WORK PLAN

Remedial Action Work Plan (RAWP)
Herkimer Former MGP Site
West Smith Street
Herkimer New York
Site No. V00471-6

nationalgrid

October 2011

O'BRIEN & GERE

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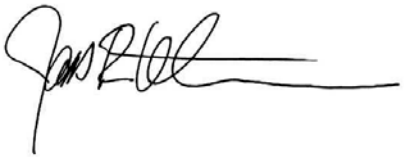
Prepared for:

nationalgrid



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1 INTRODUCTION

1.1 GENERAL

This document presents the Remedial Action Work Plan (RAWP) for the Herkimer Former Manufactured Gas Plant (MGP) Site in Herkimer, New York. This RAWP has been prepared in accordance with the 2002 multi-site Voluntary Consent Order (VCO Index No. D0-0001-001) between Niagara Mohawk (now National Grid) and the New York State Department of Environmental Conservation (NYSDEC).

In a letter dated November 12, 2009 the NYSDEC approved responses to comments on the Herkimer Former MGP Site Remedial Investigation (RI) Report (TRC, 2009) and requested that National Grid prepare a RAWP meeting the requirements of the VCO. The Consent Order specifies that the RAWP include the following:

- A detailed description of the remedial objectives and the means by which each element of the selected remedial alternative will be implemented to achieve these objectives.
- A description of the proposed contents and a schedule for preparation and submittal of "Biddable Quality" documents for implementation of the RAWP.
- A schedule to implement the RAWP.
- The parameters, conditions, procedures, and protocols to determine the effectiveness of the RAWP, including a schedule for periodic sampling of the groundwater monitoring wells.
- A description of the operation, maintenance, and monitoring activities, if any, that will be undertaken after the NYSDEC has approved construction, including an estimate of the number of years during which such activities will be performed and a specific description of the criteria to be used to decide when operation of the remedy may be discontinued.
- A contingency plan to be implemented if any element of the RAWP fails to achieve its objectives or otherwise fails to protect human health or the environment.
- A health and safety plan for protection of persons at and in the vicinity of the site during construction and after completion of construction.
- A Citizen Participation Plan that incorporates appropriate activities as required under the Voluntary Cleanup Program.
- A provision that, if during implementation of the RAWP, contamination within the definition of Existing Contamination is discovered that was not discussed in the Final RI Report, National Grid will investigate the newly discovered contamination, and if necessary, revise the RAWP to address the newly discovered contamination, if necessary.

1.2 PURPOSE AND OBJECTIVES

This RAWP performs the following functions:

- Details each of the Consent Order required elements described above
- Establishes how these elements will be organized to meet the overall project objectives
- Describes investigations conducted during preparation of the RAWP to further evaluate the extent of impacts and evaluate hydrogeologic conditions that may impact design and construction of the remedy.
- Demonstrates appropriate links between technical tasks associated with preparing the Remedial Design (RD) and the subsequent Remedial Action (RA) Construction.

1.3 WORK PLAN ORGANIZATION

Section 2 of the RAWP presents available background and establishes the nature and extent of impacts. Section 3 describes the development of the Remedial Action Objectives (RAOs) for the site and describes and evaluates the proposed Remedial Action (RA) to achieve the RAOs. Section 4 discusses the need for a topographic and boundary survey to confirm existing topography and site surface features. The contents of the RD to be

prepared to implement the RA are described in Section 5 and construction phase health and safety requirements are presented in Section 6. Section 7 describes the steps to implement the RA and Section 8 describes activities to be implemented following completion of construction. A schedule to implement the RAWP is presented in Section 9 and Community Relations Support activities to be performed by National Grid are described in Section 10.

2 BACKGROUND INFORMATION

In accordance with the VCO, several environmental investigations have been performed by National Grid at the Herkimer Former MGP Site. These include:

- Initial Site Characterization/Interim Remedial measure (IRM) Study (TRC, 2003)
- Supplemental Site Characterization (TRC, 2005)
- Remedial Investigation (RI) (TRC, 2009)
- Pre-Design Activities (O'Brien & Gere, 2010)
- Groundwater Pumping Test (O'Brien & Gere, 2011)

Information presented in these documents is summarized in this Section to serve as a basis for the development of RAOs and the RA to achieve these RAOs.

