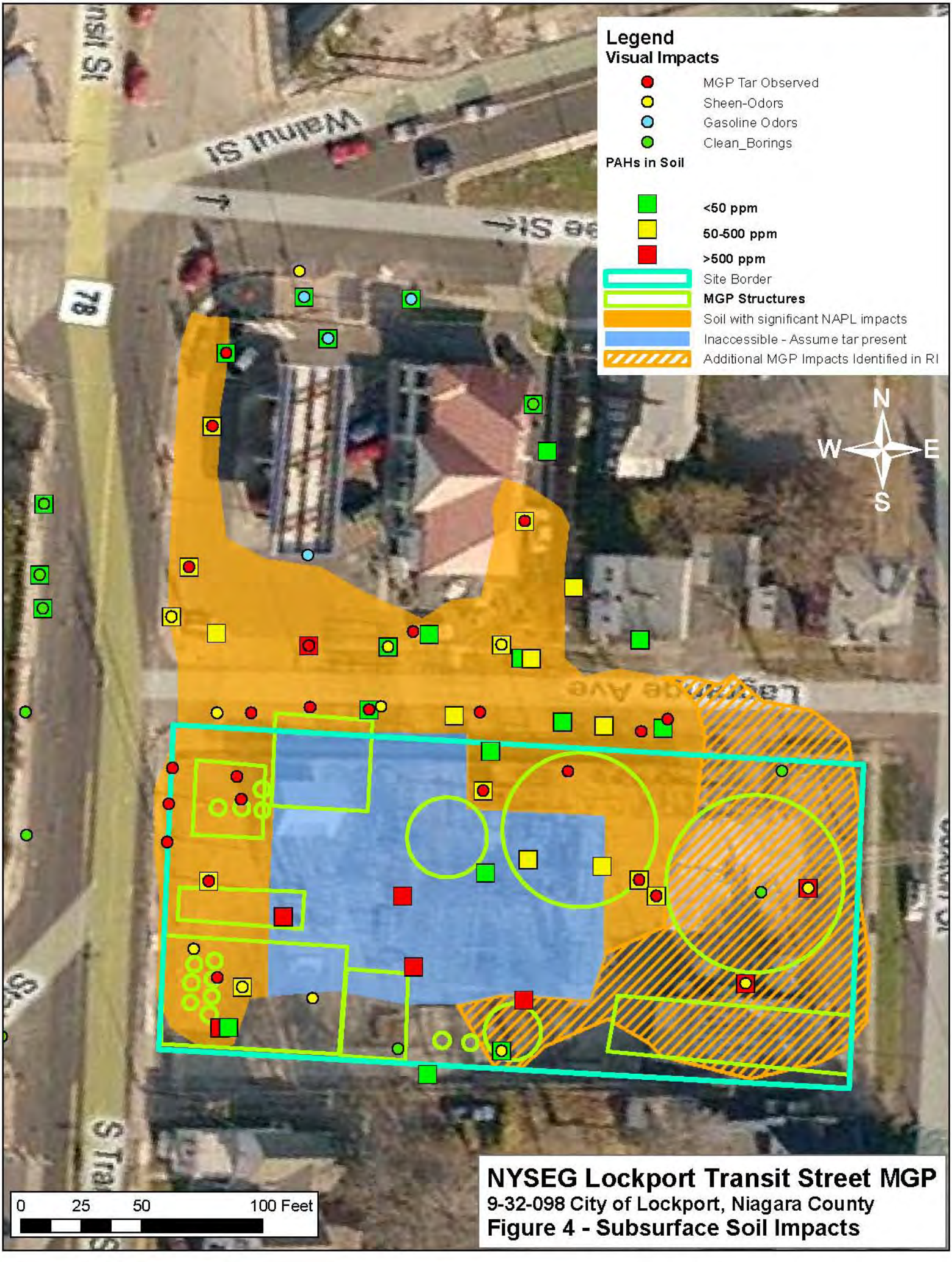
- MGP Structures
- Property Lines
- Site Border



NYSEG Lockport Transit Street MGP

9-32-098 City of Lockport, Niagara County

Figure 3 - Extent of Coal Tar


Legend
Visual Impacts
MGP Tar Observed
Sheen-Odors
Gasoline Odors
Clean_Borings
PAHs in Soil
<50 ppm
50-500 ppm
>500 ppm
Site Border
MGP Structures
Soil with significant NAPL impacts
Inaccessible - Assume tar present
Additional MGP Impacts Identified in RI
N
W
E
S
Walnut St
78
0
25
50
100 Feet
NYSEG Lockport Transit Street MGP
9-32-098 City of Lockport, Niagara County
Figure 4 - Subsurface Soil Impacts

