AECOM Environment

Prepared for:
New York State Electric and Gas Corp
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Binghamton, NY 13902

Prepared by:
AECOM
Latham, NY
Project 60135689
April 2011

Remedial Design Work Plan
Cortland-Homer Former MGP Site
Homer, New York
NYSDEC Site # 7-12-005

Final

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Prepared By: Matt Thorpe

Reviewed By: Scott Underhill, P.E.

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ENGINEERING CERTIFICATION

I hereby certify that the Remedial Design Work Plan for the Homer 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.

April 11, 2011

Scott A. Underhill Date
Registered Professional Engineer
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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 Operable Unit 1 (OU-1) and the portion of Operable Unit 2 (OU-2) known as the downgradient area on the east side of Route 11 at the Cortland-Homer Former Manufactured Gas Plant (MGP) site (Site) located in Homer, Cortland 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 Decision (ROD) for each OU at the Site [ROD, OU-1 NYSDEC, 2010] [ROD, OU-2, NYSDEC, 2005] and the Administrative Order on Consent [CO, Index No. D0-0002-9309, (NYSDEC, 1994)] between the NYSDEC and NYSEG.

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:

- In-situ solidification (ISS) of on-site soils and selected off-site soils. ISS will be preceded by pre-excavation to remove former MGP structures and highly impacted soils in the immediate vicinity of these structures accommodate spoils generated during the ISS process.
- Jet grouting of impacted soils at locations where other ISS methods are not feasible due to presence of utilities or other potential interferences.
- Installation of a jet grout curtain wall to isolate contaminants within the roadway between OU-1 and OU-2.
- A clean soil cover and demarcation layer will be constructed in the on-site and off-site ISS areas.
- Evaluation of soil vapor intrusion in the remaining portion of the building.
- 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. Additional detail is provided for the basis of the work, including: site preparation, excavation, ISS, 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 Pre-Design Investigation (PDI) activities that will provide necessary site-specific information to support the remedial design. The PDI Field Sampling and Analytical Plan is provided in Appendix A and the ISS Treatability Study Work Plan is provided in Appendix B.

DER-10 requirements

A copy of the ROD(s) 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 PDI activities. Note that a Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) for the investigation portions of the work will be developed prior to commencement of any field activities.

50% design submittals will include drafts of the following:

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

100% design submittals will include 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:

- 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.

1.1 Site History

1.1.1 Operational/Disposal History

In 1858, the Cortland-Homer MGP plant was constructed and began supplying manufactured gas to the Village of Homer under the name, "Homer and Cortland Gas Light Company". Manufactured

gas was produced at this site using the coal gasification and carbureted water gas processes. Coal gas was produced on site until 1921, and then carbureted water gas was produced from 1921 to 1932. The gas holder was used until early 1935 for storing natural gas.

Available records for the plant indicate that on-site coal tar production ranged from 19,528 gallons in 1907 to 51,347 gallons during 1913. Gas production in 1907 was 20,179,500 cubic feet of gas which was sold to 1,385 customers. Production had been expanded to approximately 600,000 cubic feet of gas per day by carbureted water gas process in 1928. This translates to a potential for 219,000,000 cubic feet of gas per year.

In the 1940s, NYSEG partially decommissioned the plant. In 1944 the Brockway Motor Company purchased the subject property and razed the remaining structures. In 2010, the onsite buildings were demolished and disposed offsite to allow for the ensuing soil sampling and remediation of onsite soils. The northern third of the former Brockway Motors building remains intact immediately north of the remediation area and is currently operated as a plumbing and electrical supply store.

1.1.2 Remedial History

In 1986, NYSDEC first listed the Site as a Class 2a site in the Registry of Inactive Hazardous Waste Disposal Sites in New York (the Registry). Class 2a was a temporary classification assigned to a site that had inadequate and/or insufficient data for inclusion in any of the other classifications. In 1987, NYSDEC reclassified the site as a Class 2 site in the Registry. A Class 2 site is a site where hazardous waste presents a significant threat to the public health or the environment and action is required.

Investigative activities at the Site were conducted by NYSEG between 1985 and 2003. These investigations identified an apparent source area of coal tar and related compounds in subsurface soils at the site. Groundwater from monitoring wells downgradient of the site also contained tar-related volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs). Sediment samples collected from the West Branch of the Tioughnioga River adjacent to and downstream from the site contained PAHs (OU-2).

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 2005, the NYSDEC issued a ROD for OU-2, which established a remedial action for the off-site impacted materials. (i.e., stabilization in-place of contaminated subsurface soils in the downgradient area). A final remedial design for OU-2 was submitted to the NYSDEC in May 2006.

In March 2007 the NYSDEC issued a ROD for OU-1, which established a remedial action for the on-site impacted materials. The 2007 ROD selected remedy for OU-1 included excavation and off-site disposal of MGP impacted soils to a depth of up to 40 feet below ground surface. However, additional information concerning the utilities in the corridor parallel to Route 11 presented difficulties with the excavation and off-site disposal option. In addition, data obtained from groundwater modeling performed during the remedial design process indicated that Excavation of OU-1 and subsequent ISS of OU-2 may cause an increase in groundwater velocity, increasing the potential for NAPL migration toward the Tioughnioga River. The difficulties presented by the utilities, coupled with the increased

potential for NAPL migration caused NYSEG and NYSDEC to re-evaluate the selected OU-1 ROD remedy.

A ROD amendment has been issued by NYSDEC to change the onsite remedy from excavation to in situ solidification (ISS). As part of the proposed remedy, additional curtain walls would be installed across Route 11 to connect the OU-1 and OU-2 ISS monoliths, isolating impacted materials remaining beneath the roadway. The Record of Decision Amendment was issued in December 2010. A single design package will be prepared to address ISS of both OU-1 and OU-2; with the exception of sediment removal associated with OU-2, which is not addressed in this design. This design package will supersede any previously submitted designs for OU-1 and OU-2, except for the sediment removal associated with OU-2. The final remedial design will be submitted for approval to the NYSDEC.

2.0 Site Contamination

Between 1985 and 2004 the site has been subject to several investigations. The lasted of these are a Supplemental Remedial Investigation (SRI) (Stearns and Wheeler, 2003) and a Feasibility Study (URS Corporation, 2004) to evaluate the alternatives for addressing the significant threats to human health and the environment.

2.1 Summary of the Remedial Investigation

The purpose of the SRI was to define the nature and extent of any contamination resulting from previous activities at the site. The RI was conducted between 1999 and 2003. The following investigative activities were conducted during the RI:

- research of historical information;
- a survey of public and private water supply wells in the area around the site;
- soil borings, to observe subsurface geologic conditions and collect subsurface soil samples;
- test pits to directly observe subsurface conditions, subsurface structures and collect soils samples;
- subsurface soil sampling;
- installation of monitoring wells to evaluate groundwater flow and collect groundwater samples;
- slug testing to evaluate groundwater velocities and soil transmissivity;
- sampling of the existing monitoring wells;
- groundwater elevation readings, to evaluate groundwater flow and the accumulation of non aqueous phase liquid (NAPL);
- surface soil sampling;
- passive soil gas sampling from on-site and off-site locations;
- sub slab soil vapor and indoor air sampling from the on-site building along with outdoor air sampling;
- indoor air sampling in the off-site motel; and
- Fish and Wildlife Impact Analysis.

2.1.1 Standards, Criteria, and Guidance

To determine whether the soil, groundwater, or indoor air contain contamination at levels of concern, data from the investigations were compared to the following SCGs:

- Groundwater, drinking water, and surface water SCGs are based on NYSDEC's "Ambient Water Quality Standards and Guidance Values" and Part S of the New York State Sanitary Code.
- Soil SCGs are based on NYSDEC's Cleanup Objectives ("Technical and Administrative Guidance Memorandum [TAGM] 4046; Determination of Soil Cleanup Objectives and Cleanup Levels" and 6 NYCRR Subpart 375-6 - Remedial Program Soil Cleanup Objectives).
- Concentrations of VOCs in air were compared to typical background levels of VOCs in indoor and outdoor air using the background levels provided in the State's guidance document titled "Guidance for Evaluating Soil Vapor Intrusion in the State of New York," dated October 2006. The background levels are not SCGs and are used only as a general tool to assist in data evaluation.

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

This section describes the findings of the investigation for all environmental media that were investigated.

As described in the RI report, many soil, groundwater, soil vapor and sediment samples were collected to characterize the nature and extent of contamination. The main categories of contaminants that exceed their SCGs are volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs).

The VOCs of concern are benzene, toluene, ethylbenzene and xylene. These compounds are referred to as BTEX in this document, and are a common component of coal and carburetted water gas tars. Of these compounds, benzene, which is a known human carcinogen, is the most significant.

SVOCs of concern are primarily a group of chemicals commonly referred to as polycyclic aromatic hydrocarbons (PAHs). The specific compounds of concern at this site, which are typically found at MGP sites, are:

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

Total PAHs concentrations referred to in this plan are the summation of the individual PAHs listed above. The italicized PAHs are probable human carcinogens. The summation of the italicized PAHs is referred to in this document as carcinogenic polycyclic aromatic hydrocarbons (cPAHs). A dense oily liquid that does not readily dissolve in water is typically found at MGP sites. Although, this liquid is largely derived from the petroleum products used in the water gas process, it is commonly known as “coal tar.” This liquid, however, does not have the sticky, viscous consistency of other materials commonly labeled as “tar.” The tar found at this site has a consistency similar to used motor oil, and is consequently able to migrate as a liquid through the subsurface. The tar is slightly denser than water, and thus tends to sink through the subsurface until it reaches a geologic unit which will not allow it to pass.

The primary inorganic contaminant of concern at this site is cyanide. Cyanide is commonly found at MGP sites where waste from gas purification is present. Cyanide has been found in site soils and site groundwater; however, the cyanide levels are generally below SCGs for both media. Where cyanide exceeds its SCGs, it is commingled with other site contaminants of concern.

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

Waste Materials

Waste materials consist of coal tar or NAPL which contain organic contaminants. NAPL refers to contaminants that remain undiluted as their original bulk form in the subsurface. Tar is found most frequently near the former MGP structures. The area with the greatest evidence of waste materials occurs around the former gas holders and other structures under the building slab. These impacts extend vertically to the top of the silty clay layer, which varies in depth and may extend as deep as 40 feet below ground surface (bgs), and laterally approximately 150 feet to the West Branch of the Tioughnioga River.

The source of the BTEX and PAH contamination found in OU-1 is the result of coal tar or NAPL which is found in and around the subsurface structures and is migrating through the subsurface. The NAPL was found to saturate the unconsolidated deposits, and is present as either a “putty-like matrix” or in discrete seams of staining and/or product. Both of these conditions generally coincide with BTEX and PAH concentrations several orders of magnitude greater than the SCOs in adjacent soils, and typically results in significant impacts to the groundwater as well.

Areas of significant waste disposal have been termed “source areas” and are defined as: free tar and tar-saturated soils, soils containing PAHs in excess of 1,000 ppm, soils containing reactive cyanide at concentrations above 250 ppm, or soils containing reactive sulfide at concentrations above 500 ppm. At the Site, these source areas appear to be directly associated with several of the former plant structures, some of which remain onsite below the former building.

PAHs account for a majority of the SVOCs present in site soils. These compounds are widespread and occur in higher concentrations beneath the on-site building and adjacent to former MGP structures.

Surface Soil

The surface soil for the Site is either fill that was placed after MGP operations ceased, or asphalt pavement. Site-related constituents were found above analytical detection limits; however, they are orders of magnitude below those found in the waste materials and found in subsurface soil.

Subsurface Soil

During the RI, approximately 43 subsurface soil samples were collected and analyzed. These samples show that certain areas of the site are heavily impacted by MGP tar and related constituents. Contaminant concentrations are generally higher on the site and become more limited in concentration and physical extent to the east of the site building and under Route 11. NAPL observed on the site occurs primarily as saturation of the unconsolidated deposits and/or product in discrete horizontal zones, particularly towards the top of the water table and directly above the silty clay unit. PAHs levels in the subsurface soils ranged from non-detect to 60,300 mg/kg. BTEX levels in the subsurface soils ranged from non-detect to 950 mg/kg.

Groundwater

The RI identifies significant groundwater contamination at the site. The groundwater contamination originates in the area of the former MGP structures under the on-site building and extends beyond the site property to the West Branch of the Tioughnioga. In the vicinity of the site, groundwater discharges to the river. Monitoring wells on the opposite bank of the river, the east bank, show no impacts from the site. The contamination in the groundwater at the site was found at comparable levels in both the shallow and deep wells as the site.

Soil Vapor/Sub-Slab Vapor/Air

During the RI, air samples were collected with summa canisters to assess potential impacts to indoor air quality and soil vapor. Six indoor air samples from the on-site building were collected and submitted for analysis of VOCs by analytical method TO-I4. BTEX was detected in all of the samples collected. Generally these detections were low and commingled with various chlorinated solvents. Individual concentrations ranged up to 87 $\mu g/m^3$ for toluene and 150 $\mu g/m^3$ tetrahydrofuran.

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 8 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. At this site the potential exposure pathways are:

- Dermal contact with NAPL, contaminated soil or groundwater;
- Incidental ingestion of contaminated soils or groundwater; and
- Inhalation of contaminated soil vapors or dust.

Subsurface Soil

During the RI, approximately 43 subsurface soil samples were collected and analyzed. These samples show that certain areas of the site are heavily impacted by MGP tar and related constituents, while other areas had more discrete impacts.

Contaminant concentrations are generally higher on the Site and become more limited in concentration and physical extent to the east of the Site building, under New York State Route 11. NAPL observed on the Site occurs primarily as saturation of unconsolidated deposits and/or

product in discrete horizontal zones, particularly towards the top of the water table and directly above the silty clay unit.

PAHs levels in subsurface soils range from non-detect to 60,300 ppm. BTEX levels in subsurface soils range from non-detect to 950 ppm.

The potential for exposure to contaminated soil and NAPL is unlikely since contaminated soils are subsurface and the site area is covered by a building, gravel, or grass. However, redevelopment, subsurface utility work or building maintenance work in the future could bring workers into contact with contaminated material or bring contaminated soils to the surface.

Groundwater

The RI identified significant groundwater contamination at the site. This groundwater contamination originates in the area of the former MGP structures under the on-site building and extends beyond the site property to the West Branch of the Tioughnioga. In the vicinity of the Site, the groundwater discharges to the West Branch of the Tioughnioga River. Monitoring wells installed on the opposite bank of the River, the east bank, show no impacts from the site.

The contamination in groundwater at the site was found at comparable levels in both the shallow and deep wells at the site. The BTEX compounds are the most mobile of the groundwater contaminants and are often present well above their individual groundwater quality standards in the on-site wells. SVOC groundwater contamination is comprised primarily of PAHs and their distribution in groundwater is similar to the VOC plumes (shallow and deep).

Exposure to contaminated groundwater is unlikely since the area is served by public water. However, the potential for exposure to contaminated groundwater in the future exists if a well were installed or construction was to occur below the shallow groundwater table.

Air

VOCs present in the subsoil onsite give the potential for exposure to indoor air contamination. Indoor air samples and sub-slab vapor samples were conducted within the former Brockway Motors building during the RI and SRI activities. Indoor air sampling in the building identified site-related chemicals which may originate from site contamination, as well as from the use of the same chemicals in the current use of the site. Sampling conducted prior to building demolition indicated that the sub slab vapor is contaminated. Indoor sampling within the former building and in the remaining portion of the building indicates that VOC levels are generally well below 1 ppm, which is hundreds of times lower than NIOSH of OSHA occupational exposure standards.

In the time since the air sampling was conducted, the southern two-thirds of his building has since been demolished. The building's slab has been left in place to prohibit exposure to soil, groundwater, and sub slab vapors. The northern third of the building remains in use just north of the site.

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.

Due to the size and industrial nature of the site there are limited opportunities for fish and wildlife resources at the OU-1 Site. Site contamination at the Site has negatively impacted the groundwater resource in the unconsolidated geologic units. This resource is identified as a sole source aquifer, the Homer/Preble aquifer, which provides area residents and businesses with water. The wellfield that extracts water from the aquifer is located 1.5 miles north of the site. The site has no direct impact on this water supply because of the groundwater flow direction is eastward.

3.0 Design Basis

The following section first describes the elements of the design basis that apply to the remedial design. The specific design basis 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 RODA, "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 to:

- Remediate, to the extent practicable, areas containing source material;
- Eliminate potential exposure to source material;
- Control future migration of source material from on-site to off-site areas;
- Eliminate potential human exposure to subsurface soil containing MGP-related contamination; and
- Eliminate potential human exposure to groundwater containing MGP-related contamination.

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

- Ambient groundwater quality standards.

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:

- Remedial design program to provide necessary details for construction, operation, maintenance, and monitoring of the selected remedy.
- Pre-excavation to approximately 4 feet below existing ground surface to accommodate the spoils generated during the ISS processes. Of this excavated material, any MGP waste, coal tar, or contaminated soils containing visible tar or oil, sheens or odors, and/or has total PAHs over 500 ppm or total BTEX concentrations above 10 ppm will be disposed of at an off-site treatment or disposal facility. Excavated materials below the criteria of 500 ppm total PAHs and 10 ppm total BTEX may be stockpiled and evaluated for reuse on site. The stockpiles will be covered and secured.
- ISS of onsite and offsite soils to the limits depicted in the ROD(s)
- A clean soil cover and demarcation layer will be constructed in the on-site and off-site ISS areas. The cover will be a minimum 12 inches thick on-site and 24 inches thick off-site. The finished surface over most of the site will be gravel, with some offsite areas receiving vegetation.

- A SMP will be developed and implemented. The SMP will:

  a) Address residual contaminated soils that may be excavated from the Site during future redevelopment and environmental easements;
  b) Evaluate the potential for vapor intrusion for any buildings developed on the Site, including provisions to mitigate any identified impacts;
  c) Identify any use restrictions; and
  d) Provide requirements for the operation and maintenance of the components of the on-site and off-site remedies.

- Institutional control in the form of an environmental easement that will require:

  a) Limiting the use and development of the on-site property to commercial use which will also permit industrial uses;
  b) Compliance with the approved SMP;
  c) Restricting the use of groundwater as a source of potable or process water without necessary water quality treatment as determined by the NYSDOH; and

- The property owner will provide a periodic certification of institutional and engineering controls, prepared and submitted by a professional engineer or other such expert acceptable to the NYSDEC, until the NYSDEC 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 into place are still in place and are either unchanged from the previous certification or are compliant with the NYSDEC approved modifications;
  b) Allow the NYSDEC to access the Site; and
  c) State that nothing has occurred that will impair the ability of the control to protect public health or the environment, or constitute a violation or failure to comply with the SMP unless otherwise approved by the NYSDEC.

3.1.3 Property access

The vast majority of the ISS work will take place on NYSEG property however some work will be conducted within the NYSDOT right-of-way as well as Village of Homer utility easements, if applicable. NYSEG 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 NYS Route 11. This plan will be reviewed and accepted by the New York State Department of Transportation and the Village of Homer prior to site mobilization.

3.1.4 Utilities

NYSEG 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/ISS locations will be staked out to ensure that the locations will be free and clear of underground utilities. Proposed sampling locations may be shifted to avoid subsurface and overhead utilities as appropriate.

During the ISS work, the overhead utility lines within the OU-2 area may need to be relocated to allow access of ISS equipment. Alternatively, jet grout stabilization may be considered in this area to avoid the need for overhead utility relocation. These two alternatives will be evaluated during the final 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% final design report.

3.2 Design basis for pre-excavation and in-situ solidification

3.2.1 In-situ solidification performance criteria

ISS performance will be measured by the hydraulic conductivity and strength of the soil-cement material after it is mixed. Wet samples are typically collected within the column shortly after the mixing process. The most common reagent used for ISS work is Portland cement. When mixed with soil, the cement grout binds the soil particles together to provide increased strength and lower permeability of the soil matrix. Several admixtures are available to enhance the performance of the ISS mix, for example; the addition of bentonite clay to the grout mix to further lower the hydraulic conductivity.

The strength of the solidified mass must be sufficient to allow for long-term durability of the material and potential future development of the Site. The target strength of the ISS monolith will be a minimum of 50 pounds per square inch (psi), as measured by the 28-day unconfined compressive strength (UCS) ASTM D 2166.

The solidified monolith must have sufficiently low hydraulic conductivity to prevent groundwater from migrating through the solidified material and potentially transporting contaminants off site. The goal is to create a solidified monolith of sufficiently low permeability to direct groundwater flow around the solidified mass, thus preventing the migration of impacts from soil to groundwater. The ISS design for the Homer site has a goal of a maximum hydraulic conductivity of 1×10^{-6} cm/sec. This goal may be further evaluated during the ISS Treatability Study.

Detail regarding field testing for quality assurance/ quality control is provided in Section 5.

A groundwater flow model has been developed for the site using the MODFLOW finite difference code developed by the USGS and previous site investigation data. Groundwater modeling results indicate that there will be minimal groundwater mounding (less than 4 inches). Changes in the design permeability and/or limits of ISS may require the groundwater model to be revised.

In addition to evaluating the effect of the ISS monolith on groundwater flow, the design will evaluate the effects of the ISS monolith on surface runoff and ponding. The design will evaluate whether grading changes and/or drainage layers need to be included in the soil cover.

Solidified soil-cement material typically weathers and breaks up under freeze-thaw cycles, therefore the finish ISS surface will be located approximately 4 feet below grade. The anticipated ISS limits are shown in Figure 2. The actual horizontal and vertical limits of ISS will be determined during the remedial design, following the pre-design investigation.

The result of this evaluation will be provided in the PDI Report.