2.1 SITE DESCRIPTION

The Herkimer Former MGP Site occupies approximately 0.4 acres of an approximately 0.585 acre parcel in a residential neighborhood in the City of Herkimer, New York. (Figure 1) The site is bordered to the north by East Smith Street, to the east by Williams Street and to the west and south by residential properties. The site is currently owned by an adjacent resident and is vacant and not fenced. The surrounding neighborhood includes residential and commercial properties. The area is served by public water and sewer systems.

Surficial structures related to the former MGP are no longer present on-site. Remnants of concrete pads and a sidewalk are visible on the surface in the center of the parcel. In addition, the investigations identified that the octagonal holder, including the conical base, is still present on the west side of the site. (Figure 2) The southern portion of the site is elevated approximately 4 ft with respect to the two adjacent properties to the south.

2.1.1 Topography and Drainage

The Herkimer Site is located within the Mohawk River Valley approximately one half mile north of the Mohawk River. The site is relatively flat with elevations ranging between approximately 386 ft msl and 384 ft msl. Drainage occurs by overland flow generally from the northeast toward the southwest. The majority of the site is grassed with limited areas of asphalt and remnants of concrete foundations.

2.1.2 Hydrogeology

Based on information obtained during the site investigations conducted by others, the overburden materials were described as consisting of three primary units:

- Fill extending to a depth of 6 ft below grade
- Fine grained silt/sand from approximately 6 ft to between 10 and 12 ft below grade
- Coarse sand/gravel extending to the bottom of borings installed at the site to at least 30 ft below grade

Pre-design investigations conducted by O'Brien & Gere in 2010 (O'Brien & Gere, 2010) refined this description as follows:

- Fill to depths between 4 to 6 ft below grade
- A semi-confining unit consisting of silt and clay present from 4 to 8 ft below grade
- Alluvial fine grained sand with some silt generally found between 8 and 10 ft below grade
- Coarse sand and cobbles found between 10 and 16 ft below grade
- Dense coarse sand and gravel

The dense sand and gravel was present to at least 50 ft below grade.

Bedrock was not encountered during the site investigations. However, the RI Report (TRC, June 2009) states that information from a construction site located 0.5 miles northwest of the site reported that bedrock was encountered at a depth of approximately 80 ft below grade.

Shallow groundwater is present at approximately 7 ft below grade and flows under a low hydraulic gradient to the south/southwest. During the 2010 investigations, O'Brien & Gere (O'Brien & Gere, 2010) attempted to perform hydraulic conductivity testing in two site wells. The results of the testing suggested that silt was deposited around the well screens as the formation collapsed around the well screen during installation. This was believed to have influenced the results of the hydraulic conductivity testing. To further evaluate the upward vertical permeability and evaluate the potential upward flow from the coarse sand and gravel unit, O'Brien & Gere conducted a groundwater pumping test in 2011 (O'Brien & Gere, 2011). Based on the results of the groundwater pumping tests, a vertical hydraulic conductivity of 25 ft/day (8.8×10^{-3} cm/sec) was estimated.

2.2 SITE HISTORY

The site history was developed through review of Sanborn fire insurance maps that was completed by Foster Wheeler on behalf of National Grid (Foster Wheeler, 2002). Maps from 1890, 1895, 1900, 1906, 1911, 1923, 1931, 1950, and 1961 were available. The following summarizes observations of each of these maps.

1890 – The Herkimer Gas Co. is noted on the Sanborn map at 323-325 Smith Street and north of Pine. An octagonal shaped gasometer (approximately 45-ft across) is located on the property. A building adjacent to the gasometer contains a retort. The Munson Mfg. Co. is located east of the property. This company reportedly made office desks.

1895 – The plant appears to be identical to that illustrated on the 1890 map. The Munson Mfg. Co. is no longer present and a road (a potential extension to William St.) is present where the Munson Mfg. Co. was formerly located.