Shallow Groundwater

Monitoring Wells

BTEX

- <10 ppb
- 10-100 ppb
- 100-1,000 ppb
- >1,000 ppb
- Coal Tar in Soil and Bedrock

BTEX in Shallow GW

High : 18020

Low : 0

W Main St
Park Ave
N Transit St
Walnut St
Tar Seeps
W Genesee St
Genesee St
LaGrange St
S Transit St
Saxton St
Harvey Ave
State Rd
State Rd
S Transit St

0 100 200 400 Feet

Bedrock Groundwater

Monitoring Wells

BTEX

- <10 ppb
- 10-100 ppb
- 100-1,000 ppb
- >1,000 ppb
- Potentially Impacted Bedrock

BTEX in Bedrock GW

High : 47065.1

Low : 0

N
W
E
S

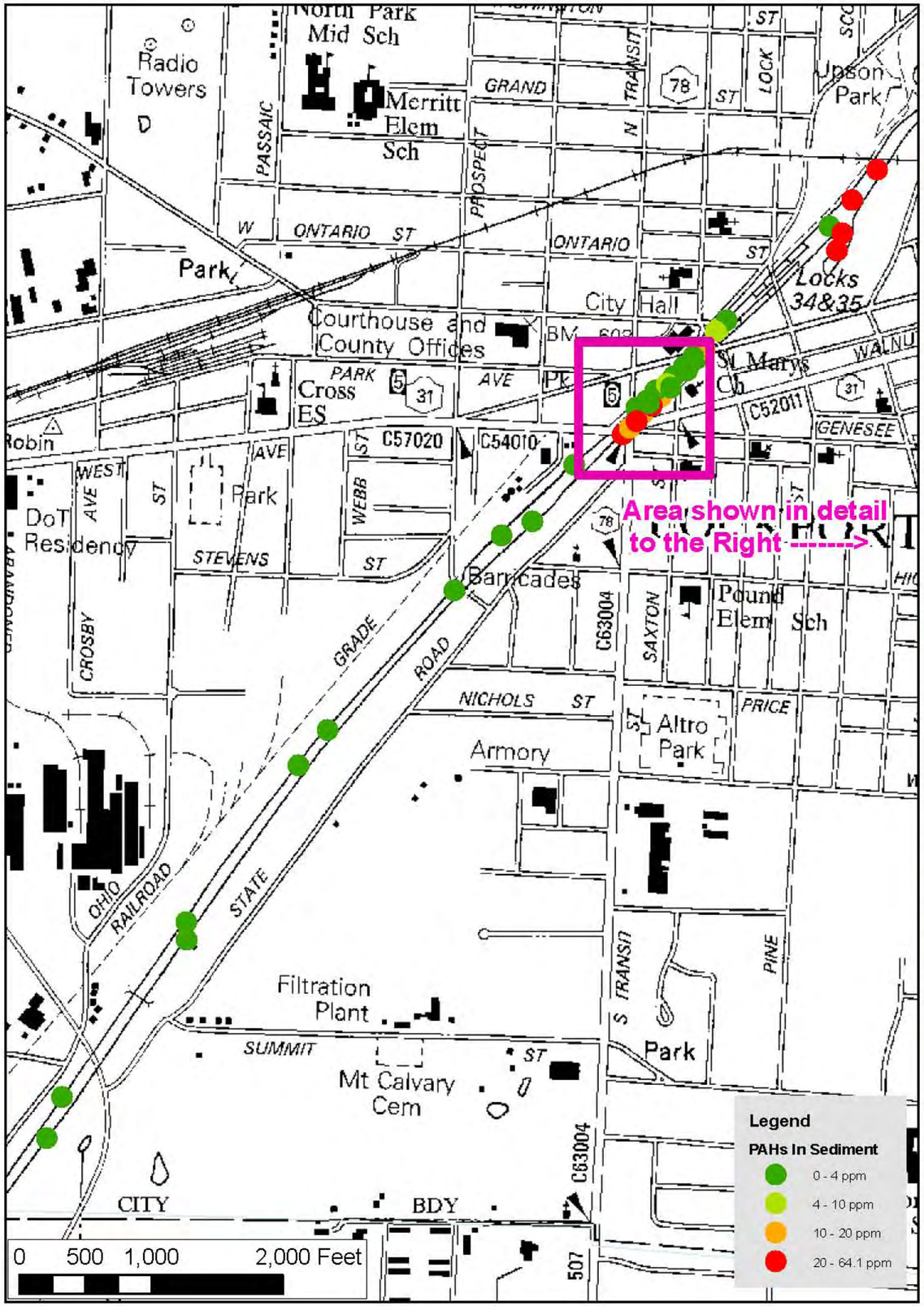
Tar Seeps