3.2.2 Pre-design investigation

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

- Soil analytical data needed to characterize the soils to be excavated for off-site disposal.
- Collection of geotechnical data to aid in ISS design.
- Sonic core sampling to determine cobble and boulder presence in site soils to determine impacts on ISS treatability.
- Collection of bulk soil samples for use in the ISS treatability study and permeability testing of existing (pre-ISS) soils. A bench scale testing program will be implemented to determine the appropriate ISS mix design.

The PDI Field Sampling and Analytical Plan is provided in Appendix A. This document shows the sampling locations, rationale, methods, and duration for the PDI. The ISS Treatability Study Work Plan is provided in Appendix B. This document describes the purpose rationale of the treatability testing, the parameters to be tested, and test methods to be used. The goal of the ISS Treatability Study is to determine a cost effective design mix that meets or exceeds the ISS remedial goals for hydraulic conductivity and strength.

The design will address subsurface structures and possible obstructions that could interfere with the ISS process. The subsurface structures will be removed during the initial pre-excavation thereby removing subsurface structures. The presence of cobbles, boulders and other natural obstructions will be investigated in the PDI will be addressed in the design specifications.

The results of the PDI will be provided in a PDI report at the conclusion of this work and prior to the submittal of the final design documents.

3.2.3 Site preparation

The Site will be prepared for the required remedial actions and restoration work. The Site preparation activities include: mobilization; 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; demolition of existing structures, such as the storage building within the OU-2 area, and implementation of traffic controls.

Any monitoring wells that will be damaged during the remedy implementation will be removed in their entirety or abandoned per the NYSDEC guidance and policies 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.

3.2.4 Excavation

Pre-excavation will be conducted in all ISS areas to accommodate the clean soil cover and the spoils generated during the ISS process. For design purposes, the volume of spoil material has been estimated to be on the order of 25 percent of the stabilized volume. The clean soil cover consist of a minimum of 12 inches meeting the commercial requirements for cover material set forth in 6 NYCRR Part 375-6.7(d), will be placed over a demarcation layer. Only the volume of soil necessary to account for the ISS spoil material and the 4 foot frost protection layer will be required to be excavated. The additional volume of soil to be excavated to account for the ISS spoil material will be targeted to accessible areas of highly contaminated material both above and below the water table. A sloped or benched excavation will be utilized. The depth of the pre-excavation will be limited in order to eliminate and/or minimize the need for excavation shoring and to minimize the amount of dewatering necessary to complete the work.

The proposed limits of ISS and pre-excavation are shown on Figure 2, as set forth in the ROD. The OU-1 area covers approximately 44,000 square feet and the OU-2 area has a footprint of approximately 16,000 square feet. In general, the ISS will extend to the underlying silt/clay confining layer, which varies from approximately 20 feet up to 40 feet below grade. The final vertical and lateral limits of ISS will be developed during the remedial design, following the pre-design investigation.

Available information indicates that the upper pre-excavation materials are not heavily impacted with MGP residuals. Excavated materials that are below the site cleanup criteria set forth by the ROD may be stockpiled and evaluated for reuse as backfill material for the frost protection layer on the Site. 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. The PDI results will provide an indication whether any of the pre-excavation materials are suitable for reuse. The final clean soil cover must satisfy the requirements of Part 375-6 for both the on-site and off-site criteria, as presented in the ROD.

In addition to the pre-excavation, some excavation may be required to aid in the ISS process. An excavator will be required to remove underground obstructions that prevent ISS installation from being advanced to the design depth, to the extent practicable.

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

3.2.5 In-situ solidification design

The basis for the ISS design will be the creation, to the extent practicable, of a solid, soil-cement-bentonite monolith within the ISS footprint specified in the ROD, and extending from the excavated soil elevation (approximately 4 feet below existing ground surface) to 4 feet into the silt/clay layer along the perimeter of the ISS footprint and 2 feet into the silt/clay layer in the interior portion of the ISS footprint. The treated monolith will be constructed by in-situ mixing of site soils with additives such as Portland cement or blast furnace slag cement. Additives may also be required to promote workability and prevent organic compounds from interfering with the reactions. Proprietary additives may include softening agents, retarders or plugging or bridging agents that are added to the water or grout mixture. Installation and mixing methods may include, but not be limited, to auger mixing, excavator or “bucket” mixing, and jet grouting.

During the remedial design a treatability study will be conducted to determine minimum design parameters (types of additives that are compatible with site soils and contamination) for the binder mix for the ISS. Bench-scale stabilization testing will be performed by contractor to finalize a binder mixture that can be used to solidify the affected areas of the Site. The bench scale testing shall use MGP source materials and contaminated site soils taken from known sections of the ISS area that contain visible product or sheen, are oil saturated, or contain elevated BTEX and PAH concentrations. This will result in the development of a conservative or worst case, mixture. Field and laboratory quality assurance/quality control testing will be performed to ensure that the remedial goals for the ISS process are achieved, as further described in Section 5.

The ISS implementation will be phased, so as to allow continued access to the process equipment area and truck exit of the Site. The phasing of the work will be finalized during the remedial design.

3.2.6 Utility relocation

During the ISS work, the overhead electrical lines along the west side of OU-2 and the buried utilities along the east side of OU-1 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. Options include relocation, by-pass pumping or jet grouting of the utility corridors.

3.2.7 Streambank

The streambank of the West Branch of Tioughnioga River may be affected as part of the ISS work. The 50% Design Report evaluate the impacts to the streambank and will include the following:

- Meeting the substantive requirements of 6NYCRR Part 608 Use and Protection of Waters;
- Protection of the West Branch of Tioghnioga River during construction activities; and
- Restoration of the streambank

3.2.8 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 and off-site disposal facility scheduling issues, and in order to consolidate large amounts of waste material for bulk truck shipments, waste material may be stored 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 unimpacted 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 in an attempt 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.

It is assumed that the composition of the excavated soils will meet the requirements of the NYSDEC guidance, 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. The soils within the Site will be pre-characterized during the PDI. Pre-characterization will facilitate the profiling and pre-acceptance of the materials to the NYSEG-approved disposal facilities. Excavation below the water table will be necessary to remove portions of the former MGP facilities and foundations. Therefore, the design will address contingency 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).

3.2.9 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 DEC TAGM 4061.

The soils within the Site will be pre-characterized during the PDI. Pre-characterization will facilitate the profiling and pre-acceptance of the materials to disposal facilities permitted to accept such material. Once the soils are pre-characterized and accepted they can be direct loaded from the excavation into transport trucks or stockpiled on the Site to expedite the excavation process.

3.2.10 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.

3.2.11 Excavation dewatering and water management

The vast majority of the excavations will take place above the ground water table to minimize the amount of construction water requiring treatment and/or disposal. Any construction water that is generated during the excavation process or ISS process, 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.

3.2.12 Site restoration

Following excavation and ISS 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 or to the requirements of any entity that will be developing the site following remediation, should one be identified prior to site restoration.

Pursuant to the ROD, the top 12 inches of the on-site area will be backfilled with material that meets the commercial requirements for cover material set forth in 6 NYCRR Part 375-6.7(d), will be placed over a demarcation layer At both on-site and off-site areas, the clean soil cover will be underlain by a demarcation layer (e.g., orange plastic snow fence). The purpose of the demarcation layer is to distinguish between the cover soils, and soils exceeding the requirements for clean cover soils and/or solidified material.

Frac tanks may be necessary on site for water management purposes. Surface drainage will be evaluated as part of the restoration design.

3.2.13 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™.

3.2.14 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 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, ISS processing, 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.

3.2.15 Noise and vibration evaluation

The planned remediation activities, including excavation and ISS, have the potential to generate noise and vibrations. The potential for noise and vibration impacts associated with the remediation process will be evaluated following the pre-design activities.

3.2.16 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 on-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.

3.2.17 Decontamination

During and upon completion of the investigation and excavation phases of the project, 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 ISS equipment will occur at the completion of the excavation and ISS 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 is assumed to be negligible compared to equipment decontamination water and stormwater removal 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, 2010), 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 will disturb an area greater than one acre in size. Therefore, the substantive requirements of the SPDES General Construction Stormwater Permit GP—0-08-001 from Construction Activity (GP-02-01, April 2008) will be need to be met. Additionally the work to be completed in the Right-of-Way of US Route 11 will require a Highway Work Permit obtained through NYSDOT Region 3. An Army Corp of Engineers Nationwide Permit will be required if work is to be performed within the mean high water of the West Branch of Tioughnioga River; the need for the Nationwide Permit will be determined during the 50% remedial design. 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 prior to any remedial activity. 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 pre-excavation and ISS portion 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;
- Field verification by the Engineer of excavation, ISS, and placed material depths, areas, and volumes; and
- Performance testing of solidified soils.

5.1.1 In-situ solidification quality assurance

The Contractor will be required to provide a specific ISS mix design with identification of the reagents and their sources. The primary means of quality assurance/quality control during the ISS process will be the observations of the ongoing process by the field construction manager. Samples will be collected and tested for the performance criteria once per day at a minimum with the final sampling frequency addressed in the 50% design. If excessively wet subsurface conditions are observed, then additional samples will be collected. The Contractor will recover the mixed soil samples at the direction of the Engineer. The Engineer will form the sample cylinders and submit them for analysis. Extra sample cylinders will be formed to allow for repeat testing should it be necessary. Solidified material that does not meet the performance criteria will be reprocessed until the performance criteria are met. The Contractor is responsible for meeting the project's performance requirements:

- Unconfined Compressive Strength: A minimum UCS of 50 pounds per square inch (psi) will be required. The maximum allowable value will be 500 psi. UC strength (ASTM D2166) will be used as a field quality control parameter.
- Permeability: A maximum allowable permeability of 1x10-6 cm/sec will be required. Permeability (ASTM D5084) will be used as an indicator of contaminant leaching potential and to demonstrate uniformity of the solidified soil mixture. Low permeability values will inhibit contaminant transport from the solidified soil mass.
- Contaminant Leaching: Contaminant leaching will be determined by using the modified static leaching test (ANSI/ANS-16.1) for BTEX and site-related TPAHs on raw "untreated" soil and on solidified soil samples from the bench-scale stabilization test. The static leaching test data will be evaluated to determine the reduction in contaminant leaching for each binder mixture. A target percent reduction (and binder mixture) for the field demonstration and mass production work will be determined by NYSEG in conjunction with NYSDEC and NYSDOH based on the stabilization test data. The target contaminant leaching reduction will consider cost of the binder mixture and ease of pumping during mass production work.

- Bulk Density: This parameter will be measured (ASTM D1556) to provide an indication of mixing consistency and volume increase.

These goals will be further evaluated and defined in the ISS PDI Report, based on the ISS Treatability Study, and a comparison to the hydraulic conductivities of the existing Site materials to be measured in the PDI.

6.0 Remedial Design Deliverables

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

- RDWP (this document).
- PDI Report.
- 50% remedial design submittals.
- 100% remedial design submittals and associated supporting documents.

6.1 Design deliverables

The anticipated list of specifications for the 50% draft design and 100% final design is as follows:

Division 1 Specifications – General requirements

- Summary of Work
- Work Restrictions
- Contract Modification Procedures
- Measurement and Payment
- Payment Procedures
- Project Management and Coordination
- Construction Progress Documentation
- Submittal Procedures
- Regulatory Requirements
- Health and Safety Requirements
- Mobilization and Temporary Facilities
- Erosion and Sedimentation Controls
- Surveying
- Closeout Procedures

Division 2 Specifications – Site work

- Protection of Existing Site Infrastructure
- Building and Subsurface Demolition (if necessary)
- Construction Water Collection and Disposal
- Excavation
- ISS Implementation
- Off-site Transportation and Disposal
- Decontamination
- Odor and Vapor Control
- Backfilling and Grading
- Parking Lot Pavement
- Planting and Seeding

The anticipated list of drawings for 100% design is:

- Title Sheet and Index
- Legend and General Notes
- Site Preparation, and Erosion and Sediment Control (Site layout and infrastructure)
- Transportation Plan
- Existing Conditions, Extent of Pre-Excavation, and Extent of ISS

- Utility Relocation Plan
- Erosion and Sediment Control Details (silt fence, construction entrance, stockpiling, and decontamination pad construction)
- ISS and Pre-Excavation Limits
- ISS and Pre-Excavation Cross Sections
- ISS and Pre-Excavation Details
- Site Restoration and Grading
- Restoration Cross Sections

This list is preliminary and subject to change as the design process proceeds. Additional drawings for the available off-site areas may be submitted as an addendum to the 100% design.

7.0 Public Information

NYSEG intends to keep the Village of Homer 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 3. Updates to this schedule will be submitted to the NYSDEC periodically when and if changes occur. The schedule for the pre-excavation and ISS work will be defined in the remedial design.

9.0 References

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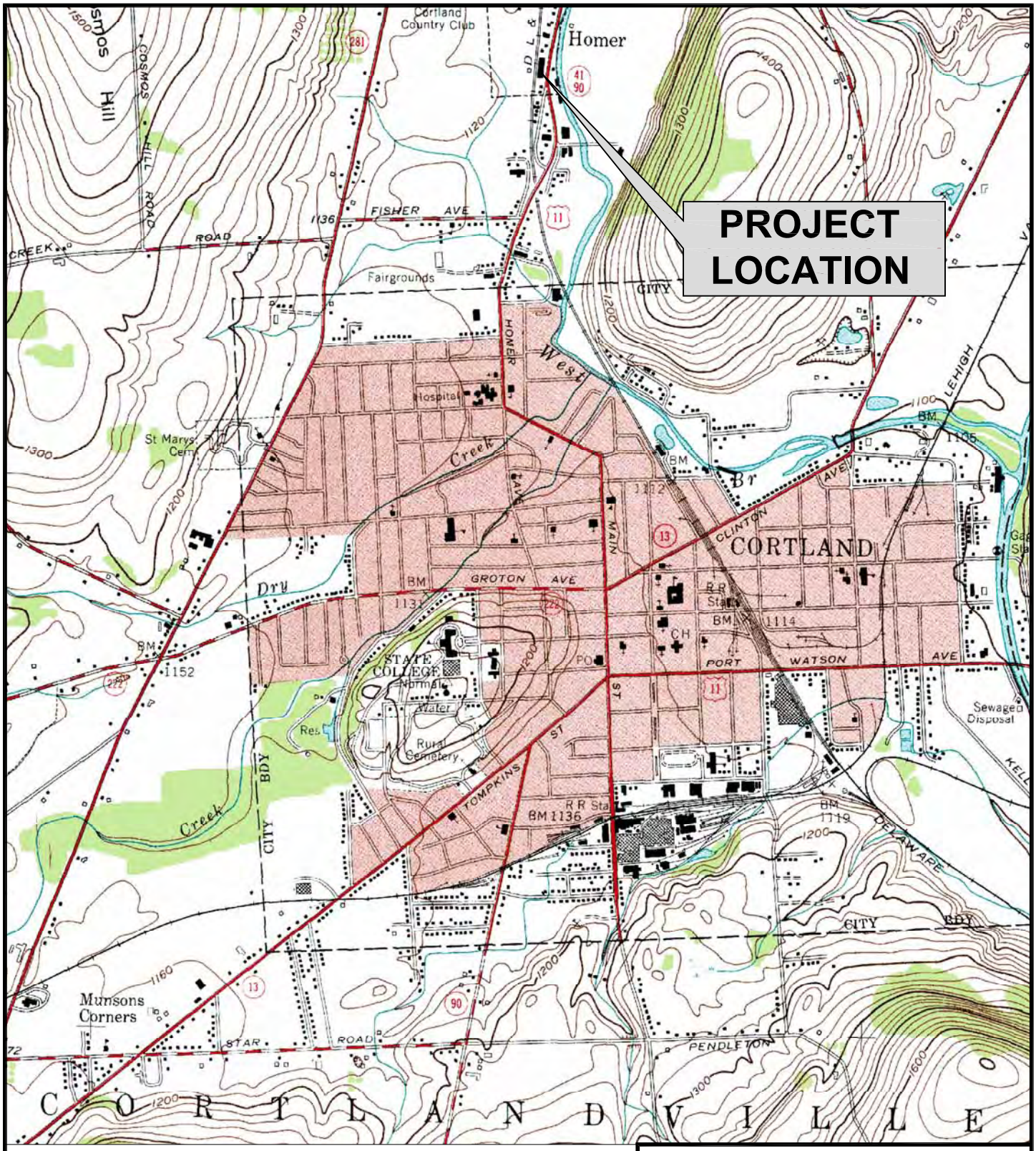
URS Corporation, 2004. Feasibility Study Report, NYSEG Cortland/Homer Former MGP Site, Cortland County, New York. April.

Figures



SOURCE: USGS 7.5 MINUTE QUADRANGLE CORTLAND SERIES

0' 1000' 2000' 4000'

AECOM

PROJECT LOCATION PLAN
FORMER CORTLAND-HOMER MGP SITE

NEW YORK STATE ELECTRIC & GAS
HOMER, NEW TORK

FILE NAME:	DRN	PROJECT NO.	DATE	FIGURE NO.
HOMER-SITE_LOC.dwg	—	102050	2/2011	1

Plotted By: meisterk
Layout--Sheet Name: 1--ISS-REMEDY
Plot File Date Created: Jan/18/2011 1:18 PM

Filename: L:\WORK\102050\CADD\NYSEG-HOMER\ROD-MOD-ISS\HOMER-SITE_LOC.DWG

GROCERY STORE (BUILDING TO REMAIN)

STORAGE BARN (PREVIOUSLY REMOVED TO TOP OF ASPHALT WEARING SURFACE)

I.D. BOOTH BUILDING (PORTION PREVIOUSLY REMOVED TO TOP OF EXISTING CONCRETE SLAB)

MKR-05-0765

MKR-2364

MKR-05-0762

MKR-2365

MKR-2366

GRAVEL PARKING

GROCERY STORE

4415

STORAGE BARN

4419

FORMER RR SIDING

FORMER COAL STORAGE SHED

OU-1

I.D. BOOTH

FORMER BUILDINGS

VERIZON

PAVED PARKING

FORMER GAS HOLDER

FORMER GAS HOLDER

216

FORMER PURIFYING HOUSE

PAVED

UTILITY CORRIDOR

HOMER AVENUE

SOUTH MAIN STREET/U. S. ROUTE 11

PAVED PARKING

PAVEMENT

GATE

GRAVEL

217A

217

OU-2

CTL-3

PARKING

4408

SAT DISH

VAULT 1

215

LEGEND

SOILS CONTAINING TOTAL SVOCS ABOVE RECOMMENDED CLEAN-UP OBJECTIVES (TAGM 4046) (FROM URS FEASIBILITY STUDY, EXTENT OF SOIL CONTAMINATION, FIGURE 6)

PROPOSED ISS AREA

PROPOSED JET GROUT AREA (UTILITY CORRIDOR)

PROPOSED CUTOFF WALL

CB CATCH BASIN

MH EXISTING SANITARY MANHOLE

TEST STATION

CONTROL POINT

TELEPHONE MARKER

TELEPHONE MANHOLE

IRON PIN

GV GAS VALVE

WV WATER VALVE

UTILITY POLE (CARRYING OVERHEAD UTILITIES, NOT SHOWN)

LIGHT

0' 15' 30' 60'

MAPPING REFERENCE:

1. BASE MAPPING, INCLUDING EXISTING UTILITY INFORMATION, PROVIDED NEW YORK STATE ELECTRIC & GAS (NYSE&G)

2. ADDITIONAL EXISTING SANITARY SEWER INFORMATION, INCLUDING R.O.W. AND EASEMENT INFORMATION TAKEN FROM A PLAN TITLED " VILLAGE OF HOMER, NEW YORK, SANITARY SEWER CONSTRUCTION, 24" TRUNK SEWER, SOUTH MAIN STREET, DATE LAST REVISED 5/18/1971, BY STEARNS AND WHEELER, CAZENOVIA, NY.