1900 - The facility appears to be identical to that illustrated on the 1895 map. However, the street address changed and the new address is 213 W. Smith Street. A circular iron gasometer (approximately 30-ft. in diameter) was added to the site, south of the existing gasometer. A purifying house was added to the retorts and two oil tanks were also present. The road west of the site is now named Dewey Avenue. The lot appears to have been subdivided with the second parcel at the corner of West Smith and William Street vacant.

1906 – The facility appears to be the same as illustrated on the 1900 map. A dwelling and saloon are now located on the second parcel.

1911 – The facility name is now Utica Gas & Electric Co. The oil tanks depicted in previous maps are no longer apparent. The original gasometer is apparent; however, the iron gasometer appears to have been enlarged. It appears that the density of residential properties in the vicinity of the site has increased. The buildings on the second parcel have increased and now contain a saloon, bakery and grocery, barber and a building housing an oven.

1923 – The building is blacked out on the map, possibly indicating that the building is vacant. The octagonal gasoline meter has been removed and the circular gasoline meter is not used. The Mohawk River and Barge Canal south of the site are shown.

1931 – The building and unused gasoline tank are not illustrated on the property. The lot appears to be vacant.

1950 - The property appears to be vacant. West of the site on the corner of Dewey Avenue and W. Smith Street is a chemical laboratory.

1961 – The property is vacant.

Based on the information provided by the Sanborn maps, it appears that the MGP operations occurred at least between 1890 and 1911. Additional review of the "Survey of Town Gas and By-product Production and Locations in the U.S. (1880-1950)" by Foster Wheeler indicated that gas was manufactured in 1890. According to the survey, gas production in 1890 was by the Sutherland process, a water gas process. Furthermore, the

survey, reports that the facility was consolidated with the Ilion MGP, a Niagara Mohawk-owned site, in 1900. The 1900 Sanborn Fire Insurance Map depicts two gas holders, two oil tanks, a purifier building, and one unidentified building associated with the former MGP while the 1911 map shows that the oil tanks are missing and the southern gasometer appears to be larger in size.

2.2.1 Petroleum Spills

Two petroleum related spill sites are located in the site area as follows:

Chirico Spill #8708644 – This spill was reported on the site at the former separate parcel located on the southwest corner of William and Smith Streets. Petroleum was discovered on September 23, 1987 during a geotechnical appraisal for Facilities Development Corporation. During a test pit evaluation, free floating petroleum was uncovered. A spill investigation began in January 1988 with the installation of 3 monitoring wells. Six additional monitoring wells were installed in June and September 1988. Quarterly sampling was performed and contaminants that exceeded NYSDEC standards included benzene, toluene, ethylbenzene, and xylenes (BTEX). Monitoring of at least one well on site continued through March 1998 and permission was granted to close out the site and discontinue monitoring in a letter dated December 10, 1998. Five of the nine wells were abandoned on October 8, 1999. It was determined that although some contaminant levels still exceeded the NYSDEC standards, the amount by which they exceeded was very small and did not require further remedial action. The investigation was officially complete and the Spill Number closed by NYSDEC on July 21, 2000.

Varlaro Automotive Spill #8904344 – This spill, located at 136 West Smith Street was reported on May 11, 1989. It was discovered that a tank holding gasoline had a number of holes in it, thus contaminating the soil and groundwater. Groundwater monitoring of three existing wells began in January 1992 and continued on a quarterly and then semiannual basis through October 1999. Groundwater contaminants include BTEX, 1, 2, 4-trimethylbenzene, n-butylbenzene, n-propylbenzene, and naphthalene. Remedial activities included the installation of a pump and treat groundwater system consisting of a low profile air stripping unit designed by Northeast Environmental Products Inc. On July 24, 2000, four additional monitoring wells originally installed as part of the Chirico Spill #8708644 investigation, were assigned to this spill, as it is believed to be the source of contamination in the area.

2.2.2 Future Use

As previously mentioned, the site is owned by the owner and resident of the property adjacent to the southeast corner of the site. Conversations with the owner revealed that he is considering construction of a garage or pole barn for use as storage and placing asphalt paving on an area bordering East Smith St. to use for parking of vehicles. This site is zoned C2 – General Commercial. Under this zoning, the property can be used for multiple dwellings for the aged (by special permit), retail, restaurant, hotel, theater, bowling, skating rink, veterinarian, gas sales and garage for auto repair.