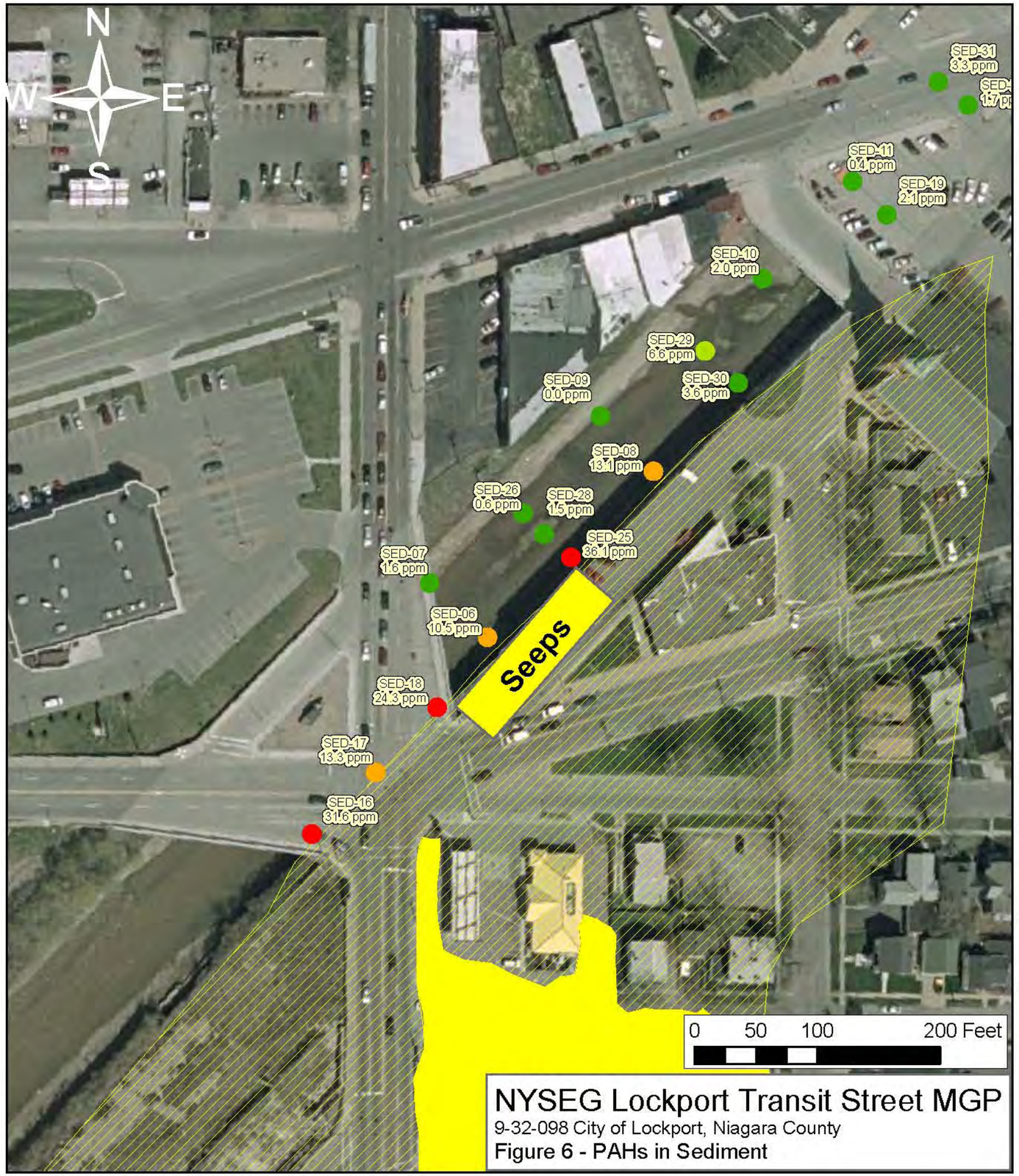
0 100 200 400 Feet

NYSEG Lockport Transit Street MGP

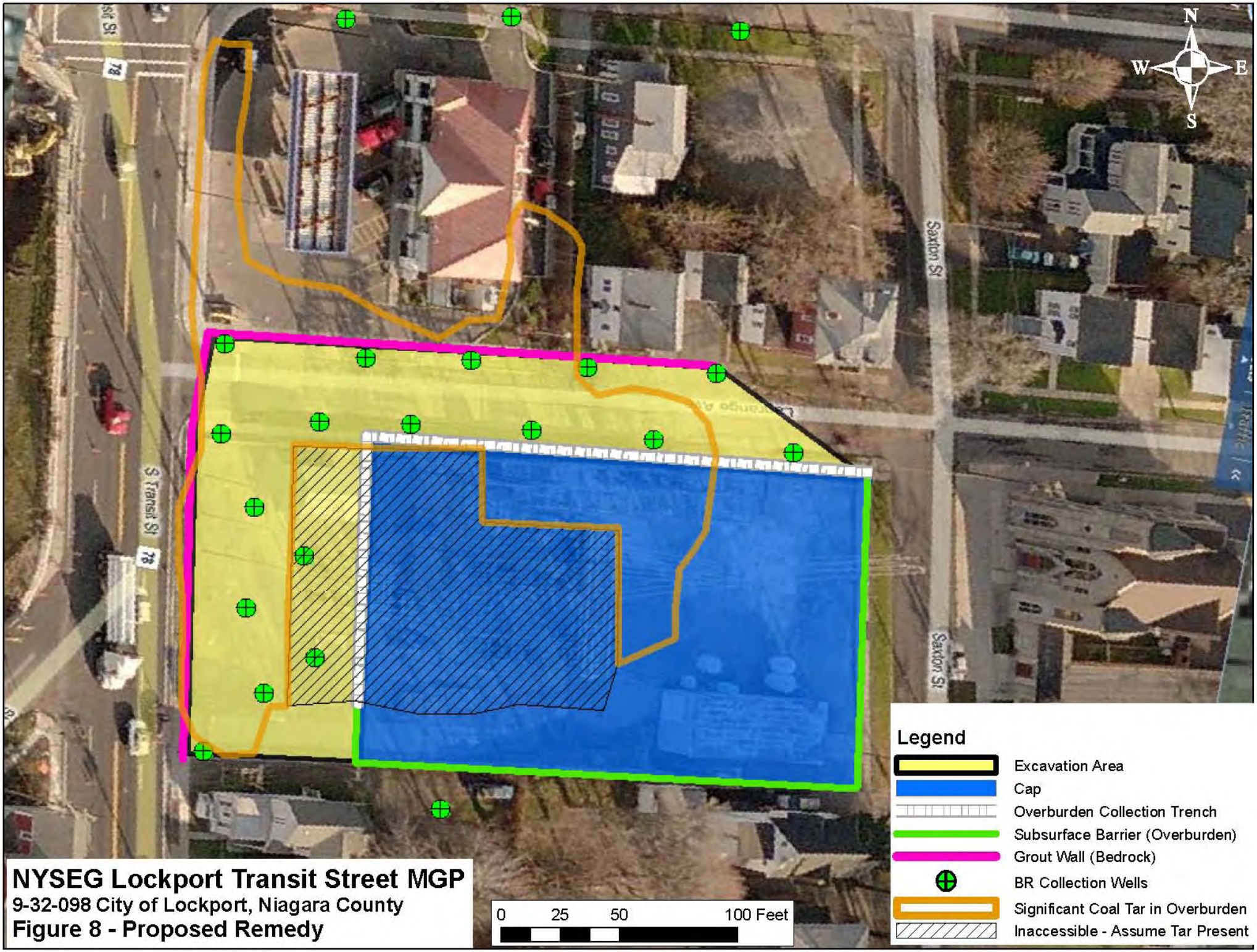
9-32-098 City of Lockport, Niagara County

Figure 5 - Extent of BTEX in Groundwater


North Park Mid Sch
Radio Towers
Merritt Elem Sch
Upson Park
Locks 34&35
City Hall
Courthouse and County Offices
St Marys Ch
Park Cross ES
Area shown in detail to the Right ------->
DoT Residency
Park
Barricades
Pound Elem Sch
Armory
Altro Park
Filtration Plant
Mt Calvary Cem
Park
PASSAIC
PROSPECT
GRAND
TRANSIT
LOCK
ONTARIO ST
W ONTARIO ST
PARK AVE
GENESEE
WALNU
WEBB
STEVENS
GRADE ROAD
NICHOLS ST
PRICE
SAXTON
CROSBY
OHIO RAILROAD
STATE
S TRANSIT
PINE
SUMMIT ST
C57020
C54010
C52011
C63004
507
CITY BDY
0 500 1,000 2,000 Feet
Legend
PAHs In Sediment
0 - 4 ppm
4 - 10 ppm
10 - 20 ppm
20 - 64.1 ppm


N
W
E
S
SED-31 8.3 ppm
SED-11 0.4 ppm
SED-19 2.1 ppm
SED-10 2.0 ppm
SED-29 6.6 ppm
SED-09 0.0 ppm
SED-30 3.6 ppm
SED-08 13.1 ppm
SED-26 0.6 ppm
SED-28 1.5 ppm
SED-25 36.1 ppm
SED-07 1.6 ppm
SED-06 10.5 ppm
Seeps
SED-18 24.3 ppm
SED-17 13.3 ppm
SED-16 31.6 ppm
0 50 100 200 Feet
NYSEG Lockport Transit Street MGP
9-32-098 City of Lockport, Niagara County
Figure 6 - PAHs in Sediment