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VERIFY SCALE IF PLAN SHEET IS REDUCED — 1 INCH

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DES BY: ---
CHK BY: ---
APP BY: ---

AECOM

NYSEG - REMEDIAL DESIGN FOR FORMER CORTLAND-HOMER MGP SITE
HOMER, NEW YORK

IN SITU SOLIDIFICATION REMEDY LAYOUT

PROJECT START DATE (M / Y)
FEBRUARY 2011

PROJECT NO.
102050

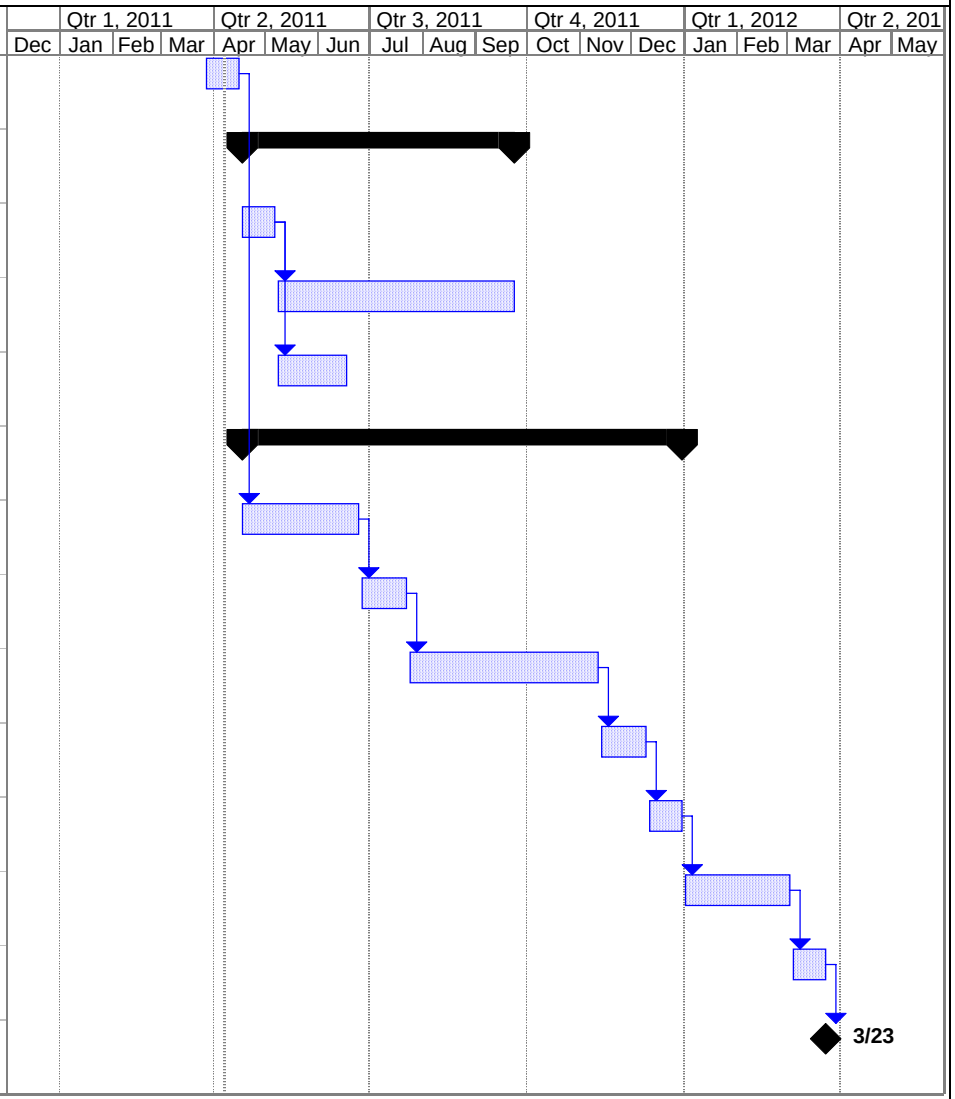
FILENAME
ROD-MOD-ISS.dwg

SHEET NO.
02

DRAWING NO.
02

Figure 3
Remedial Design Schedule
Cortland-Homer MGP Site

ID	Task Name	Duration	Start	Finish
1	Final Remedial Design Work Plan	15 days	Mon 3/28/11	Fri 4/15/11
2	**Predesign Investigation**	**115 days**	**Mon 4/18/11**	**Fri 9/23/11**
3	Install Borings	15 days	Mon 4/18/11	Fri 5/6/11
4	ISS Treatability Study	100 days	Mon 5/9/11	Fri 9/23/11
5	Analytical Results	30 days	Mon 5/9/11	Fri 6/17/11
6	**Remedial Design**	**185 days**	**Mon 4/18/11**	**Fri 12/30/11**
7	50% Remedial Design	50 days	Mon 4/18/11	Fri 6/24/11
8	NYSDEC Comments	20 days	Mon 6/27/11	Fri 7/22/11
9	100% Remedial Design	80 days	Mon 7/25/11	Fri 11/11/11
10	NYSDEC Comments	20 days	Mon 11/14/11	Fri 12/9/11
11	Final Design and Bid Package	15 days	Mon 12/12/11	Fri 12/30/11
12	Contractor Bidding	45 days	Mon 1/2/12	Fri 3/2/12
13	Selection of Contractor	15 days	Mon 3/5/12	Fri 3/23/12
14	Initiate Remedial Action	0 days	Fri 3/23/12	Fri 3/23/12



Remedial Design Schedule
Date: Thu 4/7/11

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

Appendix A

Pre-Design Investigation Field Sampling and Analytical 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 60135689
April 2011

Appendix A

Pre-Design Investigation Field Sampling and Analytical Plan
Cortland-Homer Former MGP Site
Homer, New York
NYSDEC Site # 7-12-005

Final

AECOM Environment

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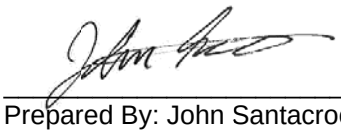
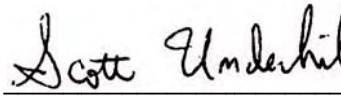
Final



Prepared By: John Santacroce



Reviewed By: Scott Underhill, P.E.

Contents

List of Appendices

1.0 Introduction

This Field Sampling and Analytical Plan (FSAP) presents the sampling locations, rationale, field methods, and laboratory methods to be used for the pre-design investigation (PDI) to support the design of the excavation and in-situ solidification (ISS) activities planned as the first phase of the remedy at the Cortland-Homer former manufactured gas plant (MGP) site (the Site), located in Homer, New York. Soil samples will be collected to provide waste characterization data for soils to be removed prior to ISS, and also to provide soil to be used in the ISS treatability study.

1.1 Overview of Field Activities

The following field activities will be performed as part of the PDI:

- Soil Boring Installation – There will be 28 soil borings advanced, with 14 soil samples collected for waste characterization and additional samples collected for ISS treatability and defining the limits of ISS.
- Surveying – The locations and elevations of the PDI sampling points will be surveyed.

The remainder of this document is organized as follows:

Section 2 describes the general field guidelines to be followed during the work.

Section 3 describes the field sampling rationale, protocol, and methods.

Section 4 describes the laboratory methods for waste characterization.

Section 5 describes sample tracking and custody procedures.

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 investigation 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 Community 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 PDI 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.

Real time monitoring will be performed at upwind and downwind stations for VOCs and particulates during drilling activities.

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 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.

Particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. Each particulate monitor will be calibrated daily with a filtered air sample. Each air monitoring instrument will be continuously downloaded and saved electronically to a dedicated computer located on-site.

The table below describes the action levels for perimeter particulate air monitoring and the associated responses to each level.

Action Level	Response
Downwind particulate concentrations 100 ug/m^3 greater than upwind particulate monitor sustained over 15 minute average	Dust suppression techniques are employed
Downwind particulate concentrations 150 ug/m^3 greater than upwind particulate monitor sustained over 15 minute average	Work halted and dust suppression techniques evaluated. Work continues once dust suppression techniques are proven successful

2.4 Investigation-derived Waste Management

All investigation-derived waste (IDW) generated during the PDI 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" and temporarily stored pending characterization and proper disposal. Depending upon the results of the characterization sampling, the drummed soils may be re-used on site as backfill following the ISS work, or they may be disposed off site at a facility permitted to accept such material.

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

2.5 Site Survey

Following completion of the PDI, all boring locations will be surveyed by AECOM for elevation and location. This information will be merged with existing base map information to allow preparation of a revised base map for the Site.

3.0 Field Investigation Methods

3.1 Required Equipment and Standard Procedures

- Field book;
- Project plans;
- PPE in accordance with the HASP;
- Stakes, flagging, and marking paint;
- Plastic bags for soil screening samples;
- Tape measure;
- Decontamination supplies;
- Water level indicator;
- Photo ionization detector (PID) with a 10.2 or 10.6 eV lamp;
- Camera;
- Clear tape, duct tape;
- Laboratory sample bottles and ISS bulk sample containers with plastic liners;
- Coolers and ice; and
- Shipping supplies.

The sampling program will use roto-sonic and hollow stem auger (HSA)/split spoon sampling equipment to collect the soil samples. Generally accepted procedures for soil sampling, equipment decontamination, sample labeling, chain-of-custody (COC), and shipping procedures will be followed, as detailed in the Standard Operating Procedures.

3.2 Soil Boring Installation

The field investigation will include the installation of 28 soil borings at the Site in order to:

- Characterize the top 6 feet of soil for off-site disposal in accordance with the requirements of the receiving facility;
- Further delineate the extent of the subsurface impacts requiring ISS;
- Collect sample volume for the ISS treatability study; and,
- Collect additional information on the subsurface geology at the Site to aid in the ISS design.

The proposed boring locations are presented on Figure A1. These locations may be moved based on field observations.

A majority of the borings will be completed using a roto-sonic drill rig. To ensure maximum recovery and maintain the integrity of the soil interval, the borings will be advanced using a dual tube system. The dual tube system includes an over-ride casing and an inner core barrel. The inner core barrel will

GROCERY STORE
(BUILDING TO REMAIN)

STORAGE BARN
(PREVIOUSLY REMOVED TO TOP OF ASPHALT WEARING SURFACE)

I.D. BOOTH BUILDING
(PORTION PREVIOUSLY REMOVED TO TOP OF EXISTING CONCRETE SLAB)

STORAGE BARN

GROCERY STORE

FORMER RR SIDING

FORMER COAL STORAGE SHED

OU-1

NYSEG

FORMER GAS HOLDER

FORMER GAS HOLDER

FORMER BUILDINGS

I.D. BOOTH

FORMER PURIFYING HOUSE

EAST HOMER AVENUE

SOUTH MAIN STREET / U.S.ROUTE 11

NYSEG

OU-2

LEGEND

- CB — CATCH BASIN
- MH — EXISTING SANITARY MANHOLE
- TEST STATION
- CONTROL POINT
- TELEPHONE MARKER
- TELEPHONE MANHOLE
- IRON PIN
- GV — GAS VALVE
- WV — WATER VALVE
- UTILITY POLE (CARRYING OVERHEAD UTILITIES, NOT SHOWN)
- LIGHT
- APPROXIMATE PROPERTY BOUNDARY
- FORMER MGP STRUCTURE
- MW-25 — EXISTING MONITORING WELL LOCATION
- SB-20 — EXISTING SOIL BORING LOCATION
- TP-4 — EXISTING TEST PIT LOCATION
- SOILS CONTAINING TOTAL SVOCS ABOVE RECOMMENDED CLEAN-UP OBJECTIVES (TAGM 4046) (FROM URS FEASIBILITY STUDY, EXTENT OF SOIL CONTAMINATION, FIGURE 6)
- PROPOSED ISS AREA
- PROPOSED JET GROUT AREA (UTILITY CORRIDOR)
- PROPOSED CUTOFF WALL
- PROPOSED SOIL BORING FOR ISS LIMIT SAMPLING (SONIC DRILLING)
- PROPOSED SOIL BORING FOR ISS LIMIT SAMPLING AND WASTE CHARACTERIZATION (SONIC DRILLING)
- PROPOSED SOIL BORING FOR ISS LIMIT SAMPLING (HOLLOW STEM AUGER DRILLING)
- PROPOSED SOIL BORING FOR ISS LIMIT SAMPLING AND WASTE CHARACTERIZATION (HOLLOW STEM AUGER DRILLING)

MAPPING REFERENCE:

1. BASE MAPPING, INCLUDING EXISTING UTILITY INFORMATION, PROVIDED NEW YORK STATE ELECTRIC & GAS (NYSE&G)

2. ADDITIONAL EXISTING SANITARY SEWER INFORMATION, INCLUDING R.O.W. AND EASEMENT INFORMATION TAKEN FROM A PLAN TITLED " VILLAGE OF HOMER, NEW YORK, SANITARY SEWER CONSTRUCTION, 24" TRUNK SEWER, SOUTH MAIN STREET, DATE LAST REVISED 5/18/1971, BY STEARNS AND WHEELER, CAZENOVIA, NY.

3. LOCATION OF EXISTING OR PREVIOUS MONITORING WELLS, SOIL BORINGS AND TEST PITS FROM PLAN TITLED FIGURE 6, FORMER MGP FS EXTENT OF SOIL CONTAMINATION BY URS

0' 15' 30' 60'

DESCRIPTION	DRN	CHK	DATE (M/D/Y)	REV
VERIFY SCALE IF PLAN SHEET IS REDUCED — 1 INCH —				

DRN BY: KAM | DES BY: --- | CHK BY: --- | APP BY: ---

AECOM

NYSEG - REMEDIAL DESIGN FOR FORMER CORTLAND-HOMER MGP SITE HOMER, NEW YORK

PROPOSED SOIL BORING LOCATIONS FOR IN SITU SOLIDIFICATION (ISS)

PROJECT START DATE (M / Y)	FEBRUARY 2011
PROJECT NO.	102050
FILENAME	ROD-MOD-ISS.dwg
SHEET NO.	A1
DRAWING NO.	**A1**

Plotted By: meisterk
Plot File Date Created: Apr/06/2011 4:16 PM
Layout-Sheet Name: PDI-LAYOUT
Filename: L:\WORK\102050\CADD\NYSEG-HOMER\ROD-MOD-ISS\OLD\ROD-MOD-ISS.DWG

be advanced using high frequency vibration and minimal down pressure. The over-ride casing will then be advanced to the depth of core barrel to prevent borehole collapse and ensure the integrity of the sample intervals. Continuous samples will be collected from ground surface to at least 2 feet into the top of the silty clay.

A portion of the soil borings will be conducted utilizing HSA drilling with continuous split spoon sampling. The purpose of these borings is to collect geotechnical data (blow counts) in support of the ISS design as well as collecting soil samples for laboratory analysis. Using the same methodology as the roto-sonic borings, the HSA borings will be completed a minimum of 2 feet into the top of the silty clay.

The soil samples will be logged, recording such data as the presence of fill material or subsurface obstructions, the nature of each geologic unit encountered, observations regarding moisture content, the PID readings, and visual and olfactory observations regarding the presence of hydrocarbon-like residuals. Blow counts will be recorded for the geotechnical borings. The soil cores will be screened for volatile organic vapors using a PID.

3.2.1 Waste Characterization Sampling

The samples collected for waste characterization data will be representative of the upper 6 feet of soil, in accordance with the requirements of the receiving facility. The receiving facility will be an off-site disposal or treatment facility licensed and approved to accept the soils from the Homer site. These facilities typically require one sample per 750 tons of soil to be characterized therefore, a total of 14 waste characterization samples will be collected for analysis.

At each boring location, a single, discrete sample for volatiles analysis will be selected from the section of the macrocores with the highest reading. If NAPL or tar-like residuals are encountered in the selected sample, this will be noted on the chain of custody in consideration of laboratory instrument limitations, and submitted for analysis.

For all other (non-volatiles) samples, three subsamples, one from the 0 to 2 foot interval, one from the 2 to 4 foot interval, and one from the 4 to 6 foot interval, will then be collected for homogenization into one representative sample. Subsamples will be collected from the most impacted portion of the intervals based on the PID screening and field observations (visual and olfactory) regarding the presence of MGP-related residuals. The subsamples will be placed in a large stainless steel collection vessel and thoroughly mixed. A representative sample of the mixed soil will then be collected for non-volatiles laboratory analysis.

The samples will be sent to the contract laboratory for analysis as indicated in Section 4.0.

3.2.2 Limits of In-situ Soil Stabilization Sampling

A total of 21 soil borings will be conducted at OU-1 and 8 soil borings at OU-2 for the purpose of defining the limits of the ISS. Characterization will be based on one sample per 500 cubic yards. In general, one composite soil sample will be collected for laboratory analysis from each 5 foot interval of boring advancement starting at 6 feet bgs. Samples will be collected from the most impacted portion of the 5-foot intervals based on PID screening and field observations (visual and olfactory) regarding the presence of MGP-related residuals. The samples will be placed in a large stainless steel collection vessel and thoroughly mixed. A representative sample of the mixed soil will then be collected for laboratory analysis.

If non aqueous phase liquid (NAPL) is detected at any interval in the soil boring then samples may not be collected from that boring. Treatment through ISS will be required to the top of the silty clay will be assumed at these locations unless the NAPL impacts occur only at a shallow enough interval (e.g., within the top 10 to 12 feet) that the impacts can be removed by an excavator.

3.2.3 In-situ Soil Stabilization Treatability Study Sampling

The ISS treatability study will be used to demonstrate the ability of the ISS technology to meet the remedial goals for this site. Conventional ISS materials such as portland cement and bentonite clay will be mixed with soil samples representing the predominant soil types found within the zone targeted for ISS. The bulk soil samples will be mixed in a controlled manner to determine the percentage of additives required to meet the established parameters for unconfined compressive strength and permeability.

The ISS treatability study program will take into account the site-specific soil types focusing on the glacial outwash consisting of sandy gravel and silt. This unit is underlain by a silt and clay layer of unknown thickness which appears to be a competent and continuous barrier to downward migration of impacts. These predominant soil types are overlain by a layer of anthropogenic fill which ranges in thickness from 6 inches to 10 feet at the site. Most of the fill layer will be removed during the excavation phase. Therefore, the treatability study will focus on the glacial outwash unit. Additional details regarding the ISS treatability study are provided in Appendix B of the Remedial Design Work Plan.

3.2.4 In-situ Solidification Treatability Soil Sampling Locations and Methods

The samples collected for ISS treatability data will be representative of the interval from 6 feet to the top of the lower silt and clay layer, which is as deep as approximately 40 feet below ground surface. These samples will be collected from boring locations as shown in Figure A1.Based on field observations, the locations of these borings may be moved slightly.

The soil samples will be logged, recording such data as the presence of fill material or subsurface obstructions, the nature of each geologic unit encountered, observations regarding moisture content, the PID readings, and visual and olfactory observations regarding the presence of MGP residuals. Each soil core screened for volatile organic vapors using a PID. At each boring location, the following three soil types will be identified:

- Type 1: Soil identified as outwash sandy gravel in the SRI cross sections (represent a majority of the soil to be solidified);
- Type 2: Fill material similar to the fill encountered in the upper 4 to 10 feet

For collection of the bulk soil samples, each of these soil types will be collected from each of the borings, if present. Each soil type bulk sample will then be placed in a large stainless steel collection vessel and thoroughly mixed. A representative sample of each mixed soil will then be placed to fill two lined, 5 gallon, gasketed, sealable plastic containers, and shipped to the geotechnical testing facility.

4.0 Analytical Program for Characterization Sampling

The laboratory chemical analyses to be performed are summarized in the following table:

Table 4-1
Sample tracking and custody

Sample Type	Matrix	Holding Time	Method
Waste Characterization Sampling			
TCLP VOCs	Soil	14 days (TCLP extraction); 7 days (after extraction)	U.S. EPA Method 1311/8260B
TCLP SVOCs	Soil	14 days (extraction); 40 days (after extraction)	U.S. EPA Method 1311/8270C
TCLP Metals	Soil	180 days (TCLP extraction)	U.S. EPA Method 1311/6010B
TCLP Herbicides	Soil	14 days (TCLP extraction); 7 days (preparative extraction); 40 days (after extraction)	U.S. EPA Method 1311/8151A
TCLP Pesticides	Soil	14 days (TCLP extraction); 7 days (preparative extraction); 40 days (after extraction)	U.S. EPA Method 1311/8081A
Total PCBs	Soil	40 days	U.S. EPA Method 8082
Ignitability (Flashpoint)	Soil	N/A	U.S. EPA Method 1010
Corrosivity (as pH)	Soil	7 days	U.S. EPA Method 9045C
Reactive Sulfide	Soil	7 days	U.S. EPA Method 8030B/9034
Reactive Cyanide	Soil	14 days	U.S. EPA Method 9012A
Limits of ISS Sampling			
PAHs	Soil	14 days	U.S. EPA Method 8270C
Reactive Sulfide	Soil	7 days	U.S. EPA Method 8030B/9034
Reactive Cyanide	Soil	14 days	U.S. EPA Method 9012A

At least 14 samples representative of the upper 6 feet of soil will be analyzed for waste characterization data in accordance with the requirements of the receiving facility. These samples will be analyzed for full RCRA Hazardous Characteristics testing. The objective of the sampling will be to profile the soil for waste disposal. The samples will be chosen from the most impacted soil collected during the investigation as determined by the field geologist. The hazardous characteristics testing will include the analysis as indicated in Table 4-1 above.

Up to 140 samples may be collected for defining the limits of the ISS. The soil samples will be analyzed for PAHs, reactive cyanide, and reactive sulfide as indicated Table 4-1. The extent that the concentrations of these compounds are over the remedial goals (e.g., PAHs above 500 mg/kg) will define the extent of the area to be stabilized.

The chosen laboratory for the project will be certified, and maintain certification, under the NYSDEC Environmental Laboratory Approval Program (ELAP) and the NYSDOH ELAP Contract Laboratory Program (CLP) for analyses of solid and hazardous waste.

All sampling equipment will be properly decontaminated before being reused. Samples will be collected in pre-cleaned sample containers provided by the laboratory performing analysis with any necessary preservations added to the sample containers at the laboratory prior to sample collection. Coolers with ice will be used to store samples at 4 degrees Centigrade until delivered to and analyzed by the laboratory.

Holding times for the samples are given in Table 4-1. COC procedures will be followed to document that contamination of samples has not occurred during container preparation, shipment, and sampling.

5.0 Sample Tracking and Custody

5.1 Introduction

This section presents sample custody procedures for both the field and laboratory. Implementation of proper custody procedures for samples generated in the field is the responsibility of field personnel. Both laboratory and field personnel involved in the COC and transfer of samples will be trained on the purpose of the COC and specific procedures prior to implementation.

Evidence of sample traceability and integrity is developed by implementation of, and adherence to, the COC procedures. These procedures document the sample traceability from the selection and preparation of the sample containers by the laboratory, to sample collection, to sample shipment, to laboratory receipt and analysis. A sample is considered to be in a person's custody if the sample is:

- In a person's possession;
- Maintained in view after possession is accepted and documented;
- Locked and tagged with Custody Seals so that no one can tamper with it after having been in physical custody; or
- In a secured area which is restricted to authorized personnel.

5.2 Field sample custody

A COC record accompanies the sample containers from selection and preparation at the laboratory, during shipment to the field for sample containment and preservation, and during return to the laboratory. Triplicate copies of the COC must be completed for each sample set collected.

The COC lists the field personnel responsible for taking samples, the project name and number, the name of the analytical laboratory to which the samples are sent, and the method of sample shipment. The COC also lists a unique description of every sample bottle in the set. If samples are split and sent to different laboratories, a copy of the COC record will be sent with each sample.