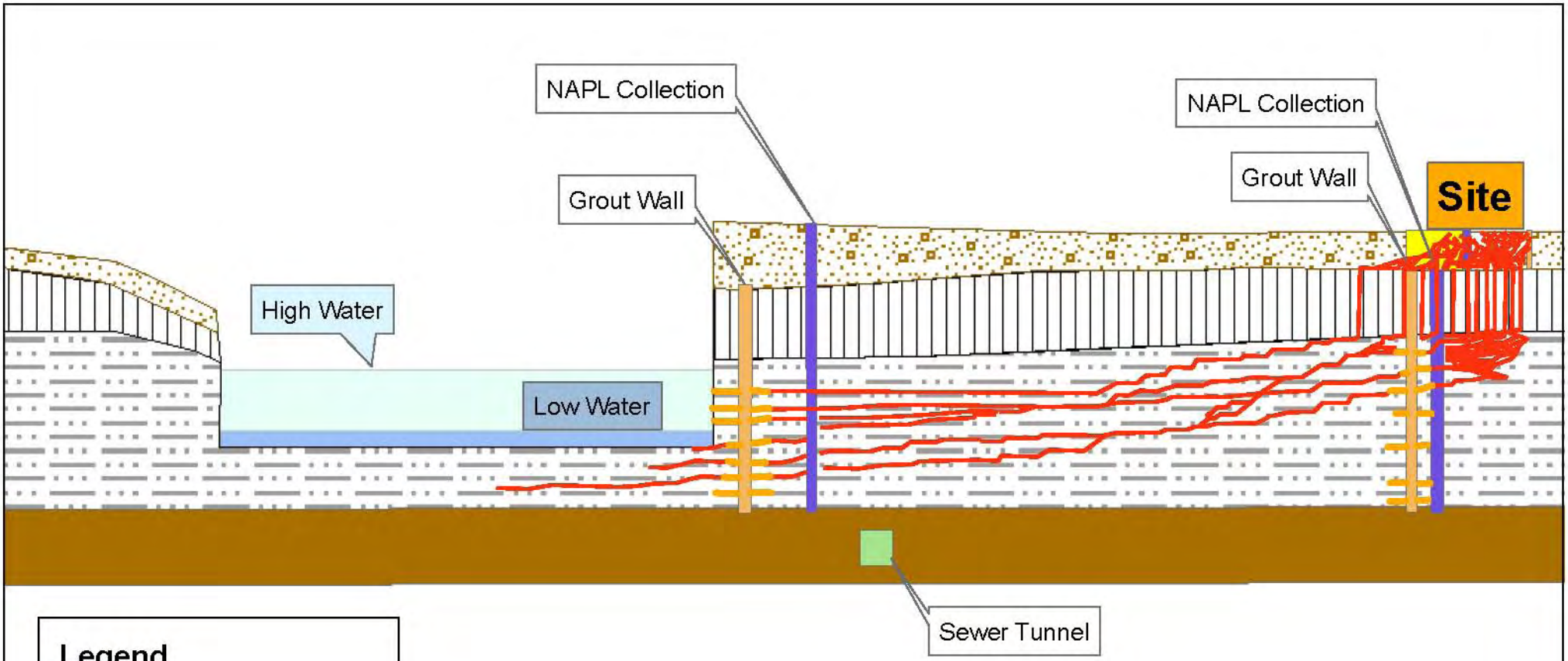

N
W
E
S
Legend
Visual Impacts
Tax Parcel-Niagara
BR Collection Wells
Grout Wall
Excavation
Sediment Removal
Site Border
MGP Structures
Potentially Impacted Bedrock
Soil with significant NAPL impacts
Inaccessible - Assume tar present
Additional MGP Impacts Identified in RI
0
50
100
200 Feet
NYSEG Lockport Transit Street MGP
9-32-098 City of Lockport, Niagara County
Figure 7 - Common Elements



NYSEG Lockport Transit Street MGP

9-32-098 City of Lockport, Niagara County

Figure 8 - Proposed Remedy



Legend

- BR_Grout
- Coal Tar
- Barrier Wall
- NAPL recovery
- Sewer Tunnel
- Excavation
- Overburden
- Dolomite

Shale

- Burleigh Hill (Higher Permeability)
- Lewiston (low Permeability)

Water Level

- High Water Level
- Low Water Level

NYSEG Lockport Transit Street MGP

9-32-098 City of Lockport, Niagara County

Figure 9 - Profile and Seep remedy

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

NYSEG Lockport Transit Street MGP Site
Lockport (c), Niagara County, New York
Site No. 932098

The Proposed Remedial Action Plan (PRAP) for the NYSEG Lockport Transit Street 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 26, 2009. The PRAP outlined the remedial measure proposed for the contaminated soil, sediment and groundwater at the NYSEG Lockport Transit Street 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, 2009, which included a presentation of the Remedial Investigation (RI) and the Feasibility Study (FS) 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 28, 2009.