The REMARKS space on the COC is used to indicate if the sample is an MS/MSD, or any other sample information for the laboratory. Since they are not specific to any one sample point, trip and equipment blanks are indicated on separate rows. Once all bottles are properly accounted for on the form, a sampler will write his or her signature and the date and time on the first RELINQUISHED BY space. The sampler will also write the method of shipment, the shipping cooler identification number, and the shipper air bill number on the top of the COC. Errors will be crossed out with a single line in ink and initialed and dated by the author.

One copy of the COC is retained by sampling personnel and the other two copies are put into a sealable plastic bag and taped inside the lid of the shipping cooler. The cooler lid is closed, custody seals provided by the laboratory are affixed to the latch and across the back and front lids of the cooler, and the person relinquishing the samples signs their name across the seal. The seal is taped, and the cooler is wrapped tightly with clear packing tape. It is then relinquished by field personnel to personnel responsible for shipment, typically an overnight carrier. The COC seal must be broken to open the container. Breakage of the seals before receipt at the laboratory may indicate tampering. If tampering is apparent, the laboratory will contact the Project Manager, and the sample(s) will not be analyzed.

5.3 Laboratory sample custody

The Project Manager or Field Team Leader will notify the laboratory of upcoming field sampling activities and the subsequent shipment of samples to the laboratory. This notification will include information concerning the number and type of samples to be shipped as well as the anticipated date of arrival.

The following laboratory sample custody procedures will be used:

- The laboratory will designate a sample custodian who will be responsible for maintaining custody of the samples and for maintaining all associated records documenting that custody.
- Upon receipt of the samples, the custodian will check cooler temperature, and check the original COC documents and compare them with the labeled contents of each sample container for correctness and traceability. The sample custodian will sign the COC record and record the date and time received.
- Care will be exercised to annotate any labeling or description errors. In the event of discrepant documentation, the laboratory will immediately contact the Project Manager or Field Team Leader as part of the corrective action process. A qualitative assessment of each sample container will be performed to note any anomalies, such as broken or leaking bottles. This assessment will be recorded as part of the incoming COC procedure.
- The samples will be stored in a secured area and, if required, stored at a temperature of 4°± 2° C.
- A laboratory tracking record will accompany the sample or sample fraction through final analysis and final storage for control.
- A copy of the tracking record will accompany the laboratory report and will become a permanent part of the project records.

Appendix A1

Health and Safety 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 60135689
April 2011

Appendix A1

Health and Safety Plan
Cortland-Homer Former MGP Site
Homer, New York
NYSDEC Site # 7-12-005

Final

AECOM Environment

Prepared for:
New York State Electric and Gas Corp
18 Link Drive
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Latham, NY
Project 60135689
April 2011

Appendix A1

Health and Safety Plan
Cortland-Homer Former MGP Site
Homer, New York
NYSDEC Site # 7-12-005

Final

Prepared By: John Santacroce

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 D 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 Pre-Design Investigation (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 former Cortland-Homer Manufactured Gas Plant (MGP) located at 216 South Main Street in the Village of Homer, Cortland 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 pre-design investigation (PDI) at the former Cortland-Homer MGP (the "Site") on behalf of NYSEG. The Site (NYSDEC Site # 7-12-005) is located at 216 South Main Street, Village of Homer, Cortland County, New York.

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

The primary constituents of concern are benzene, toluene, ethylbenzene, and xylenes (BTEX), volatile organic compounds (VOCs), semi-VOCs, polycyclic aromatic hydrocarbons (PAHs), reactive cyanide, and reactive sulfide in the groundwater and subsurface soils.

The primary objectives of the Record of Decision issued for the Site in March 2007, include the elimination or reduction, to the extent practicable:

- Exposures of persons at or around the site to site-related constituents, VOCs, SVOCs and PAHs, in groundwater and subsurface soils;
- The release of contaminants from soil into groundwater that may create exceedances of groundwater quality standards;
- The release of contaminants from subsurface soil under buildings into indoor air through soil vapor; and
- Migration of coal tar beyond the site boundary.

Further, remediation objectives for the site include the attainment to the extent practicable:

- Ambient groundwater quality standards

The following sections detail the methods and procedures to be used during the investigation.

2.1.3 General Scope of Work

The scope of this project is to complete a PDI to support the design of the excavation and in-situ solidification (ISS) activities planned as the first phase of the remedy at the Site. The following field activities to be performed during the PDI include:

- Oversight of soil boring installation – There were be 29 soil borings advanced, with soil samples collected for waste characterization, extent on ISS limits, and ISS treatability study; and

- Surveying – The locations and elevation of the PDI sample locations will be surveyed by AECOM.

Services to be provided by the subcontractor include use of roto-sonic drilling with a dual tube sampling system and hollow stem augers (HSA) with split spoon samplers.

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 – John Santacroce

Project Manager – Scott Underhill

Site Manager – Keith Stahle (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. 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. No work is anticipated in the roadway of Freemans Bridge Road; therefore, no flaggers will be utilized.

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

AECOM has prepared this site specific health and safety plan in accordance with federal regulations and its corporate standards and policies. It is the intent of AECOM to perform the contracted scope of work according to the Standard this HASP. No additional client-specific safety requirements are anticipated.

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 Soil Boring Installation

The proposed scope of work includes installation of soil borings using hollow-stem auger (HSA) and roto-sonic methodology. Soil borings will be advanced to continuously sample and screen soils potentially impacted by non aqueous phase liquid (NAPL). Cuttings will also be screened for VOCs using a photoionization detector (PID). Soil samples will be analyzed for full RCRA Hazardous Characteristics testing and for PAHs, reactive cyanide, and reactive sulfide. 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. AECOM personnel will oversee the drilling subcontractor and locate all borings and wells.

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

5.1.2 Surveying

AECOM will provide non-intrusive land surveying services to survey the locations and elevations of the soil borings installed during the PDI. 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:

- Roto-sonic Drilling (includes soil borings and drum handling); and
- HSA Drilling (includes soil borings and drum 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.

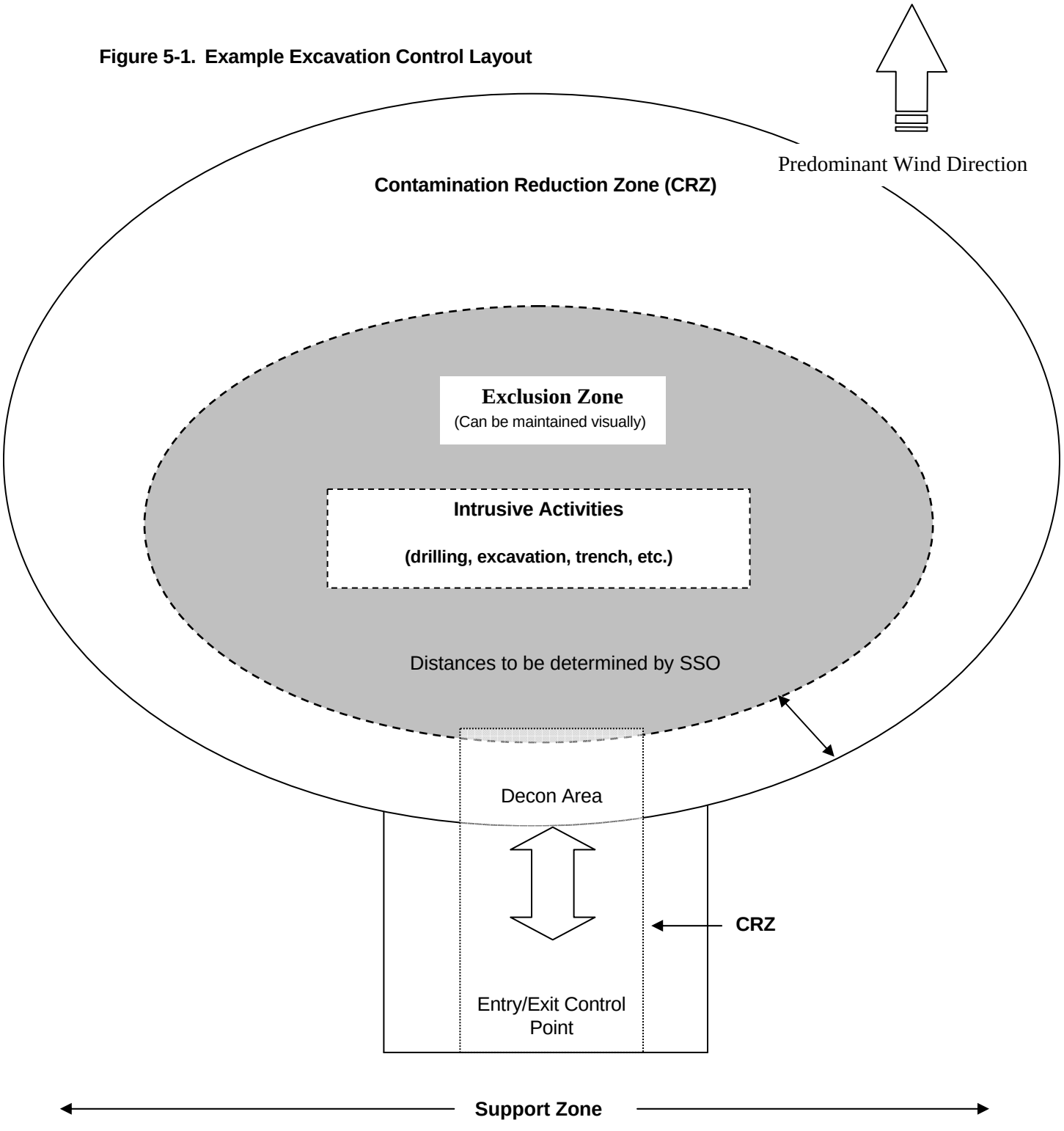
5.7 Decontamination

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 at upwind and downwind monitoring stations as described in Section 2.3 of the Pre-Design Investigation Sampling and Analysis 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

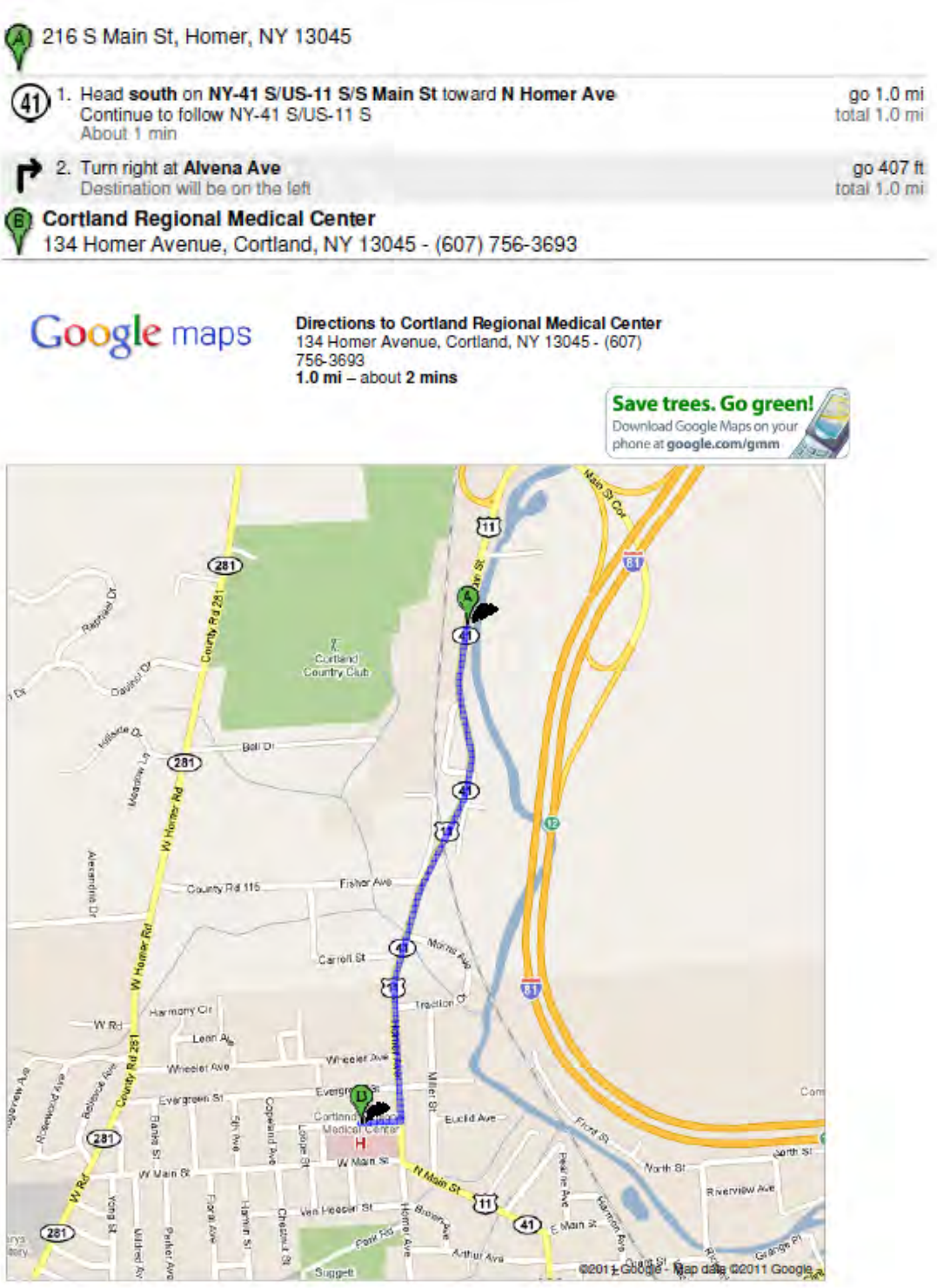
AECOM will utilize the following Emergency Contact List provided below to contact other parties regarding site specific emergencies and non-emergencies when necessary. This Emergency Contact List will be posted in all field trailers near telephone locations and hard copies will also be provided to all 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
Homer Fire Department (non-emergency), Homer Fire District			607-749-3121
Homer Police Department (non-emergency)			607-749-2022
Cortland Regional Medical Center 134 Homer Avenue, Cortland, New York 13045			607-756-3500
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



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

AECOM TECHNICAL SERVICES NORTHEAST, INC.
FORMER CORTLAND-HOMER MANUFACTURED GAS PLANT
TASK HAZARD ANALYSIS FORM

ADMINISTRATIVE INFORMATION

Job/Task Name: Boring Installation and Soil Sampling – Roto Sonic Drill and Hollow Stem Auger

Project Name: Former Cortland-Homer MGP	Project Location: Homer, New York
Project Manager: Scott Underhill	Analysis adapted by: Mark Howard
Date Job/Task to be performed:	Type of Job/Task: ☒ One time ☐ Routine job/task
Responsible Organization:	Job Supervisor:

JOB EVENT SEQUENCE

LIST ONE STEP OF THE JOB FOR EACH LINE. (*ATTACH ADDITIONAL JOB EVENT SEQUENCE FORM(S) AS NECESSARY*) PAGE __1_ OF __1_

1. Conduct a daily tailgate safety meeting	6. Retract inner core or split spoon
2. Don all applicable PPE if haven't done so already	7. Cut liner or split spoon into half
3. Locate and mark out location for boring installation	8. Take PID readings and check dust meter
4. Barricade area and position rig over the new well location	9. Examine and log soil
5. Advance dual coring/tube system or augers to desired depth	10. Collect soil samples and soil for headspace analysis

CHEMICAL HAZARDS

- ☐ Asbestos
- ☐ Acids
- ☐ Caustics
- ☐ Chlorinated hydrocarbons (TCE) in groundwater (gw)
- ☒ Lead
- ☐ Gasoline or diesel fuel in gw
- ☒ BTEX in gw
- ☐ Jet fuel (JP-4, JP-5, JP-8) in gw
- ☐ PCBs
- ☐ Cadmium
- ☐ Compressed gases/asphyxiants
- ☒ PAHs
- ☐ Welding fumes
- ☐ Hydrogen sulfide
- ☒ Other metals
- ☐ Bunker fuel/oil
- ☐ Explosives (TNT)
- ☒ Dust
- ☐ Dioxins
- ☐ Pesticides/Herbicides
- ☐ MTBE
- ☐ Methylene chloride
- ☐ Waste oil
- ☒ Hydraulic fluid
- ☒ Petroleum hydrocarbons in gw

PHYSICAL HAZARDS

- ☒ Electricity/High voltage
- ☐ Elevated work areas (fall hazard)
- ☐ Non-ionizing radiation (RF/UV/IR)
- ☐ OE/UXO
- ☒ Hand tool usage
- ☒ Power tool usage
- ☒ Heavy equipment operations
- ☒ Drill rig (HSA, DP, Air Rotary)
- ☐ Excavations (engulfment/collapse)
- ☐ Confined space entry
- ☐ Ionizing radiation
- ☒ Eye hazards (impact, light, etc.)
- ☒ Slips, trips, and falls
- ☒ Hazardous noise
- ☒ Heat or cold stress
- ☐ Oxygen-deficient atmosphere
- ☐ Oxygen-enriched atmosphere
- ☐ Explosive atmosphere
- ☐ Powder-actuated tools
- ☒ Vehicular traffic

Other Chemical/Physical Hazards (*List*): The location of the well to be installed is in a high paced, busy parking lot. Set up a barrier around the work zone with work vehicles and traffic cones. Be sure to put the four-way flashers on for each vehicle.

PERSONAL PROTECTIVE EQUIPMENT (PPE) REQUIRED

Boots:
- ☐ Rubber (safety-toe)
- ☒ Leather (safety-toe)

General:
- ☐ Coveralls _____(*type*)
- ☒ Hearing protection (plugs/muffs)
- ☐ FF APR _____(*cartridges*)
- ☐ ½-face APR _____(*cartridges*)
- ☐ Safety harness & lanyard
- ☒ ANSI approved Hard hat

Eye Protection:
- ☐ Faceshield
- ☒ Safety glasses or goggles
- ☐ Welder's helmet/goggles

Gloves:
- ☒ Chemically-protective Nitrile rubber (*type*)
- ☐ Leather/cloth
- ☐ Welder's

Other (*List*): High visibility outer garment

OTHER SAFETY EQUIPMENT/CONSIDERATIONS

- ☒ Fire ext. _____(*rating*)
- ☒ First-aid kit
- ☐ Dust control/mitigation
- ☒ Portable eyewash
- ☐ Fire watch
- ☒ Traffic control measures

Other (*List*): _____

INSPECT/PERMIT REQUIREMENTS	EQUIPMENT TO BE USED
Inspect all vehicles, rigs, and equipment daily and before each use.	Various rigs and vehicles Power and hand tools

AECOM TECHNICAL SERVICES NORTHEAST, INC.
FORMER CORTLAND-HOMER MANUFACTURED GAS PLANT
TASK HAZARD ANALYSIS FORM

ADMINISTRATIVE INFORMATION	
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Date Job/Task to be performed:	Type of Job/Task: ☒ One time ☐ Routine job/task
Responsible Organization:	Job Supervisor:

APPLICABLE SH&E'S	TRAINING REQUIREMENTS
SH&E 101, SH&E 112, SH&E 113, SH&E 115, SH&E 201, SH&E 303, SH&E 509, SH&E 601, SH&E 607, SH&E 608, SH&E 610, SH&E 615, SH&E 616, SH&E 716, SH&E 726, SH&E 727	40-hr HAZWOPER 8-hr HAZWOPER Supervisor

AIR MONITORING PROCEDURES

No work zone air monitoring is required for this site.

HAZARD MITIGATION PROCEDURES

JOB STEP	HAZARD	MITIGATION
Mobilize/Traverse Site	-Pinch/Crush/Mangle Points -Slips/Trips/Falls -Vehicular Traffic -Biological -Weather -Contact with Utilities	-Set up work area barricade -Use signage -Identify tripping hazards and remove or mark them -Inspect route for holes and obstacles before moving rig -Maintain clear paths around/through work area -Always put rig mast down prior to moving rig -Use spotters whenever rig is in motion -Secure all equipment prior to moving -Be aware of local wildlife and scour for poisonous plants - Do not work out doors when thunder and lightning is observed or other ominous weather patterns.
Raise Mast	-Pinch/Crush/Mangle Points -Contact with Utilities -Weather	-Never use rig/raise mast when there is signs of thunder and lightning -Do not raise mast and/or begin drilling until rig is secured and leveled with jacks -Identify and mitigate any overhead lines prior to start of event -Keep 10 foot clearance from all overhead lines -Be aware of the effects wind may have on utility contact
Drilling Operations	-Pinch/Crush/Mangle Points -Contact with Utilities -Exposure -Hand Injuries -Back Injuries -Hearing Loss -Eye Injuries -Fire/Explosion (Contaminant related)	-Identify any overhead and underground utilities/structures prior to start of event -Rig should be inspected prior to use, using appropriate form. -Test safety shut offs -Keep body parts away from moving parts -Do not wear loose clothing or accessories -Long hair should be secured up -Drill operators should use "show me your hands" method before handling moving parts such as the auger. -Use PID and/or LEL to monitor as appropriate for contaminant -Wear leather gloves when handling equipment -Wear Nitrile gloves to handle contaminated material/equip. -Lift objects by squatting, pulling object to chest and lift with legs -Use two persons to lift object if it is over 49 pounds or is awkward

Appendix B

In-Situ Solidification Treatability 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 60135689
April 2011

Appendix B

In-Situ Solidification Treatability Study Work Plan
Cortland-Homer Former MGP Site
Homer, New York
NYSDEC Site # 7-12-005

Final

AECOM Environment

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

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Appendix B

In-Situ Solidification Treatability Study Work Plan
Cortland-Homer Former MGP Site
Homer, New York
NYSDEC Site # 7-12-005

Final

Prepared By: Matthew Thorpe

Reviewed By: Carsten Floess, P.E.