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

COMMENT 1: Should the substation be demolished?

RESPONSE 1: The substation is an essential component of NYSEG's electrical distribution grid. It would need to be replaced rather than simply demolished. The Department considered this possibility (Alternative 5), but concluded that cost and community disruption associated with that alternative would not be justified.

COMMENT 2: If we had a bad wet season, is it possible for contamination to seep into nearby basements?

RESPONSE 2: The possibility that changing site conditions could create an exposure is one reason that remedial action is needed at this site. It may be possible that extreme weather conditions, or future construction activity could change conditions in the subsurface, and create an exposure that does not currently exist. Implementation of the remedy is expected to eliminate this possibility.

COMMENT 3: How much coal tar will the wells collect?

RESPONSE 3: Collection of coal tar in any well, and a bedrock well in particular, is highly variable and difficult to predict in advance. However, even a modest recovery could have a significant effect on tar mobility, since it is the most mobile material that is most likely to move into the wells.

COMMENT 4: Do we know how much coal tar is actually in the soil?

RESPONSE 4: No. We do not know the volume of coal tar present in the subsurface. However, we have determined the three-dimensional extent of the area where this contamination is present. Because the distribution of tar within this volume of soil is highly variable, it is not practical to determine the actual volume of tar within the effected area. As the remedial excavation proceeds, some of the soil excavated may in fact be uncontaminated, and may be reused as backfill within the site boundaries (not beneath LaGrange Street) if it meets soil reuse criteria.

COMMENT 5: How long will it take before the coal tar stops leaching into the Canal?

RESPONSE 5: It will likely take over a year to complete the design process. Several factors, including the detailed and complex design of the selected remedy, the need to relocate electrical infrastructure, and off-site property access will require a significant time period to implement. Consequently, it could take up to five years to fully address the contamination at this site.

COMMENT 6: How long will it be before the contamination no longer affects the Kenyon property? Is the soil under the Kenyon property contaminated? Can the property be redeveloped? Will NYSEG be on Kenyon property during remediation?

RESPONSE 6: The MGP-related contamination below the Kenyon property (1 Walnut Street) is present only in the deep bedrock. The overlying soil is not contaminated. The remedy does not impose any restrictions on the use and development of this property, but will require access to the property for the installation, operation, and maintenance of the collection wells and the subsurface barrier below the street in the area adjacent to the canal.

COMMENT 7: How long has NYSEG known about coal tar seepage into the canal and down the street? Did NYSEG know the canal is used by the city as an emergency water supply?

RESPONSE 7: It is believed that NYSEG has known that there was hardened tar on the canal wall for over a decade, but only determined that there was an ongoing discharge in the spring of 2008. The City's water intake is located approximately one mile upstream and is thus not impacted or threatened by the MGP site. This is an emergency intake which is not routinely used.

COMMENT 8: Was coal tar used for roofing pitch? Is it a threat to human health?

RESPONSE 8: Coal tar-derived products are used for roofing and sealing driveways and may contain some of the chemicals of concern found in coal tar. The Material Safety Data Sheets

(MSDS) for each material should be consulted for appropriate restrictions and safety precautions.

Melvin Baily of Lockport called on March 2, 2009 with the following comments:

COMMENT 9: The fact sheet indicates this is a "superfund" project. Is the state paying for this?

RESPONSE 9: No. NYSEG is the responsible party and will pay the full cost of the cleanup, including the Department's oversight costs.

COMMENT 10: Is there any provision for training and employing local people?

RESPONSE 10: No. There is no provision for local training or hiring.

David Kinyon from the Town of Lockport Industrial Development Agency submitted the following comment by e-mail on March 13, 2009. The e-mail was submitted through Norm Allen, the Lockport City Engineer, by way of Michael Tucker, the Mayor of Lockport. The comment was submitted as representing the combined interest of the City of Lockport, Town of Lockport and the Town of Pendleton, NY.

COMMENT 11 : The Lockport Canal Task Force has long identified the NYSEG substation at Transit and LaGrange Streets as a blighting influence in Lockport's Canal Corridor. A number of years ago, the Canal Task Force had requested NYSEG to upgrade the site through a range of alternatives (enclosing the transmission infrastructure, landscaping, bushes, etc). I would like to request that the site be improved from an aesthetic point of view, and, if possible, in a manner consistent with the proposed Design Guidelines for our local Transit North plan.

RESPONSE 11: This is beyond the scope of this decision document. However, NYSEG has reviewed this comment and has indicated a willingness to provide a visual barrier between the road and the portion of the substation equipment which will remain following remediation. NYSEG will work with the City to develop a detailed plan, and would want this area to require relatively little maintenance.

Amy Sweet, a Public Reporter for Construction Data Company submitted the following comment by e-mail on March 11, 2009.

COMMENT 12 : For this project, would you please tell me if the NYSDEC will handle the bidding of this project and when it might go out for public bidding and if not who the owner of this project will be that handles the bidding? Also, if you have an engineering firm you are working with would you please send that information as well?

RESPONSE 12: The project will be managed by NYSEG under the oversight of the NYSDEC. They are responsible for procuring all remedial construction contractors and engineering design consultants to perform this work.

David Petrosewitz, the Real Estate Manager for Reid Petroleum Corp., submitted the following comment by e-mail on March 19, 2009.

COMMENT 13 : Reid Petroleum Corp., through its sister company Hawley Development Corporation, owns three properties in close proximity to the NYSEG site. The first, located at 4 South Transit Street, is recognized in the PRAP; remediation and inclusion in the long term Site Management Plan (SMP) having been addressed. The second property is known as 15 LaGrange Street, (tax parcel 109.62-2-22). It is a vacant lot located immediately east of 4 South Transit on the north side of LaGrange Street. The third property is also a vacant lot known as 24-28 Genesee Street (tax parcel 109.62-2-28). It is located in the southwest quadrant of the intersection of Genesee and Saxton Streets. Neither the LaGrange nor Genesee properties are recognized in the PRAP. Given their proximity to the remediation site we ask whether any sampling has been done on them, and if not, why? Does NYSDEC plan to do so? Reid Petroleum Corp. believes now is the time to either rule out or confirm the presence of coal tar contamination on these properties and deal with them accordingly. If impacted, we would like to see them remediated during the course of the current project. At a minimum we believe they (along with the remainder of this block) should be characterized as to their current condition and addressed in the long term SMP with a commitment by responsible parties to remediate them now or in the future should conditions warrant.

RESPONSE 13: The Department and NYSEG are aware of the other properties held by Reid Petroleum Corp referenced in the above comment. The discussion in the ROD of "Reid Petroleum property" should be interpreted to include both the 4 South Transit Street property and the 15 LaGrange Street property (tax parcel 109.62-2-22). As such, any MGP related contamination at 15 LaGrange Street will be addressed during redevelopment.

The borings along the north side of La Grange Street, between the site and the 24-28 Genesee Street property, did not detect any MGP contamination. Consequently, this property appears to be unimpacted and no restriction on its use is envisioned. If significant contamination were to be observed in the northern wall of the excavation beneath LaGrange Street, NYSEG would be required to determine the extent of contamination and work with the Department to develop a plan to appropriately address that contamination.

COMMENT 14 : As you are aware, Reid Petroleum Corp. owns and operates the existing convenience store and gas station at 4 South Transit Street. A Tim Horton's restaurant with drive through service is also located on the premises. The Tim Horton's is operated by a third party franchisee. The PRAP indicates that the entirety of LaGrange Street, including the driving surface, will be excavated and replaced during the project. This action will have major negative impacts on both businesses due to loss of access via two curb cuts from LaGrange Street. The

west curb cut, nearest the intersection of Transit and LaGrange, is the primary path of ingress and egress from Transit Street to the Tim Horton's drive through. Loss of this access will cause a severe decrease in customer traffic as it will deter motorists from entering the premises. The time period this curb cut and access from LaGrange Street to Transit is out of service must be kept to an absolute minimum. Reid Petroleum Corp. is requesting consultation with NYSDEC, NYSEG and the site contractor to develop a work plan that minimizes the length of time this curb cut is unusable, or otherwise compensates both business owners for the impact.

The second curb cut from LaGrange Street, easterly from the first, is the only point of access to the trash corral and dumpster. It is the only location on the property which allows a perpendicular approach to the dumpster required by garbage trucks. We are requesting the PRAP include alternate arrangements for our trash removal during the time this access is unavailable.

Additionally, you may have observed that customer parking space is at a premium at 4 South Transit. Many customers, especially during the morning rush, park on LaGrange Street while at the store. We believe the loss of parking on LaGrange will have a very negative impact on both businesses. Here again, the length of time LaGrange Street is impacted during remediation must be kept to an absolute minimum.

Reid Petroleum Corp. wishes to be involved in the development of the work plan as it pertains to the issues stated in this letter. We wish to protect our interests in our property near the project and minimize its impact on our business, in particular, minimizing the length of time access to and from LaGrange Street, and further to Transit Street, is closed.