Contents

1.0 Introduction

This Treatability Study Work Plan (TSWP) presents the rationale, methods, and anticipated results for the bench-scale testing of soil samples from the Homer site to develop the basis for the in-situ solidification (ISS) activities planned as the first phase of the remedy at the Homer former MGP site (the Site), located in Homer, New York. Soil samples to be used in the treatability study will be collected in accordance with a companion document, the Pre-Design Investigation (PDI) Field Sampling and Analytical Plan (FSAP).

1.1 Overview of treatability study activities

The following activities will be performed for the ISS treatability study:

- Initial phase of soil testing prior to addition of solidification agents, including permeability testing of existing (pre-ISS) soils;
- Bench-scale testing, conducted in two additional phases, to determine the appropriate ISS mix design;
- Permeability and strength testing of final mix design to confirm applicability for the range of soil characteristics within the ISS area; and
- Reporting of results.

1.2 Background and treatability study rationale

The ISS treatability study will be used to demonstrate the ability of the ISS technology to meet the remedial goals for the Homer site using actual soils from the Site. These soils will be composited upon collection in order to create a homogenous soil mass that will be representative of the entire site. Representative soil samples will be collect from across the site on both OU-1 and OU-2 during the Pre-Design Investigation. Conventional ISS materials, such as Portland Cement and bentonite clay, will be mixed with soil samples representing range of soil characteristics found within the zone targeted for ISS. The bulk soil samples will be mixed in a controlled manner to determine the percentage (by weight) of additives required to achieve acceptable results. The weight percentages, referred to as the design, can then be cited in the design documents to allow for accurate cost estimates of the ISS process.

The ISS treatability study program will evaluate site-specific variability in the soil types found at the Homer site. The goal of this program is to develop a technically sound mix design that can cost-effectively meet the performance criteria for permeability and strength. Composited soils from the PDI will be retained and provided to the successful bidder (Contractor). In this manner the Contractor will be provided with a portion of the same homogenous site soil mixture used for this Treatability Study to further refine their proposed batch mix design. Prior to mobilization the Contractor will then be required to provide their proposed batch mix design and the method which they will install the required proportions of additives into the ISS treatment area.

The Site has one predominant soil type within the zone targeted for ISS, identified as outwash sandy gravel, in the SRI cross sections. This material is all below the groundwater table (wet) approximately 15 to 30 feet thick. These soils are underlain by a lucustrine silt and clay layer of unknown thickness, which appears to be a competent and continuous barrier to downward migration of impacts. The

underlying confining layer is present at a depth of approximately 20 to 40 feet below the existing ground surface at the site.

There is an upper layer of fill (sand and gravel) across the site, much of which is not significantly impacted by MGP residuals. Most of this fill material will be removed by the pre-excavation to 4 feet. The thickness varies considerably, with most of it approximately 4 to 10 feet. This fill material constitutes a second soil type to undergo ISS, although only a small volume. The fill is more granular with less silt content than the underlying outwash sandy gravel. Higher silt content affects the solidification process and generally requires a higher proportion of solidification agents. Therefore, the mix design selected for the outwash sandy gravel soils is anticipated to be effective for the fill. This will be confirmed by a set of tests run on a sample of the fill soil using the selected mix design to confirm the effectiveness of the design mix on the fill material.

2.0 In-situ Solidification Treatability Study Program

The treatability study will be conducted in three phases using the samples of the soil collected in accordance with the FSAP. The treatability study testing program, including the estimated number of tests in each phase, is summarized on Table 2-1.

The soil types to be tested include:

- Type 1: Soil identified as outwash sandy gravel in the SRI cross sections (represent a majority of the soil to be solidified);
- Type 2: Fill material similar to the fill encountered in the upper 4 to 10 feet.

An undisturbed sample ad a mixed bulk sample will be provided for each of these soil types.

2.1 Phase I: Initial Testing of Untreated Soils

Due to the gravel type material, no undisturbed soil samples will be collected and therefore, no initial testing will be performed.

2.2 Phase II: Preliminary Solidification Testing

In this phase, the critical soil (Type 1) will be mixed with a wide percentage range of cement and clay additives in order to understand the upper and lower bounds of the solidification performance for these soils. Hydraulic conductivity (falling head permeability) and unconfined compressive strength (UCS) will be added to the battery of tests performed. The hydraulic conductivity method D5084 is the appropriate method specified for low-permeability materials such as the ISS soil-cements. UCS testing will be by method ASTM D 2166 in which test cylinders are broken under compressive loading after 28 days. Additionally preliminary breaks at 7 and 14 days will also be conducted. The early testing, as well as use of pocket penetrometer testing, will be used to provide early indications of the mix design's ultimate performance. For each soil type, the results will be used to select a more narrow range of percentages for optimization. During the course of the testing, at an early stage some mixes may not exhibit acceptable curing characteristics. Further testing on these will be discontinued, so that the study can focus on the more promising mixes. Therefore, the number of tests actually performed may differ from the estimate provided in Table 2-1.

2.3 Phase III: Optimization Testing

In this final phase, a single mix design for soil (Types 1 and 2) will be developed by testing within a more narrow range of percentages of additives. Testing of successful design mixes with varying ratios of water addition will also be performed to understand the ability to adjust water addition in gout mixing during field implementation.

Table 2-1
ISS Testing Program, Homer, NY

Untreated Soil Characterization Phase I	**Test Methods**	**Number of Samples, Soil Type 1**	**Number of Samples, Soil Type 2**
None			
Preliminary Solidification Testing Phase II	**Test Methods**		
Soil pH	U.S. EPA 9045C	12	NT
Grain size and plasticity	ASTM D422/D4318	12	NT
Moisture and density	ASTM D2937/D2216	12	NT
Hydraulic Conductivity	ASTM D5084	12	NT
UCS at 28 days (and preliminary tests)	ASTM D2166	12	NT
Optimization Testing Phase III	**Test Methods**		
Soil pH	U.S. EPA 9045C	6	3
Grain size and plasticity	ASTM D422/D4318	6	3
Moisture and density	ASTM D2937/D2216	6	3
Hydraulic Conductivity	ASTM D5084	6	3
UCS at 28 days (and preliminary tests)	ASTM D2166	6	3

Notes:

ASTM = American Society for Testing and Materials
NT = Not tested. Type 2, fill soil, will be tested using the optimal mix design in Phase III.
UCS = Unconfined Compressive Strength
U.S. EPA = United States Environmental Protection Agency

3.0 Reporting of Results

The results of the treatability testing will be provided in a report, which will include a description of the mixing and testing methods, the results from each phase of the study, the rationale for mix design selection, and the conclusions and recommendations for design specifications and field implementation of the ISS remedy at the Homer site.

Appendix C

Record of Decision Amendment (December 2010)

Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision Amendment

NYSEG Cortland Homer Former MGP Site
Operable Unit No. 1
Village of Homer, Cortland County, New York
Site Number 712005

December 2010

New York State Department of Environmental Conservation
DAVID A. PATERSON, *Governor* PETER M. IWANOWICZ, *Acting Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION AMENDMENT

NYSEG Cortland Homer MGP Site
Operable Unit No. 1
Village of Homer, Cortland County, New York
Site No. 712005

Statement of Purpose and Basis

This Record of Decision (ROD) Amendment presents the selected remedy for the Operable Unit No. 1 of the NYSEG Cortland Homer MGP Site. The selected remedial program was chosen in accordance with the New York State Environmental Conservation Law, 6 NYCRR Part 375, and is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300), as amended.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for Operable Unit No. 1 of the NYSEG Cortland Homer MGP Site and the public's input to the ROD Amendment 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 Amendment.

Description of Selected Remedy

Based on the results of new information from the pre-design investigations completed for the NYSEG Cortland Homer MGP Site and the criteria identified for evaluation of alternatives, the Department has amended the 2007 ROD to require targeted excavation of impacted soils with off-site disposal; performing in-situ solidification of contaminated soils; and containing contaminated soils under major utilities and Route 11. All other elements of the 2007 ROD remain unchanged. The components of the remedy are as follows:

1. A remedial design program to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. Any uncertainties identified during the RI/FS will be resolved.

2. Demolition of the southern portion of the on-site building as necessary to enable the excavation of contaminated soils. The northern portion of the current site building will remain in place. This will require additional construction efforts to shore and support the building's continued use during excavation.

3. Excavation and off-site disposal of existing former MGP structures, debris, piping, and major obstructions, including highly impacted soils in the immediate vicinity of these

structures, to allow in-situ solidification of soils containing greater than 500 ppm total PAHs.

4. In-situ solidification (ISS) of impacted soils. The method of ISS will be determined in the remedial design. The ISS will extend to the approximate vertical and horizontal limits of the excavation indicated in the 2007 ROD, which will be expanded as necessary to include areas of impacted soil containing greater than 500 ppm PAHs. Further delineation of the affected areas will be carried out after the partial building demolition, prior to the start of remedial construction. Solidified soils will be covered by a four-foot layer of soil to protect them from freeze-thaw cycles. To account for the expansion in volume associated with ISS and the four-foot frost protection layer, additional soil will be excavated and the excavated area graded to the required ISS elevation. Only the volume of soil necessary to account for the volume of the expansion associated with the ISS and the 4-foot frost protection layer will be required to be excavated. The additional soil to be excavated to account for the volume expansion associated with ISS and the 4-foot frost protection layer will be targeted to accessible areas of highly contaminated material, both above and below the groundwater table, focusing on soils containing visible coal tar, NAPL, oil, or visible purifier waste. Excavated soil containing these materials or total PAHs greater than 500 ppm will be disposed of at an off-site treatment or disposal facility. Excavated materials not meeting the disposal criteria will be stockpiled and evaluated for re-use on site as needed to establish the ISS elevation.

5. Jet grouting of impacted soils at locations where other ISS methods are not feasible due to the presence of utilities or other potential interferences.

6. Construction of jet-grouted vertical barrier walls beneath Route 11 to divert groundwater flows around potentially impacted soils that will be contained under Route 11.

7. Excavated materials which are below the 500 ppm PAH criteria will be stockpiled and evaluated for reuse on-site. The excavation will be backfilled with stockpiled soils and clean soil as defined in 6 NYCRR 375-6.7(d), graded, and the ground surface will be prepared to meet future land use requirements. A soil cover consisting of a minimum of one foot of soil meeting the commercial requirements for cover material set forth in 6 NYCRR Part 375-6.7(d), will be placed over a demarcation layer. Non-vegetated areas (buildings, roadways, parking lots, etc.) will be covered by a paving system or concrete at least 6 inches thick.

8. To maximize the net environmental benefit, Green remediation and sustainability efforts are considered in the design and implementation of the remedy to the extent practicable, including

    - using renewable energy sources
    - reducing green house gas emissions
    - encouraging low carbon technologies
    - fostering green and healthy communities
    - conserving natural resources

- increasing recycling and reuse of clean materials
- preserving open space and working landscapes
- enhancing recreational use of natural resources
- designing cover systems to be usable for habitat or recreation
- designing storm water management systems to recharge aquifers

9. Soil vapor intrusion in the remaining portion of the building will be evaluated after soil excavation and building modification, with mitigation and/or monitoring as determined to be necessary.

10. Imposition of an institutional control in the form of an environmental easement that will require: (a) limiting the use and development of the property to commercial use, which would also permit industrial use; (b) compliance with the approved site management plan; (c) restricting the use of groundwater as a source of potable water, without necessary water quality treatment as determined by NYSDOH; and (d) the property owner to complete and submit to the Department a periodic certification of institutional and engineering controls.

11. Development of a site management plan which will include the following institutional and engineering controls: (a) management of the final soil cover system to restrict excavation below the soil cover's demarcation layer, pavement, or buildings. 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) continued evaluation of the potential for soil vapor intrusion for any building developed on the site, including provisions for mitigation of any impacts identified; and (c) a monitoring program that contains groundwater monitoring and contingencies to be implemented should the site remedy fail to achieve the remedial action objectives in a timely manner or NAPL is observed in the monitoring wells.

12. NYSEG will provide 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 into place are still in place and are either unchanged from the previous certification or are compliant with the Department-approved modifications; (b) allow the Department access to the site; and (c) state that nothing has occurred that would impair the ability to 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.

DEC 29 2010
Date

Dale A. Desnoyers, Director
Division of Environmental Remediation

RECORD OF DECISION AMENDMENT
NYSEG CORTLAND HOMER FORMER MGP SITE
OPERABLE UNIT NO. 1

Village of Homer / Cortland County/ Registry No. 712005 December 2010

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

1.0 SUMMARY AND PURPOSE OF THE AMENDED REMEDY

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has amended the remedy for the above referenced site. The disposal of hazardous waste at the site has resulted in threats to public health and the environment that are addressed by this Record of Decision (ROD) Amendment. The disposal of hazardous wastes at this site, as more fully described in Sections 2 of this document, have contaminated various environmental media. The remedy, discussed in detail in Section 3, is intended to attain the remedial action objectives identified for this site in Section 4.1 for the protection of public health and the environment. This ROD identifies the selected remedy, summarizes the other alternatives considered, and discusses the reasons for the selected remedy. The Department has selected a final remedy for the site after careful consideration of all comments received during the public comment period.

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

The Department has issued this ROD in accordance with the requirements of New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, 6 NYCRR Part 375.

2.0 SITE INFORMATION

2.1 Site Description

The NYSEG Cortland Homer Former MGP Site is located at 216 South Main Street, in the Village of Homer, Cortland County, New York (see Figure 1), just north of the City of Cortland. The site is approximately 2 acres in area and consists of two adjoining land parcels that are privately owned. The southern parcel is vacant and the northern parcel contains a single story commercial building which is occupied by a general plumbing and electrical supply store and a parking lot.

The site parcels are bordered by New York State (NYS) Route 11 to the east, the New York and Susquehanna railroad line to the west and commercial properties to the north and south. East of NYS Route 11 is the West Branch of the Tioughnioga River. The west bank of the river is approximately 150 feet to the east of the site parcels.

Current land uses adjacent to the site include retail/convenience stores, automotive/equipment repair shops, gasoline service stations and a motel. A private residence and a park with athletic fields are located immediately east of the West Branch of the Tioughnioga River. The Cortland Country Club is located to the west of the site, beyond the railroad line.

Operable Unit (OU) No. 1, which is the subject of this document, consists of the former manufactured gas plant (MGP) and adjacent off-site contaminated soils under NYS Route 11. An operable unit represents a portion of the site remedy that for technical or administrative reasons can be addressed separately to eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination. The remaining operable unit for this site, Operable Unit 2 (OU 2), consists of the parcel of land between the river and NYS Route 11, and includes contaminated sediments in the West Branch of the Tioughnioga River. OU 2 is the subject of a separate ROD that was issued in March 2005. The OU2 ROD included ISS of subsurface soils between Route 11 and the Tioughnioga River and sediment excavation as components of the off-site remedy. Figure 2 presents the operable units of the site and the major site features.

2.2 Site History

In 1858, the NYSEG Cortland- Homer MGP plant was constructed and began supplying manufactured gas to the Village of Homer under the name, "Homer and Cortland Gas Light Company". An MGP is a facility where gas for lighting and heating homes and businesses was produced. Manufactured gas was produced at this site using the coal gasification and carburetted water gas processes. Coal gas was produced on site until 1921, and then carburretted water gas was produced from 1921 to 1932. The gas holder was used until early 1935 for storing natural gas.

In the 1940's, NYSEG partially decommissioned the plant. In 1944 the Brockway Motor Company purchased the subject property and razed the remaining structures. The building that presently stands on the site is presumed to have been built by Brockway Motors and modified by subsequent owners.

2.3 Nature and Extent of Site Contamination

As described in the original ROD and other documents, many surface soil, subsurface soil and groundwater samples were collected at the site to characterize the nature and extent of contamination. The primary contaminants of concern include: volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs). The VOCs of concern include benzene, toluene, ethylbenzene and xylene. These compounds are referred to as BTEX in this document. SVOCs of concern are primarily a group of chemicals referred to as polycyclic aromatic hydrocarbons (PAHs).

Waste Materials

The production of manufactured gas created many by-products, some of which remain on the site. A dense, oily liquid known as coal tar would condense out of the gas at various stages during its production, purification and distribution. Although some of the coal tar produced by plants may have been reused or sold, recovery of the tar was incomplete. Substantial amounts of tar leaked or were discharged from storage and processing facilities over the long life of the plant, contaminating subsurface soils on the site, as well as groundwater. Another by product, purifier waste, was the exhausted lime and/or iron oxide treated wood

chips that were used to remove cyanide and sulfur from the gas. Purifier waste was often discarded on the site of a gas plant or used as a fill material.

The source of much of the BTEX and PAH contamination found on site is the coal tar or non-aqueous phase liquids (NAPL) which is found both in and around the various subsurface structures, or is migrating through the subsurface at the site. The NAPL was found to saturate the unconsolidated deposits and/or exist in scattered, discontinuous globules. Either of these conditions generally coincides with high BTEX and PAH concentrations in soils and typically results in significant contamination to the groundwater as well. Areas with a substantial volume of contaminants have been termed "source areas" and are defined as the locations at the site of former MGP structures and/or those areas of soil which contain significant volumes of coal tar waste or which are saturated with visually observed separate phase product (NAPL). Soils exhibiting odors, staining and/or sheens are not necessarily included in the definition of "source areas." At the site, these "source areas" appear to be directly associated with several of the former plant structures, some of which remain on site below the current ground surface.

Surface Soil

The surface soil for the site is either fill that was placed after MGP operations ceased or asphalt pavement. Site-related constituents were found above analytical detection limits; however, they are orders of magnitude below those found in the waste materials and found in subsurface soil.

Total PAHs (TPAHs) detected in surface (0-1 inch) samples ranged from 1.5 to 34.7 ppm. Two samples collected to represent background ranged from 5.9 to 7.1 ppm for TPAHs. PAHs are common in fuel, asphalt, combustion and coal residues and are therefore common in developed areas.

The following individual compounds and their range of concentrations were found to be above background levels and/or soil cleanup objectives: benzo (a) anthracene (0.6 to 3.6 ppm), chrysene (0.62 to 3.3 ppm), benzo (a, h) fluoranthene (1.4 to 2.5 ppm), benzo (k) fluoranthene (1.9 to 2.1 ppm), benzo (a) pyrene (0.58 to 3.3 ppm), dibenzo (a, h) anthracene (0.034 to 1.1 ppm).

Subsurface Soil

During the RI, approximately 43 subsurface soil samples were collected and analyzed. These samples show that certain areas of the site are heavily impacted by MGP tar and related constituents, while other areas had more discrete impacts.

Contaminant concentrations are generally higher on the site and become more limited in concentration and physical extent to the east of the site building, under New York State Route 11. NAPL observed on the site occurs primarily as saturation of unconsolidated deposits and/or product in discrete horizontal zones, particularly towards the top of the water table and directly above the silty clay unit. PAHs levels in subsurface soils range from non-detect to 60,300 ppm. BTEX levels in subsurface soils range from non-detect to 950 ppm.

Groundwater

The RI identified significant groundwater contamination at the site. This groundwater contamination originates in the area of the former MGP structures under the on-site building and extends beyond the site

property to the West Branch of the Tioughnioga. In the vicinity of the site, the groundwater discharges to the river. Monitoring wells installed on the opposite bank of the river (the east bank) show no impacts from the site.

The contamination in groundwater at the site was found at comparable levels in both the shallow and deep wells at the site. For example, in the well couplet of MW-3, which is screened at 7-12 feet, and MW-24, which is screened at 30-40 feet, the BTEX levels were 5,550 ppb and 3,030 ppb, respectively. The TPAH levels were similarly contaminated at 6,680 ppb and 7,570 ppb, respectively. The principal VOCs detected above groundwater quality standards include benzene, toluene, ethylbenzene, and xylenes (BTEX). The extent of these exceedances is shown in Figure 3. The BTEX compounds are the most mobile of the groundwater contaminants and are often present well above their individual groundwater quality standards in the on-site wells. SVOC groundwater contamination is comprised primarily of PAHs and their distribution in groundwater is similar to the VOC plumes (shallow and deep). The extent of SVOC groundwater contamination is shown in Figure 4.

Soil Vapor/Sub-Slab Vapor/Air

During the RI, air samples were collected with summa canisters to assess potential impacts to indoor air quality and soil vapor. Six indoor air samples from the on-site building were collected and submitted for analysis of volatile organic compounds by analytical method TO-14. BTEX was detected in all of the samples collected. Generally these detections were low and commingled with various chlorinated solvents. Individual concentrations ranged up to 87 ug/m^3 for toluene and 150 ug/m^3 for tetrahydrofuran.

Subsequently, three sub-slab soil vapor grab samples were collected with summa canisters from beneath the site building. These samples found the sub slab vapor to be contaminated with BTEX. The most heavily impacted sample was collected from SB-9, near the relief holder. Values detected in this sample included: 2851 ug/m^3 of BTEX, 173 ug/m^3 of benzene, 60 ug/m^3 of cumene and 1832 ug/m^3 of xylenes.

2.4 Summary of Human Exposure Pathways

This section describes the types of human exposures that may present added health risks to persons at or around OU1. A more detailed discussion of the human exposure pathways can be found in Section 1.2 of the Final Feasibility Study (FS) 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 are documented. An exposure pathway is considered a potential pathway when one or more of the elements currently does not exist, but could in the future.

Potential Exposure Pathways identified are:

- Dermal contact with NAPL, contaminated soil or groundwater;
- Incidental ingestion of contaminated soils or groundwater; and
- Inhalation of contaminated soil vapors or dust.

The potential for exposure to contaminated soil and NAPL is unlikely since contaminated soils are subsurface and the site area is covered by a building, gravel, or grass. However, redevelopment, subsurface utility work or building maintenance work in the future could bring workers into contact with contaminated material or bring contaminated soils to the surface.

Exposure to contaminated groundwater is unlikely since the area is served by public water. However, the potential for exposure to contaminated groundwater in the future exists if a well were installed or construction was to occur below the shallow groundwater table.

There is currently an active industrial building on the site; therefore the potential exists for exposure to indoor air contamination. Sampling indicates the sub slab vapor is contaminated. Indoor air sampling in this building also identified site-related chemicals which may originate from site contamination, as well as from the use of the same chemicals in the current industrial use of the site. For example, chlorinated solvents are attributed to the building's current use since chlorinated solvents are not associated with MGP operations.

2.5 Summary of Environmental Assessment

This section summarizes the existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, as well as damage to natural resources such as aquifers and wetlands. Due to the size and industrial nature of the site there are very limited opportunities for fish and wildlife resources at the OU1 portion of the site. Site contamination at the site has negatively impacted the groundwater resource in the unconsolidated geologic units. This resource is identified as a sole source aquifer, the Homer/Preble aquifer, which provides area residents and businesses with water. The well field that extracts water from the aquifer is located 1.5 miles north of the site. The site has no direct impact on this water supply because of the groundwater flow direction is eastward.

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. These impacts were addressed in the March 2005 Record of Decision for OU2.

2.6 Original Remedy

Based upon the results of the RI/FS and an evaluation of the data, the Department selected a site remedy in 2007 that included:

1. Demolishing the southern portion of the on-site building as necessary to excavate the contaminated soils.

2. Excavating MGP waste, NAPL and contaminated soils meeting one or more of the following criteria: visible tar or oil; the presence of sheens or odors with total PAHs over 1000 ppm; purifier waste with reactive cyanide levels above 250 ppm; or purifier waste with reactive sulfide levels above 500 ppm. Treatment and/or disposal of excavated materials meeting the above criteria would occur at an off-site facility.

3. Extracting and treating groundwater properly during construction in compliance with applicable standards.

4. Stockpiled materials which are below the criteria would be evaluated for reuse on-site. The excavation would be backfilled with stockpiled soils and clean soil, and the ground surface would be prepared to meet future land use requirements. Non-vegetated areas (buildings, roadways, parking lots, etc.) would be covered by a paving system or concrete at least 6 inches thick.

5. Evaluating the potential for soil vapor intrusion in the remaining portion of the building after soil excavation and building modification are completed.

6. Imposition of an institutional control in the form of an environmental easement that restricts the use of the property to industrial/commercial, requires compliance with the site management plan, and requires periodic certification of the effectiveness of the remedy.

7. Development of a site management plan which would include institutional and engineering controls for future use and monitoring at the site. This plan would manage future use and monitor the effectiveness of the soil remediation.

8. The property owner would provide a periodic certification to the Department that the institutional and engineering controls are still in place and are effective.

The current configuration of the original remedy is shown on Figure 5.

3.0 DESCRIPTION OF THE AMENDMENTS TO THE ROD

3.1 New Information

Since the issuance of the FS and ROD, significant new information about the site has been obtained. Groundwater modeling results indicate that contaminated soil which could not be excavated due to the presence of the roadway and critical utilities along the east side of the site would pose an unacceptable source of groundwater contamination and migration if the groundwater continued to pass through it. These utilities include the sanitary sewer that services the Village of Homer, a water main, gas main, telephone line and storm sewer. Information derived from groundwater modeling indicates that targeted excavation and ISS at the OU-1 site offers better long-term groundwater protection by reducing the mobility of the remaining source material. The model results show that the solidification of soils in the OU2 area between Route 11

and the Tioughnioga River would divert groundwater approaching from beneath the site and Route 11. This diversion would increase the velocity of groundwater flow through areas of remaining contamination, and thereby increase the potential for contaminant migration from the unexcavated areas beneath the utility corridor and Route 11. The model further demonstrates that construction of a low permeability ISS area beneath the site would divert groundwater flow around the entire contaminated area. The remaining contamination would be isolated from groundwater flow, and groundwater velocities would be increased only through uncontaminated areas. This approach would better protect groundwater resources and would improve the long-term effectiveness of the remedy.

3.2 Changes to the 2007 ROD

Based on the new information submitted, the Department determined that the requested modification to the 2007 ROD would require a ROD Amendment.

The Department selected the following changes:

1. Excavation and off-site disposal of MGP structures, debris, piping, and major obstructions, including highly impacted soils in the immediate vicinity of these structures, to allow in-situ solidification of soils containing greater than 500 ppm total PAHs.

2. In-situ solidification (ISS) of impacted soils. The method of ISS will be determined in the remedial design. The ISS will extend to the approximate vertical and horizontal limits of the excavation indicated in the 2007 ROD to be expanded as necessary to include areas of impacted soil containing greater than 500 ppm PAHs. Further delineation of the affected areas will be carried out after the partial building demolition, prior to the start of remedial construction. Solidified soils will be covered by a four-foot layer of soil to protect them from freeze-thaw cycles. The top foot of this cover will be soil that meets the restricted commercial requirements for cover material set forth in 6 NYCRR Part 375-6.8(d), which will be placed over a demarcation layer. To account for the expansion in volume associated with ISS and the four-foot frost protection layer, additional soil will be excavated. Only a volume of soil sufficient to account for the volume expansion associated with the ISS and the 4-foot frost protection layer will be required to be excavated. The additional soils to be excavated to account for the volume expansion associated with ISS and the 4-foot frost protection layer will target highly contaminated material that is accessible, both above and below the groundwater table, focusing on soils containing visible coal tar, NAPL, oil, or visible purifier waste. Soil containing these materials or total PAHs greater than 500 ppm will be disposed at an off-site treatment or disposal facility. Excavated materials not meeting these criteria will be stockpiled and evaluated for re-use on site.

3. Jet grouting of impacted soils at locations where other ISS methods are not feasible due to the presence of utilities or other potential interferences.

4. Construction of jet-grouted vertical barrier walls connecting the OU1 and OU2 areas of ISS beneath Route 11 to divert groundwater flows around potentially impacted soils that will remain isolated under Route 11.

The elements of the revised remedy are shown on Figure 6. Other components of the amended remedial

action, including institutional controls to restrict land and groundwater uses, and a site management plan, and groundwater monitoring, will be unchanged from the 2007 ROD.

4.0 EVALUATION OF CHANGES

4.1 Remedial Goals

Goals for the cleanup of the site were established in the original ROD. The goals selected for this site are to eliminate or reduce to the extent practicable:

- Exposures of persons at or around the site to site-related constituents, VOCs, SVOCs and PAHs, in groundwater and subsurface soils;
- The release of contaminants from soil into groundwater that may create exceedances of groundwater quality standards;
- The release of contaminants from subsurface soil under buildings into indoor air through soil vapor; and
- The migration of coal tar beyond the site boundary.

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

- Ambient groundwater quality standards

4.2 Evaluation Criteria

The criteria used to compare the remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites in New York State (6 NYCRR Part 375). For each criterion, a brief description is provided. A detailed discussion of the evaluation criteria and comparative analysis is contained in the original Feasibility Study.

The first two evaluation criteria are called 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.

Both the remedy selected in the 2007 ROD and the selected remedy would be equally protective of human health and the environment since both would remove or address the MGP-contaminated soils, implement long-term groundwater monitoring programs, and establish institutional controls and engineering controls for OU1.

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 most significant SCGs of concern are ambient groundwater quality standards (6NYCRR Parts 700-705) and the 6NYCRR Part 375 Soil Cleanup Objectives (SCOs) pertaining to MGP-related NAPL and PAHs.

The selected remedy would address a greater volume of soil that exceeds the SCOs from the site than the original remedy. The selected remedy would better achieve groundwater quality standards because the solidified material would divert the groundwater around the remaining contaminated soil.

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.

The short-term impacts of vehicle traffic, contaminated material excavation and handling, and soil backfill would represent noise, dust and emission concerns which would need to be controlled with health and safety plans and engineering controls. The amended remedy represents a decrease in short term impacts due to the reduced excavation volume and associated decrease in odors, truck traffic and duration. However, routine procedures will be used to monitor and mitigate odor and dust resulting from the construction activities. The impacts from the ISS will be similar to the impacts for the soils across Route 11.

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.

The excavation and off-site treatment or disposal component of the amended remedy provides a higher degree of long-term effectiveness than on-site containment and collection. The source material above the groundwater table would be excavated and properly disposed off-site for both the amended remedy and the original remedy. The four-foot frost protection layer over the ISS material would ensure that the soil treatment is effective in the long term. The contaminated soils in the utility corridor and under Route 11, which were not addressed by the original remedy, would be addressed by containment under the amended remedy. Therefore, the reliability is greater and the magnitude of risk is lower for the amended remedy as compared to the original remedy.

Both the original and amended remedy would require monitoring of the groundwater. However, the risk associated with the potential release of contaminated groundwater under the amended remedy would be lower than the risk of allowing the contaminated soils in the utility corridor and under Route 11 to remain untreated.

Additionally, the time needed to achieve compliance with groundwater SCGs across the site would be expected to be less than for the amended remedy, due to the ISS of the soils and installing a jet grouted vertical barrier walls within the Route 11 right-of-way to divert groundwater flows around potentially impacted soils under Route 11.

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.

The amended remedy will remove some of the NAPL-contaminated soil for treatment off-site, which would provide a permanent reduction in volume. The remainder would be treated in place to reduce its mobility. By comparison, the remedy selected in the 2007 ROD would excavate a larger portion of contaminated soil and thereby provide a greater reduction in volume. However, the original remedy would have increased the potential mobility of contamination remaining beneath Route 11, while the amended remedy would reduce the mobility of this contamination by isolating it within a solidified area. The amended remedy will therefore provide a greater reduction in mobility than the original remedy.

6. Implementability. The technical feasibility 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.

The ISS and excavation alternatives pose different implementability challenges at this site. Excavation is performed using standard construction techniques and readily-available equipment, while ISS requires specialized equipment and personnel. Excavation at this site is made more difficult by the depth required for excavation and the highly productive groundwater aquifer, which together would require an extensive dewatering and groundwater treatment system. The remedial design of the ROD-specified excavation remedy also identified a number of critical utilities which would have to be avoided or relocated to achieve the remedial goals for the site. The ISS technology does not require excavation dewatering, but is made more difficult by the coarse sand and gravel beneath the site and the potential presence of obstructions, such as former MGP structures and subsurface utilities. Jet grouting around the utilities and beneath Route 11 to create vertical barrier walls is more implementable than excavation of these areas. Based on this evaluation the amended remedy is more readily implementable than the remedy selected in the 2007 ROD.

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

The estimated cost of the amended remedy is $10,800,000. The estimated cost of the original ROD remedy, as determined during the design process and based on current prices, is $13,700,000.

The amended remedy will provide substantial benefit to the environment by addressing a greater volume of contaminated soil, reducing the mobility of residual contamination and shortening the time required for the restoration groundwater quality for this increase in cost.

This final criterion is considered a modifying criterion and is considered after evaluating those above. It is focused upon after public comments on the proposed ROD amendment have been received.

8. Community Acceptance. Concerns of the community regarding the proposed changes have been evaluated. The responsiveness summary (Appendix A) presents the public comments received and the manner in which the Department addressed the concerns raised. The public generally supported the amended remedy.

5.0 SUMMARY OF ROD AMENDMENT

The Department has amended the Record of Decision (ROD) for the NYSEG Cortland Homer Former MGP Site, Operable Unit 1. The selected changes include:

- Reducing the area of excavation to include the former MGP structures, impacted soils in the immediate vicinity of these structures, and targeted soils as necessary to accommodate the volume expansion and four-foot frost protection layer .

- Replacing excavation of the remaining soils with in-situ solidification (ISS). This includes jet grouting at locations where excavation was not specified in the original remedy due to the presence of existing utilities along Route 11 or other potential interferences.

- Lowering the action level for soils to be addressed from 1000 ppm total PAHs to 500 ppm total PAHs.

- Construction of jet grouted vertical barrier walls beneath Route 11 to divert groundwater flows around contaminated soils that remain under Route 11.

The estimated present worth cost to carry out the amended remedy is $10,800,000. The estimated present worth to complete the original remedy was $13,700,000. The cost to construct the amended remedy is estimated to be $10,300,000 and the estimated average annual cost for 30 years is $33,000.

The elements of the amended remedy are as follows:

1. A remedial design program to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. Any uncertainties identified during the RI/FS will be resolved.

2. Demolition of the southern portion of the on-site building as necessary to enable the excavation of contaminated soils. The northern portion of the current site building will remain in place. This will require additional construction efforts to shore and support the building's continued use during excavation.

3. Excavation and off-site disposal of existing former MGP structures, debris, piping, and major obstructions, including highly impacted soils in the immediate vicinity of these structures, to allow in-situ solidification of soils containing greater than 500 ppm total PAHs.

4. In-situ solidification (ISS) of impacted soils. The method of ISS will be determined in the remedial design. The ISS will extend to the approximate vertical and horizontal limits of the excavation indicated in the 2007 ROD, which will be expanded as necessary to include areas of impacted soil containing greater than 500 ppm PAHs. Further delineation of the affected areas will be carried out after the partial building demolition, prior to the start of remedial construction. Solidified soils will be covered by a four-foot layer of soil to protect them from freeze-thaw cycles. To account for the expansion in volume associated with ISS and the four-foot frost protection layer, additional soil will be excavated and the excavated area graded to the required ISS elevation. Only the volume of soil necessary to account for the volume of the expansion associated with the ISS and the 4-foot frost protection layer will be required to be excavated. The additional soil to be excavated to account for

the volume expansion associated with ISS and the 4-foot frost protection layer will be targeted to accessible areas of highly contaminated material, both above and below the groundwater table, focusing on soils containing visible coal tar, NAPL, oil, or visible purifier waste. Excavated soil containing these materials or total PAHs greater than 500 ppm will be disposed of at an off-site treatment or disposal facility. Excavated materials not meeting the disposal criteria will be stockpiled and evaluated for re-use on site as needed to establish the ISS elevation.

5. Jet grouting of impacted soils at locations where other ISS methods are not feasible due to the presence of utilities or other potential interferences.

6. Construction of jet-grouted vertical barrier walls beneath Route 11 to divert groundwater flows around potentially impacted soils that will be contained under Route 11.

7. Excavated materials which are below the 500 ppm PAH criteria will be stockpiled and evaluated for reuse on-site. The excavation will be backfilled with stockpiled soils and clean soil as defined in 6 NYCRR 375-6.7(d), graded, and the ground surface will be prepared to meet future land use requirements. A soil cover consisting of a minimum of one foot of soil meeting the commercial requirements for cover material set forth in 6 NYCRR Part 375-6.7(d), will be placed over a demarcation layer. Non-vegetated areas (buildings, roadways, parking lots, etc.) will be covered by a paving system or concrete at least 6 inches thick.

8. To maximize the net environmental benefit, Green remediation and sustainability efforts are considered in the design and implementation of the remedy to the extent practicable, including

    - using renewable energy sources
    - reducing green house gas emissions
    - encouraging low carbon technologies
    - fostering green and healthy communities
    - conserving natural resources
    - increasing recycling and reuse of clean materials
    - preserving open space and working landscapes
    - enhancing recreational use of natural resources
    - designing cover systems to be usable for habitat or recreation
    - designing storm water management systems to recharge aquifers

9. Soil vapor intrusion in the remaining portion of the building will be evaluated after soil excavation and building modification, with mitigation and/or monitoring as determined to be necessary.

10. Imposition of an institutional control in the form of an environmental easement that will require: (a) limiting the use and development of the property to commercial use, which would also permit industrial use; (b) compliance with the approved site management plan; (c) restricting the use of groundwater as a source of potable water, without necessary water quality treatment as determined by NYSDOH; and (d) the property owner to complete and submit to the Department a periodic certification of institutional and engineering controls.

11. Development of a site management plan which will include the following institutional and engineering controls: (a) management of the final soil cover system to restrict excavation below the

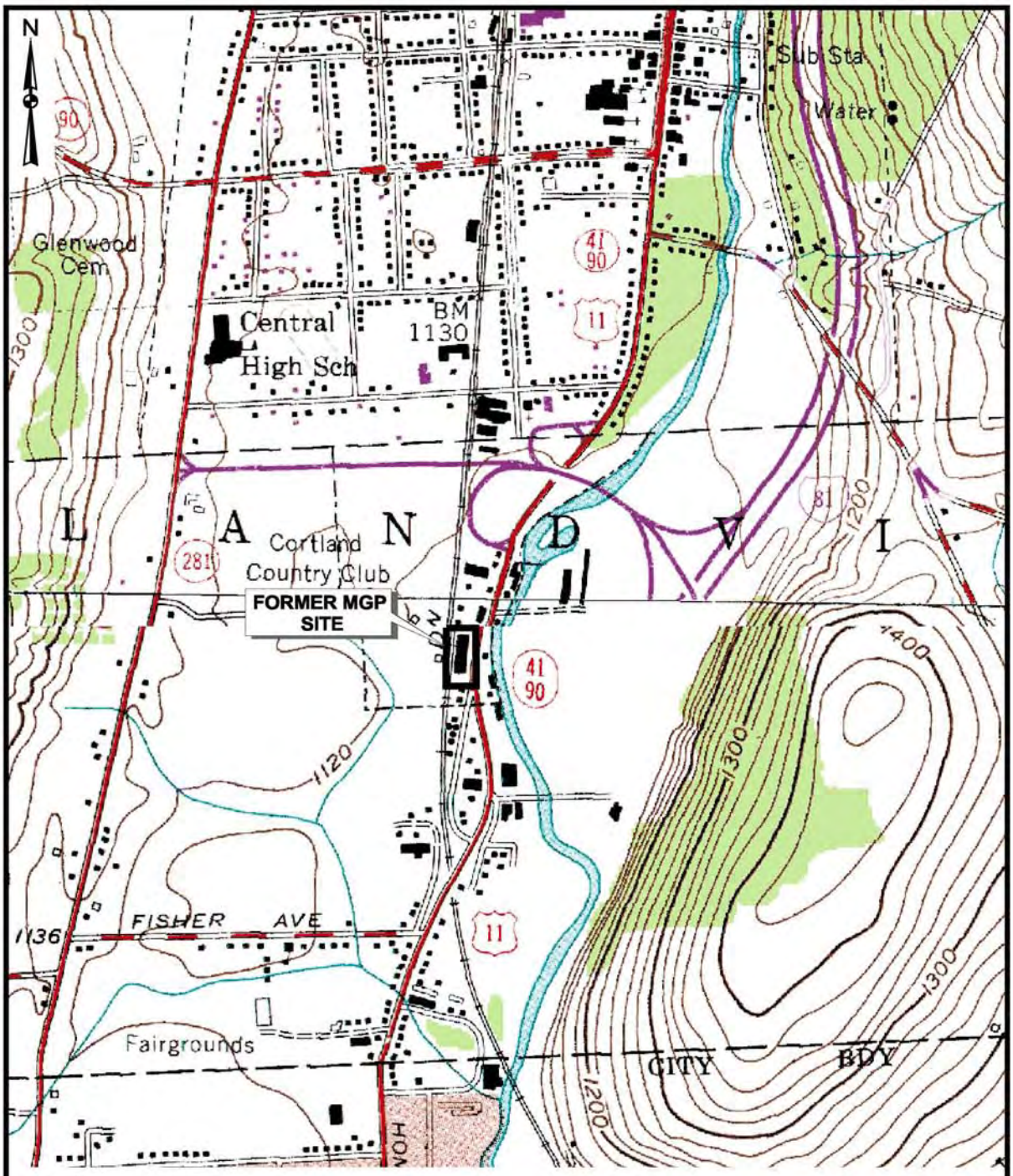
soil cover's demarcation layer, pavement, or buildings. Excavated soil will be tested, properly handled to protect the health and safety of workers and the nearby community, and will be properly managed in a manner acceptable to the Department; (b) continued evaluation of the potential for soil vapor intrusion for any building developed on the site, including provisions for mitigation of any impacts identified; and (c) a monitoring program that contains groundwater monitoring and contingencies to be implemented should the site remedy fail to achieve the remedial action objectives in a timely manner or NAPL is observed in the monitoring wells.

12. NYSEG will provide 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 into place are still in place and are either unchanged from the previous certification or are compliant with the Department-approved modifications; (b) allow the Department access to the site; and (c) state that nothing has occurred that would impair the ability to 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.