RESPONSE 14: The Department will assure that NYSEG works with the property owner and operator in developing the design.

COMMENT 15: Reid Petroleum Corp. also has concerns about the impact that airborne dust will have on our business during the project. These include human exposure and related health impacts, the need for additional housekeeping and increased maintenance to HVAC and other air exchange equipment (i.e. filter replacement). What monitoring and control procedures will be in place during the project? We are requesting compensation for the cost of additional maintenance and repair, whether dust related or otherwise, caused by the remediation project.

RESPONSE 15: A community air monitoring program (CAMP) will be in place during all intrusive work at this site, which will monitor dust levels and vapors at the site perimeter and require controls be in place to limit particulates (dust), vapors and odors leaving the site.

Beyond the instrumentation, it is the Department’s experience that nuisance odors are often detected long before vapor concentrations reach health-based limits. Adequate measures will be in place to prevent the release of strong or persistent odors. The Department will assure a plan is in place to require appropriate mitigation and control measures are available to address odors and other potential impacts to off-site areas if monitoring equipment detects actionable exceedances of the CAMP limits, and if odors or dust are impacting off site areas.

Richard P. Manns, Division Canal Engineer at the New York State Canal Corporation submitted the following comment in a letter dated March 23, 2009.

COMMENT 16 : Conceptually, the Canal Corporation is in support of the project, especially the proposed cleanup and mitigation of the tar seeps into the Canal

RESPONSE 16: No Response necessary.

COMMENT 17 : A Canal Work Permit will be required for any remedial work located on Canal property. These activities may include sediment removal, the grout wall adjacent to the Canal, and NAPL collection adjacent the Canal. Before a Canal Work Permit can be issued, plans and specifications will need to be reviewed and approved by the Canal Corporation.

RESPONSE 17: Comment noted. Provisions relative to obtaining permits and other approvals for remedial work is governed by Part 375-1.12.

COMMENT 18 : Construction of the grout wall cannot have any impact on the stability of the adjacent canal wall.

RESPONSE 18: NYSEG and the NYSDEC will work with the Canal Corporation to ensure the stability of the wall.

COMMENT 19 : Properties which require institutional controls, Site Management Plans, and certification should be clearly identified in the PRAP. If institutional controls are required on property under the Canal Corporation jurisdiction, then the Canal Corporation should be permitted to comment on proposed controls and potential impacts on Canal operation and maintenance - if any. If use of the Canal Corporation property is under permit with another entity, the Canal Corporation will pass the requirements associated with institutional controls to the permittee. The Canal Corporation is not in the position to make any certification associated with the proposed cleanup.

RESPONSE 19: No institutional controls are anticipated on Canal Corporation property. Institutional controls, in the form of an environmental easement are anticipated only on the site itself (the location of the existing substation).

COMMENT 20 : Section 8, Element 10 (sediment removal). This element cannot have any impact on Canal navigation.

RESPONSE 20: Comment noted. This work is expected to be completed during the off-season, when the Canal is drained, so no impact to navigation is anticipated.

APPENDIX B

Administrative Record

Administrative Record

NYSEG Lockport Transit Street MGP Site

Site No. 9-32-098

1. Proposed Remedial Action Plan for the NYSEG Lockport Transit Street MGP site, dated February 2009, prepared by the Department.

2. Order on Consent, Index No. DO-0002-9309, between the Department and NYSEG, executed on March 30, 1994.

3. "Investigation and Assessment of the Lockport Coal tar Site, Task 3 Report, Boring and Well Installation and First Round Ground-Water Sampling," July 1984, Prepared by Woodward-Clyde.

4. "Remedial Investigation Work Plan, Transit Street and State Road Former Manufactured Gas Plants, Lockport, New York," November 2004, Prepared by URS

5. Final Remedial Investigation Report Volume 1 - Text, Tables, and Figures August 2008, Prepared by URS

6. Final Remedial Investigation Report Volume II - Appendices, August 2008, Prepared by URS

7. "Feasibility Study" January 2009, Prepared by URS

8. Fact Sheet announcing Remedial Investigation, October 2004, prepared by the Department.

9. Fact Sheet announcing the completion of the Remedial Investigation, May 2008, prepared by the Department.

10. Fact Sheet announcing the PRAP, February 2009, Prepared by the Department.

11. E-mail dated March 11, 2009 from Amy Sweet, Public Reporter, Construction Data Company, providing comments on the PRAP from the City of Lockport.

12. E-mail dated March 13, 2009 from David Kinyon, via Norm Allen providing comments on the PRAP from the City of Lockport.

13. Letter dated March 19, 2009 from David Petrpsewitz, Reid Petroleum Corp., providing comments on the PRAP.