6.0 HIGHLIGHTS OF COMMUNITY PARTICIPATION

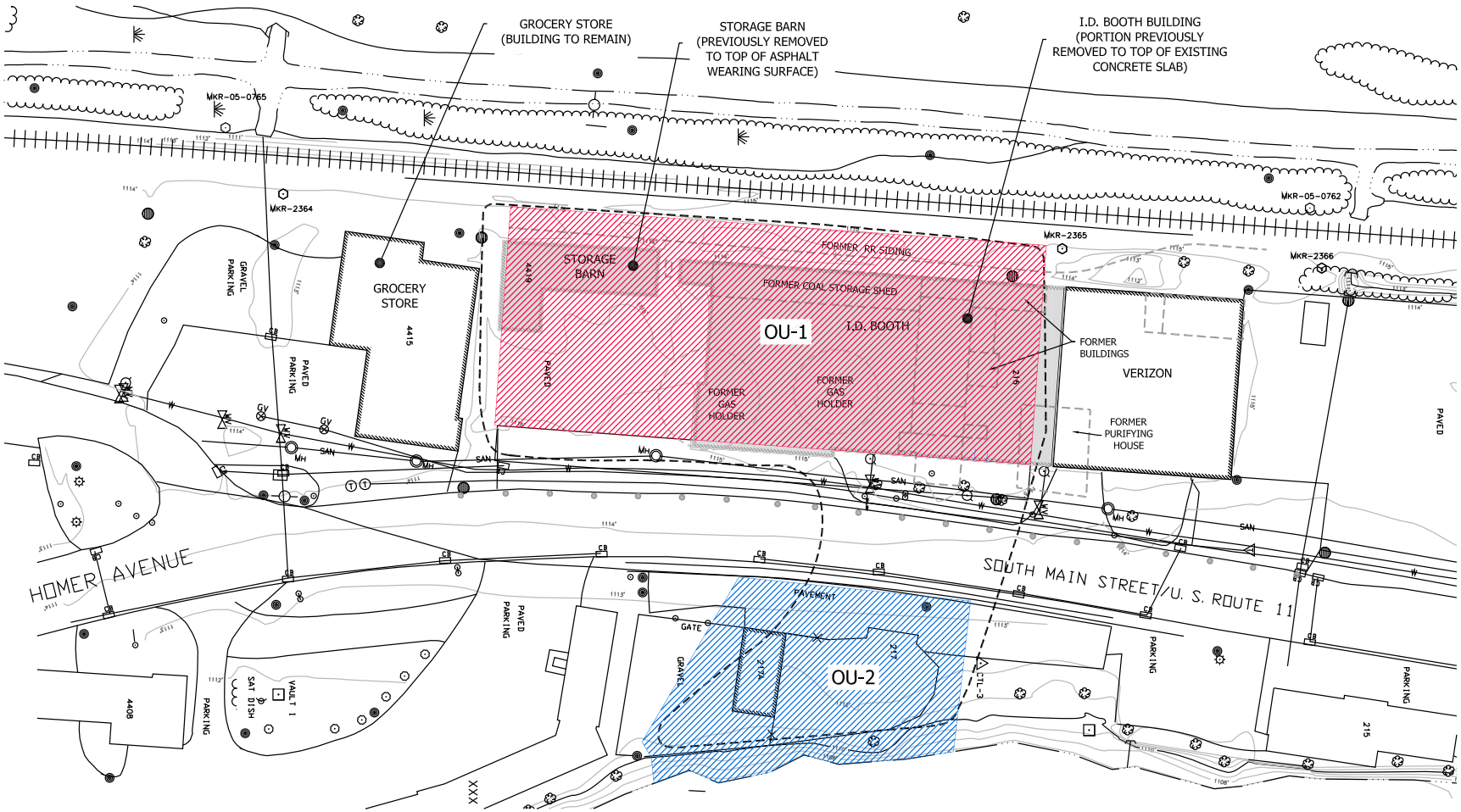
As part of the remedial investigation process, a number of Citizen Participation activities were undertaken to inform and educate the public about conditions at the site and the potential remedial alternatives. The following public participation activities were conducted for the site:

- Repositories for documents pertaining to the site were established.
- A public contact list, which included nearby property owners, elected officials, local media and other interested parties, was established.
- A fact sheet was sent to the mailing list in October 2010 describing the proposed amendment and soliciting public comment.
- A public meeting was held on November 9, 2010 to present and receive comments on the proposed amendment.
- A responsiveness summary (Appendix A) was prepared to address the comments received during the public comment period for the ROD Amendment.



N:\1117323.00000\DB\GIS\nyseg.apr SITE LOCATION
1/26/2004

URS	NYSEG - CORTLAND/HOMER FORMER MGP SITE LOCATION	FIGURE 1



NOTES:

1. BUILDINGS LABELED AS "PREVIOUSLY REMOVED" TO BE REMOVED UNDER A SEPARATE CONTRACT.

2. EXISTING FLOOR SLABS, WEARING SURFACES, FOUNDATION AND OTHER BURIED ITEMS FROM PREVIOUS STRUCTURES, SHOWN OR NOT SHOWN, TO BE REMOVED AND DISPOSED OF UNDER THIS CONTRACT.

3. IN-SITU STABILIZATION AREA SHOWN TO BE INSTALLED IN THE AREA OF EXISTING UTILITIES.SEE DETAILS DWG. 06.

4. FOR INFORMATION ON EXISTING UNDERGROUND UTILITIES SEE DWG. 05.

5. FOR SHEETPILE PHASE LAYOUT INFORMATION SEE DWG. 07.

6. FOR SHEETPILE BRACING AND CONNECTION DETAILS SEE DWG. 08.

MAPPING REFERENCE:

1. BASE MAPPING, INCLUDING EXISTING UTILITY INFORMATION, PROVIDED NEW YORK STATE ELECTRIC & GAS (NYSE&G)

2. ADDITIONAL EXISTING SANITARY SEWER INFORMATION, INCLUDING R.O.W. AND EASEMENT INFORMATION TAKEN FROM A PLAN TITLED " VILLAGE OF HOMER, NEW YORK, SANITARY SEWER CONSTRUCTION, 24" TRUNK SEWER, SOUTH MAIN STREET, DATE LAST REVISED 5/18/1971, BY STEARNS AND WHEELER, CAZENOVIA, NY.

LEGEND

- SOILS CONTAINING TOTAL SVOC'S ABOVE RECOMMENDED CLEAN-UP OBJECTIVES (TAGM 4046) (FROM URS FEASIBILITY STUDY,EXTENT OF SOIL CONTAMINATION, FIGURE 6)
- PROPOSED EXCAVATION AREA (SHEET PILE)
- PROPOSED ISS AREA

- CB — CATCH BASIN
- MH — EXISTING SANITARY MANHOLE
- TEST STATION
- CONTROL POINT
- TELEPHONE MARKER
- TELEPHONE MANHOLE
- IRON PIN
- GV — GAS VALVE
- WV — WATER VALVE
- UTILITY POLE (CARRYING OVERHEAD UTILITIES, NOT SHOWN)
- LIGHT

0' 15' 30' 60'
SCALE

NO	REVISIONS	DRN	CHK	DATE

40 British American Blvd.
Latham, NY
518-951-2200

DRN	KAM
DES	CLW
CHK	SAU
APP	CHF

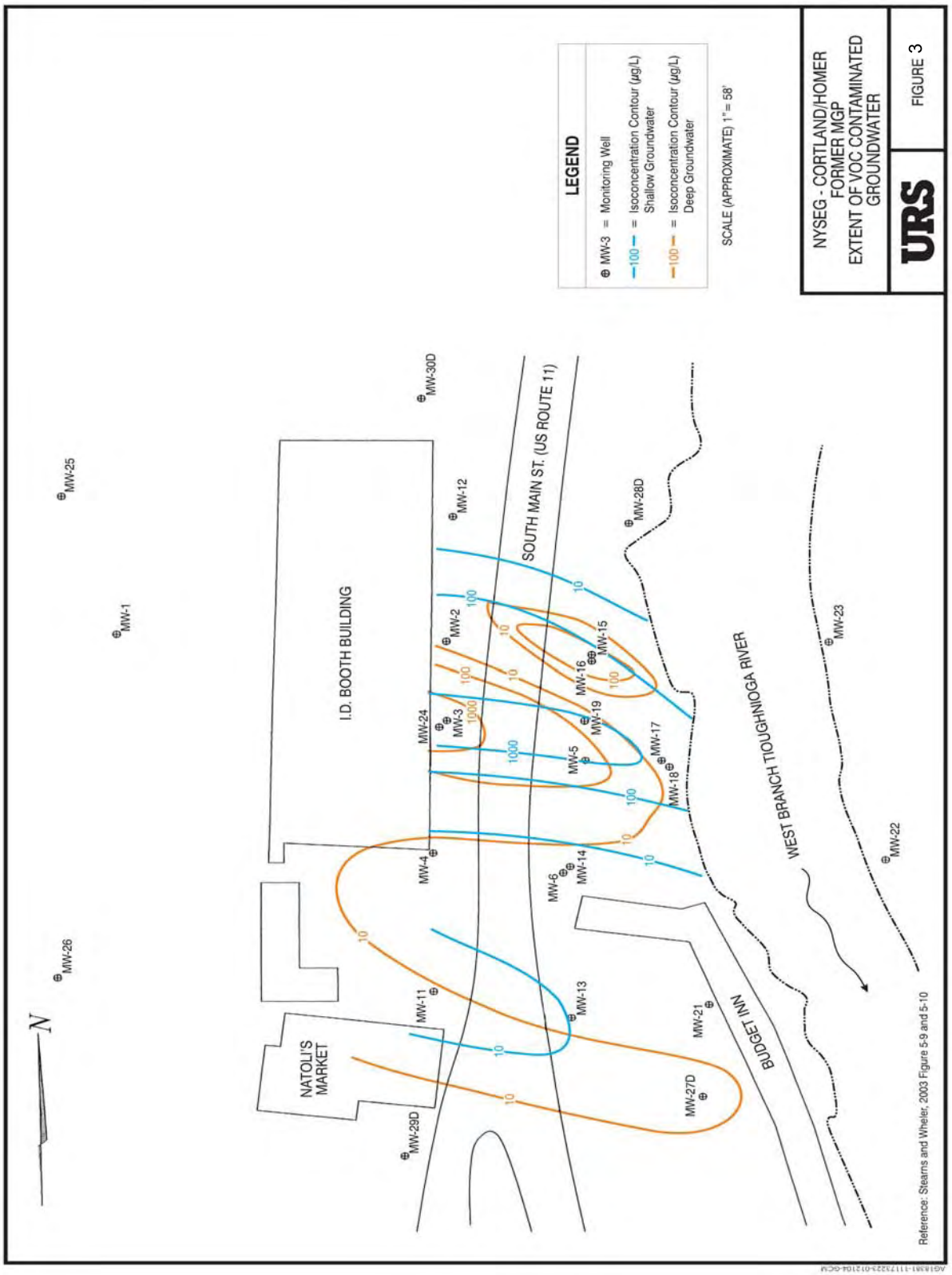
AECOM

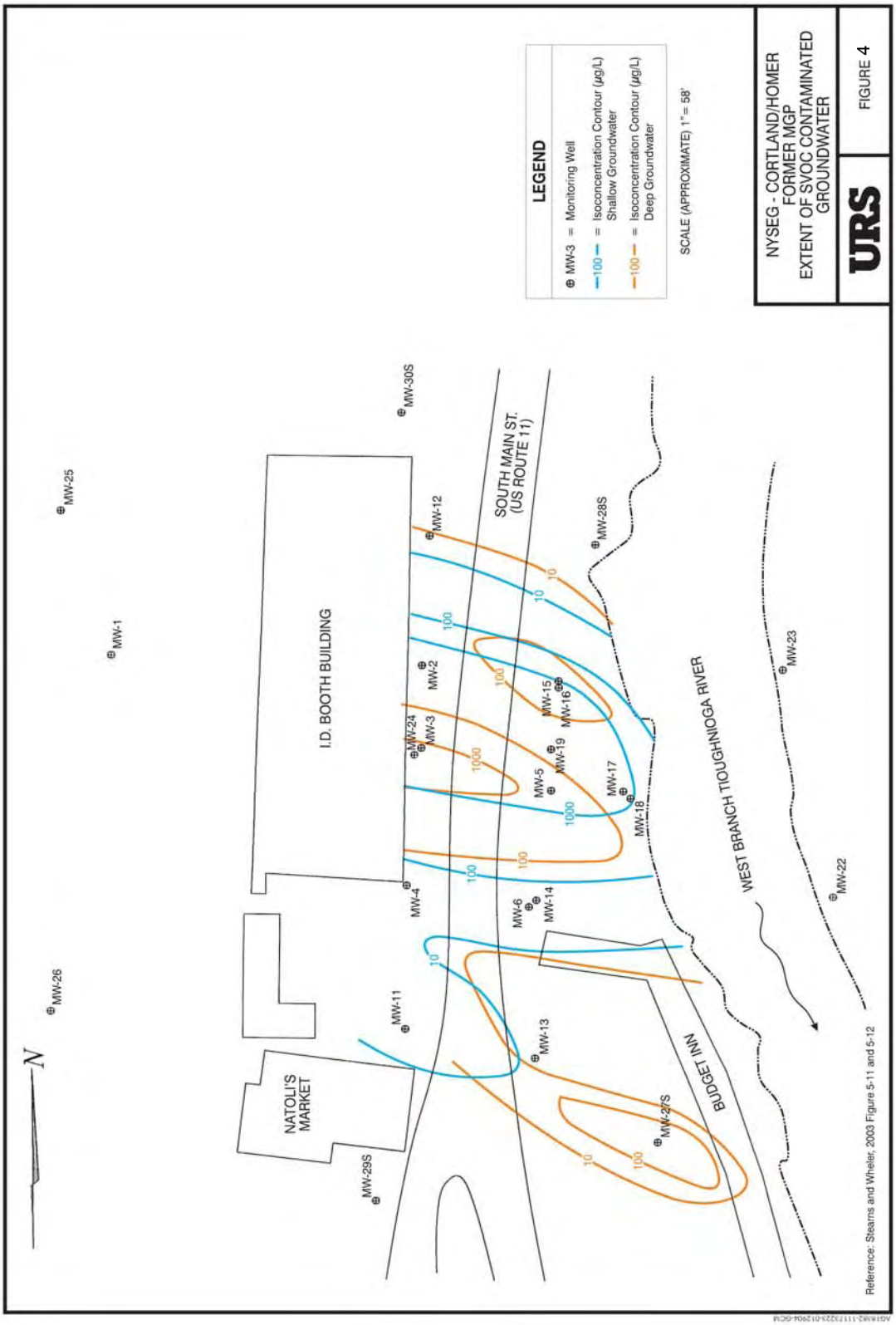
NYSEG - REMEDIAL DESIGN FOR
FORMER CORTLAND-HOMER MGP SITE (OU-1)
HOMER, NEW YORK

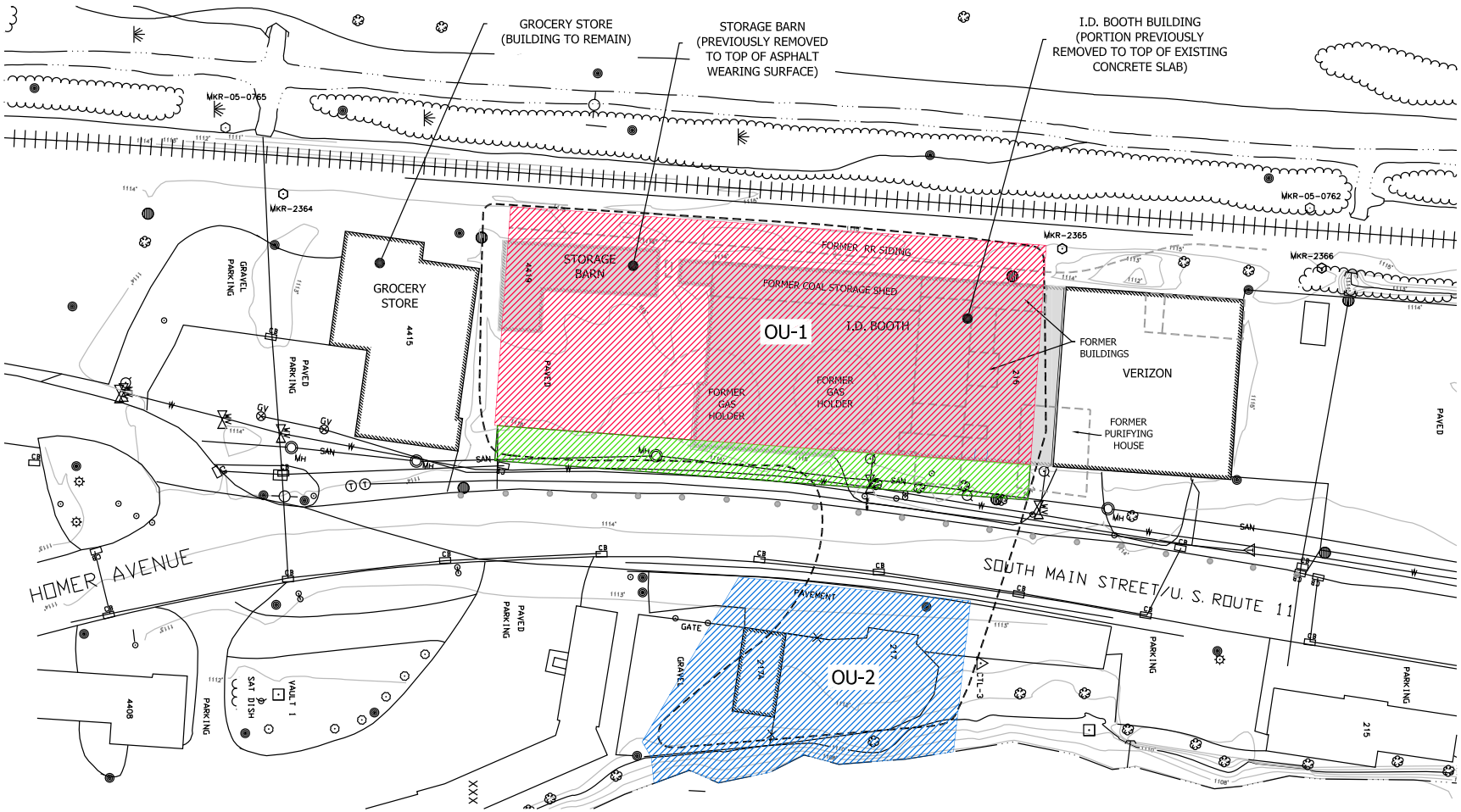
SITE OPERABLE UNITS

DATE	JULY 2009
PROJECT NO	102050
FILENAME	102050
SHEET NO	2
DRAWING NO	2

FILE = L:\WORK\102050\CADD\...\SESC-HOMER-DESIGN.DWG


LEGEND
MW-3 = Monitoring Well
100 = Isoconcentration Contour (µg/L) Shallow Groundwater
100 = Isoconcentration Contour (µg/L) Deep Groundwater
SCALE (APPROXIMATE) 1"= 58'
NYSEG - CORTLAND/HOMER FORMER MGP
EXTENT OF VOC CONTAMINATED GROUNDWATER
URS
FIGURE 3
N
MW-25
MW-1
MW-26
MW-30D
MW-12
MW-2
MW-24
MW-3
MW-4
MW-11
MW-29D
MW-6
MW-14
MW-5
MW-19
MW-16
MW-15
MW-17
MW-18
MW-13
MW-21
MW-27D
MW-28D
MW-23
MW-22
I.D. BOOTH BUILDING
SOUTH MAIN ST. (US ROUTE 11)
NATOLI'S MARKET
BUDGET INN
WEST BRANCH TIOUGHNIOGA RIVER
Reference: Stearns and Wheler, 2003 Figure 5-9 and 5-10


LEGEND
MW-3 = Monitoring Well
100 = Isoconcentration Contour (µg/L) Shallow Groundwater
100 = Isoconcentration Contour (µg/L) Deep Groundwater
SCALE (APPROXIMATE) 1" = 58'
NYSEG - CORTLAND/HOMER FORMER MGP
EXTENT OF SVOC CONTAMINATED GROUNDWATER
URS
FIGURE 4
N
I.D. BOOTH BUILDING
SOUTH MAIN ST. (US ROUTE 11)
NATOLI'S MARKET
BUDGET INN
WEST BRANCH TIOUGHNIOGA RIVER
MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-11
MW-12
MW-13
MW-14
MW-15
MW-16
MW-17
MW-18
MW-19
MW-22
MW-23
MW-24
MW-25
MW-26
MW-27S
MW-28S
MW-29S
MW-30S
10
100
1000
Reference: Stearns and Wheler, 2003 Figure 5-11 and 5-12



NOTES:

1. BUILDINGS LABELED AS "PREVIOUSLY REMOVED" TO BE REMOVED UNDER A SEPARATE CONTRACT.

2. EXISTING FLOOR SLABS, WEARING SURFACES, FOUNDATION AND OTHER BURIED ITEMS FROM PREVIOUS STRUCTURES, SHOWN OR NOT SHOWN, TO BE REMOVED AND DISPOSED OF UNDER THIS CONTRACT.

3. IN-SITU STABILIZATION AREA SHOWN TO BE INSTALLED IN THE AREA OF EXISTING UTILITIES.SEE DETAILS DWG. 06.

4. FOR INFORMATION ON EXISTING UNDERGROUND UTILITIES SEE DWG. 05.

5. FOR SHEETPILE PHASE LAYOUT INFORMATION SEE DWG. 07.

6. FOR SHEETPILE BRACING AND CONNECTION DETAILS SEE DWG. 08.

MAPPING REFERENCE:

1. BASE MAPPING, INCLUDING EXISTING UTILITY INFORMATION, PROVIDED NEW YORK STATE ELECTRIC & GAS (NYSE&G)

2. ADDITIONAL EXISTING SANITARY SEWER INFORMATION, INCLUDING R.O.W. AND EASEMENT INFORMATION TAKEN FROM A PLAN TITLED " VILLAGE OF HOMER, NEW YORK, SANITARY SEWER CONSTRUCTION, 24" TRUNK SEWER, SOUTH MAIN STREET, DATE LAST REVISED 5/18/1971, BY STEARNS AND WHEELER, CAZENOVIA, NY.

LEGEND

- SOILS CONTAINING TOTAL SVOC'S ABOVE RECOMMENDED CLEAN-UP OBJECTIVES (TAGM 4046) (FROM URS FEASIBILITY STUDY,EXTENT OF SOIL CONTAMINATION, FIGURE 6)
- PROPOSED EXCAVATION AREA (SHEET PILE)
- UTILITY CORRIDOR (NO EXCAVATION)
- PROPOSED ISS AREA

- CB — CATCH BASIN
- MH — EXISTING SANITARY MANHOLE
- TEST STATION
- CONTROL POINT
- TELEPHONE MARKER
- TELEPHONE MANHOLE
- IRON PIN
- GV — GAS VALVE
- WV — WATER VALVE
- UTILITY POLE (CARRYING OVERHEAD UTILITIES, NOT SHOWN)
- LIGHT

0' 15' 30' 60'
SCALE

NO	REVISIONS	DRN	CHK	DATE

40 British American Blvd. Latham, NY 518-951-2200

DRN KAM
DES CLW
CHK SAU
APP CHF

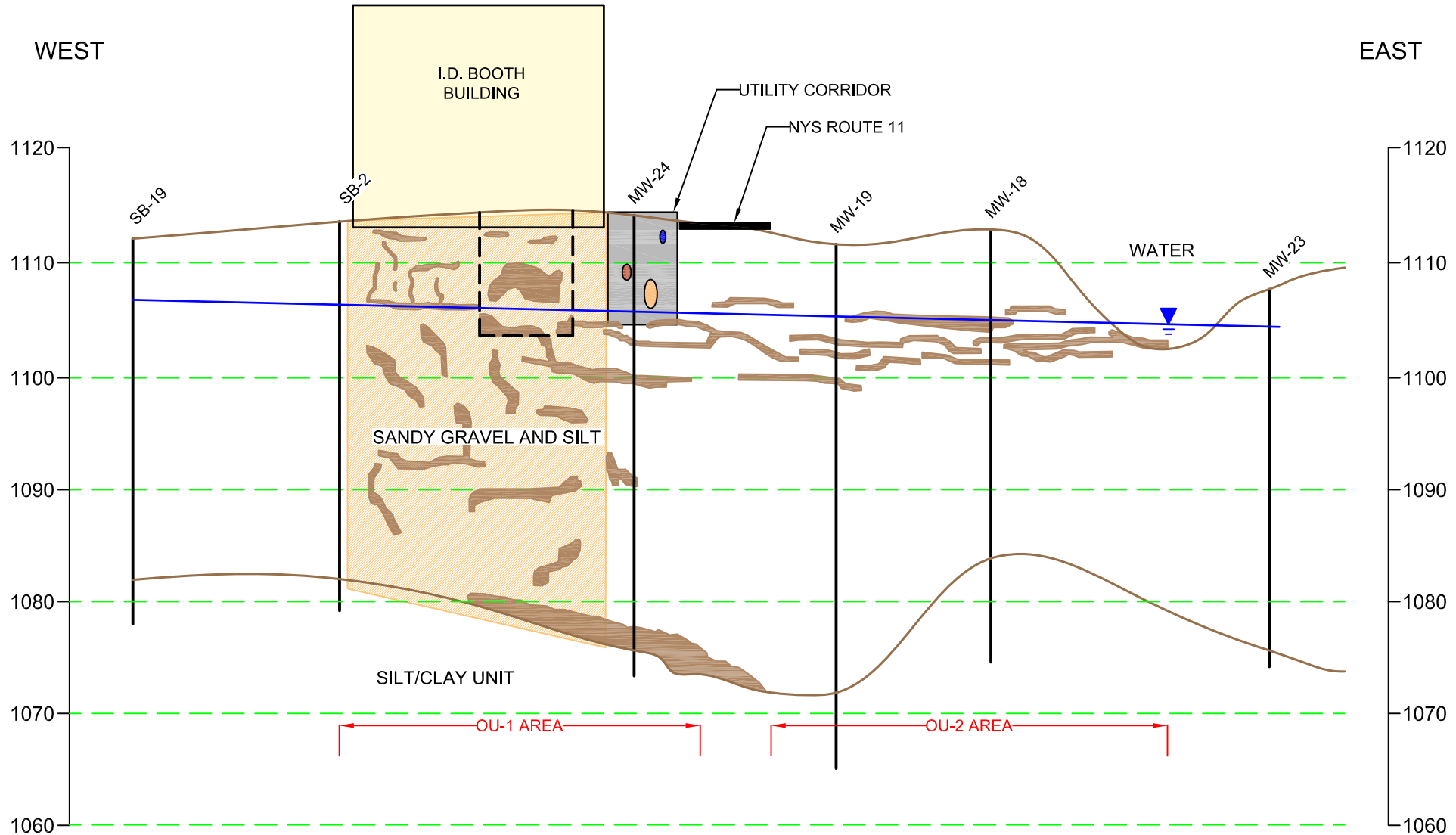
AECOM

NYSEG - REMEDIAL DESIGN FOR
FORMER CORTLAND-HOMER MGP SITE (OU-1)
HOMER, NEW YORK

EXCAVATION REMEDY LAYOUT

DATE	JULY 2009
PROJECT NO	102050
FILENAME	102050
SHEET NO	10
DRAWING NO	5

FILE = L:\WORK\102050\CADD\...\SESAC-HOMER-DESIGN.DWG



LEGEND:

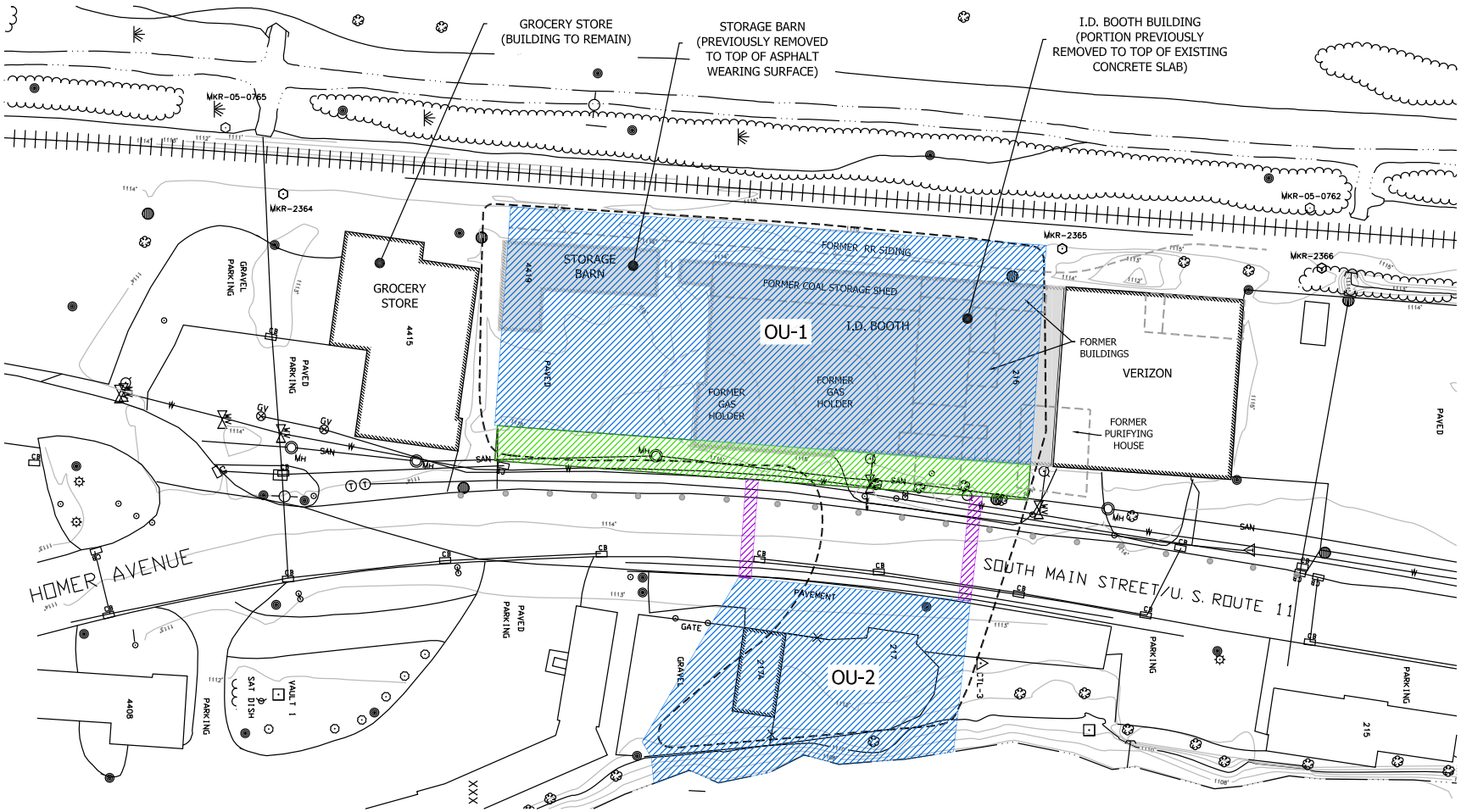
- REPRESENTS MGP WASTE MATERIAL
- GAS MAIN
- 6-INCH WATER MAIN
- 24-INCH SEWER MAIN
- RELIEF HOLDER
- REMEDIATION AREA

NOTES:

1. SANDY GRAVEL = VARIABLE MIX OF GRAVELLY FILL MATERIAL AND NATIVE GRAVEL, SAND AND SILT.
2. SILT/CLAY = SILT WITH VARIABLE AMOUNTS OF CLAY

0 25 50
SCALE IN FEET

\\USGRNS01\data\work\earth\Latham NY Work\NYSEG Homer\60133566_002 Conceptual Site Model_Current Remediation Area OU-1.dwg, 8/30/2010 11:18:08 AM, splawnm



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LEGEND

- SOILS CONTAINING TOTAL SVOC'S ABOVE RECOMMENDED CLEAN-UP OBJECTIVES (TAGM 4046) (FROM URS FEASIBILITY STUDY,EXTENT OF SOIL CONTAMINATION, FIGURE 6)
- PROPOSED ISS AREA
- PROPOSED JET GROUT AREA (UTILITY CORRIDOR)
- PROPOSED CUTOFF WALL

- CB — CATCH BASIN
- MH — EXISTING SANITARY MANHOLE
- TEST STATION
- CONTROL POINT
- TELEPHONE MARKER
- TELEPHONE MANHOLE
- IRON PIN
- GV — GAS VALVE
- WV — WATER VALVE
- UTILITY POLE (CARRYING OVERHEAD UTILITIES, NOT SHOWN)
- LIGHT

0' 15' 30' 60'
SCALE

NO	REVISIONS	DRN	CHK	DATE

AECOM
40 British American Blvd.
Latham, NY
518-951-2200

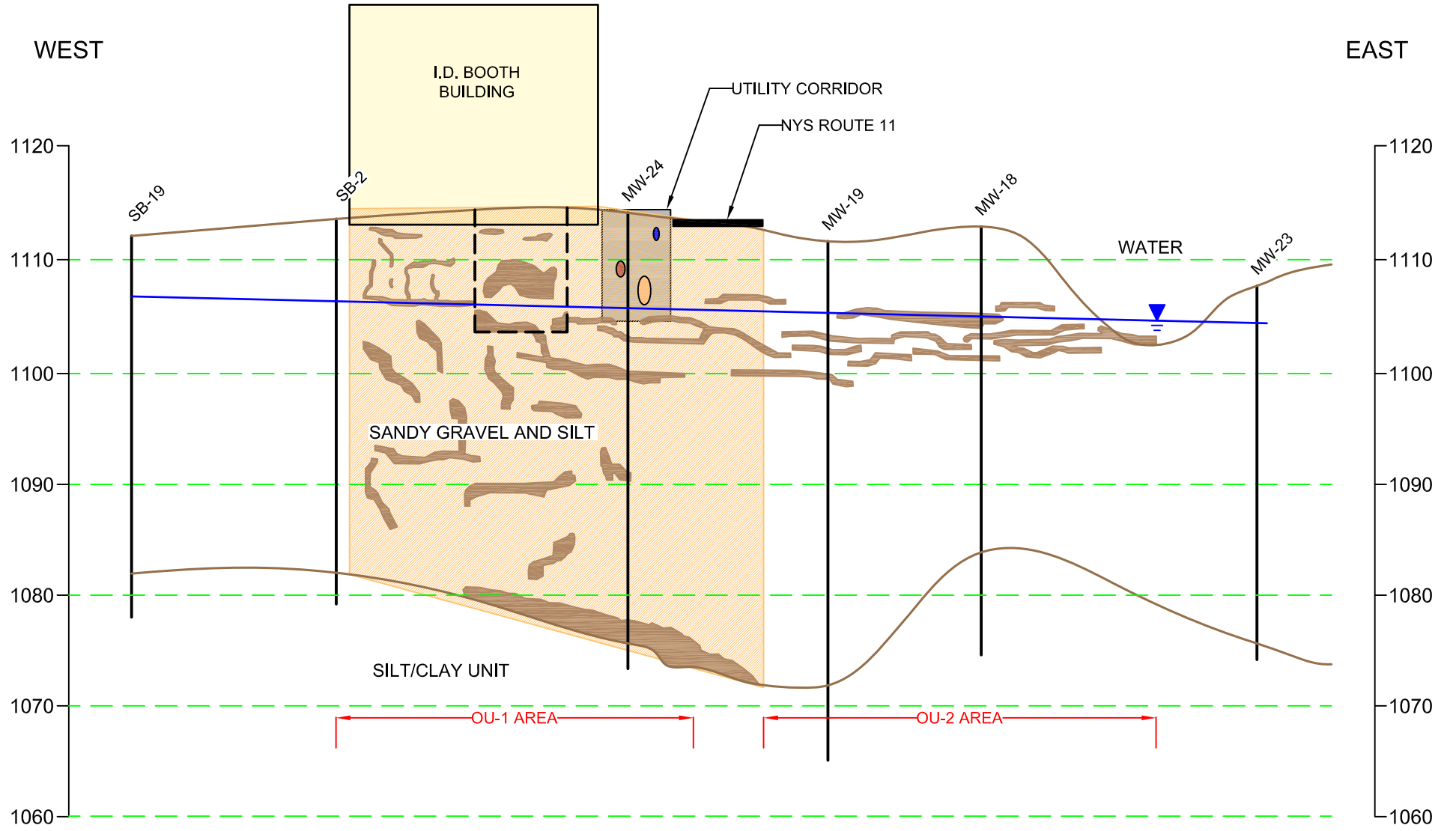
DRN	KAM
DES	CLW
CHK	SAU
APP	CHF

NYSEG - REMEDIAL DESIGN FOR
FORMER CORTLAND-HOMER MGP SITE (OU-1)
HOMER, NEW YORK

IN SITU SOLIDIFICATION (ISS) REMEDY LAYOUT

DATE	JULY 2009
PROJECT NO	102050
FILENAME	102050
SHEET NO	11
DRAWING NO	6

FILE = \\WORK\102050\CADD\...\HOMER-DESIGN.DWG



LEGEND:

- REPRESENTS MGP WASTE MATERIAL
- GAS MAIN
- 6-INCH WATER MAIN
- 24-INCH SEWER MAIN
- RELIEF HOLDER
- AREA TO BE REMEDIATED

NOTES:

1. SANDY GRAVEL = VARIABLE MIX OF GRAVELLY FILL MATERIAL AND NATIVE GRAVEL, SAND AND SILT.
2. SILT/CLAY = SILT WITH VARIABLE AMOUNTS OF CLAY

0 25 50

SCALE IN FEET

\\USGRNS01\data\work\earth\Latham NY Work\NYSEG Homer\60133566_003 Conceptual Site Model_Proposed Treatment Area OU-1.dwg, 8/30/2010 11:20:03 AM, splawnm

APPENDIX A

Responsiveness Summary

NYSEG Cortland Homer Former MGP Site
Operable Unit No. 1
Homer, Cortland County, New York
Site No. 712005

The Record of Decision Amendment (Amendment) for the NYSEG Cortland Homer Former 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 October 20, 2010. The proposed Amendment outlined the remedial measure proposed for the contaminated soil and groundwater at the NYSEG Cortland Homer Former MGP site.

The release of the Amendment 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 November 9, 2010, which included a presentation of the pre-design investigation for the NYSEG Cortland Homer Former MGP as well as discussion of the proposed amended remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed amendment to the remedy. These comments have become part of the Administrative Record for this site. The public comment period for the ROD Amendment ended on November 19, 2010.

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

COMMENT 1: Where will the material that is being excavated be disposed?

RESPONSE 1: The excavated material where contaminants are present above the site cleanup criteria will be properly treated or disposed of at an off-site facility that is permitted by the Department to accept this type of material. Some of the excavated material may be evaluated for reuse in on-site excavations where levels are below the site cleanup criteria. The remedial design will identify the appropriate handling for the excavated material.

COMMENT 2: When will the river remediation work be performed?

RESPONSE 2: The exact timing has not been established at this time. However, the river remediation work is expected to begin after the completion of the in-situ stabilization remediation of the site.

COMMENT 3: When will the jet grouting under Route 11 be done?

RESPONSE 3: The timing of the jet grouting under Route 11 has not been established at this time. The schedule for the work will need to be coordinated with the New York State Department of Transportation. The remedial design will consider appropriate timing in conjunction with the other remedial activities.

COMMENT 4: What will be monitored after the remediation is complete?

RESPONSE 4: The monitoring following remediation will primarily include sampling groundwater and possibly surface water to confirm the Department's expectation that contaminant levels and the migration of contaminants to the river will decrease over time. The details of the monitoring plan will be developed with the remedial design and included in the Site Management Plan (SMP).

John Helgren of the Cortland County Health Department submitted a letter dated November 19, 2010, which included the following comments:

COMMENT 5: The condition of the Village of Homer water main which is located on the site will be evaluated by excavations in December 2010. As discussed in the meeting, the integrity of the Village's water main may be in question due to corrosion from interaction with contaminants at the site. Cortland County Health Department requests that you consider the need for replacement of the main at this time.

RESPONSE 5: The need for replacing the section of the water main pipe will be evaluated based on the findings of the excavation planned for December 2010.

COMMENT 6: The proposed remedial work on the east side of Rte. 11 and in the Tioughnioga River (OU2) would proceed after the work on the west side of Rte. 11 (OU1). It was indicated that on-going air monitoring of the site would be done during the remediation work. The Cortland County Health Department requests that results for this monitoring, and any other monitoring of the remediation work (such as groundwater and soil sampling), be made readily available to our Department.

RESPONSE 6: The monitoring data from the remedial work will be shared with the Cortland County Health Department.

COMMENT 7: The Cortland County Health Department would appreciate the opportunity to review the plan for long term monitoring subsequent to remediation of the site and river, and ask how the results will be available for review. We recommend ongoing monitoring to confirm that the finished work prevents migration of contaminants to groundwater and the river. We request these results be shared with this Department.

RESPONSE 7: The SMP (which includes the monitoring plan) and subsequent data will be shared with Cortland County Health Department. We agree with the recommendation that one of the goals of the monitoring plan will be to determine the concentrations of contaminants in groundwater. This information will allow an evaluation of the potential for migration of

contaminants to groundwater and the river.

COMMENT 8: The Cortland County Health Department would also appreciate the opportunity to review the temporary/permanent easements and restrictions proposed for the site. Of interest are restrictions on groundwater use, particularly for drinking water wells in the area, and easements, all of which to prevent public (including utility worker) exposure to contamination.

RESPONSE 8: The Cortland County Health Department will be provided the easement language relative to the restrictions to be included in the easement and the SMP for review.

Administrative Record

NYSEG Cortland Homer Former MGP Site
Operable Unit No. 1
Homer, Cortland County, New York
Site No. 712005

1. Proposed Record of Decision Amendment NYSEG Cortland Homer Former MGP Site, Operable Unit No.1, dated October 2010, prepared by the Department.

2. Record of Decision NYSEG Cortland Homer Former MGP site, Operable Unit No.1, dated March 30, 2010, prepared by the Department

3. Multi-Site Order on Consent, Index No. D0-0002-9309, between the NYSDEC and New York State Electric and Gas (NYSEG), executed on March 30, 1994. The NYSDEC and NYSEG the entered into a multi-site Consent Order on March 30, 1994.

4. "Cortland Including McGraw, Cortland County, New York," January 1926, Sanborn Map Company

5. "Investigation of Former Coal Gasification Sites, Cortland/Homer Homer, New York, Task 2 Investigation Report, Initial Field Investigation Report, New York State Electric and Gas", July 1987, E.C. Jordan Co.

6. "Investigation of the Former Coal Gasification Site, Cortland/Homer Homer New York, Task 3 Report Expanded Problem Definition Program, New York State Electric and Gas Corporation", May 1989, E.C. Jordan Co.

7. "Historical Summary NYSEG Cortland/Homer Former MGP, Cortland County", April 2001, Stearns and Wheler Corporation

8. "Supplemental Remedial Investigation (SRI) Work Plan, NYSEG Cortland/Homer Former MGP, Cortland County, New York", August 1999, Stearns & Wheler Corporation

9. "Work Plan Addendum Supplemental Remedial Investigation Phase 2, NYSEG Cortland/Homer Former MGP, Cortland County, New York", June 2001, Stearns & Wheler Corporation

10. "New York State Electric and Gas, Interim Remedial Measures Final Engineering Report, Storm Drain Construction Activities Adjacent to Cortland/Homer South Main Street (Route 11) Former Manufactured Gas Plant (MGP) Site", March 2002, NYSEG Licensing and Environmental Operations Department

11. "Supplemental Remedial Investigation (SRI), NYSEG Cortland/Homer Former MGP, Cortland County, New York", December 2003, Stearns & Wheler Corporation

12. “New York State Electric and Gas Corporation, Former Cortland/Homer Former Manufactured Gas Plant, Homer, New York, Feasibility Study Report”, April 2004, URS Corporation.

13. February 15, 2007 Fact Sheet/Notice for Proposed Remedy, Public Meeting and Comment Period

14. “Proposed Record of Decision Amendment”, July 2010, AECOM

15. October 2010 Fact Sheet/Notice for Proposed Record of Decision Amendment, Public Meeting and Comment Period