The environmental easement to be placed on the property will provide guidelines and limits for future development activities.

2.3 NATURE AND EXTENT OF IMPACTS

2.3.1 Surface Soil

A total of six surface soil samples were collected on-site during completion of the initial Site Characterization activities in 2003. Four background surface soil samples were also collected during this program. The surface soil samples were collected from an interval of 0 to 6 inches below grade and analyzed for TCL SVOCs and TAL metals.

Review of the surface soil analytical data reveals that the only constituents that were found at concentrations above the Restricted Residential SCOs were carcinogenic PAHs. The Soil Cleanup Objectives (SCOs) for these compounds are 1 mg/Kg or lower. The compounds were found in both the background and the on-site samples at similar concentrations which, with the exception of SS-11, were below 2 mg/Kg. SS-11 contained the same compounds at concentrations between 2 and 4 mg/Kg. The constituents and concentrations observed are commonly found in urban fill or in urban neighborhoods.

2.3.2 Subsurface Soil

Investigations completed at the site include completion of 65 soil borings and 5 test pits and installation of three monitoring wells and a groundwater pumping well for the vertical hydraulic conductivity testing. Soil samples were collected and analyzed for TCL VOCs, TCL SVOCs, metals and cyanide. Cyanide and metals were not detected in soils at the site above SCOs. The constituents of concern that were identified above SCOs included VOCs (benzene, toluene, ethylbenzene, xylene) and SVOCs (polycyclic aromatic hydrocarbons). The areas where soil exceeded SCOs generally also contained visual evidence of impacts in the form of NAPL, tar or blebs of product.

The impacted soils have been identified in two general areas of the site. One area is located in the center of the site where the former fuel oil tanks and MGP facility were located, and the second is located on the western side of the parcel in the vicinity of the former octagonal holder. Figure 3shows the general locations of these areas. This figure depicts the horizontal extent of heavily impacted soils as established by field observations of NAPL, tar or blebs within the soil samples.

Holder Area

The sub-grade brick holder foundation is approximately 40 feet in diameter, with a conic bottom sloping from a depth of six feet in the center down to eight feet within the inner circumference. A riveted metal liner was observed within the inner perimeter during RI activities. The depth to water within the holder (8 ft below grade) is slightly deeper than the water table (approximately 7 ft below grade). This suggests that the holder foundation is reasonably intact. The depth of the outer side of the base of the holder is approximately 8 ft below grade. This depth suggests that the base of the holder penetrates the semi-confining unit and is hydraulically connected with the permeable alluvial sand and silt and cobbles.

Physical indications of NAPL were observed in all interior holder borings, ranging from tar coating on the bottom mortared brick in the shallow center of the holder to 2 feet of viscous MGP tar saturated material in the inner perimeter. In addition, the RI noted limited NAPL impacts immediately beneath the holder bottom to depths of up to approximately 12 ft. During the additional investigations conducted by O'Brien & Gere in 2010, boring SB-44 was completed adjacent to the previous SB-13 inside the holder. Black stained fill was observed in this boring to 12.5 ft, which is coincident with the top of the cobble zone. Boring SB-13R, completed immediately outside the holder footprint during the 2010 investigations, did not encounter NAPL suggesting that the NAPL present beneath the holder is limited to the footprint of the holder.

During the RI, soil containing visible NAPL was observed outside of the northern, eastern, and southern sides of the holder from approximately 6 ft to as deep as 10.8 ft, which is similar to the depth of impacted material beneath the holder. The nature of these observations included product blebs, strong odors, and strong sheen. Fingerprint analysis of a sample from the southeast side of the holder (SB-29 8-8.5) suggests that the material is gasoline mixed with an unknown fuel oil. The specific source of these impacts is therefore, unclear. Shallow soil/fill less than 6 ft deep are generally not impacted by MGP related materials and consists primarily of miscellaneous urban fill.

The additional investigations (borings SB-13R, 42, 43, 55, 56) indicate that the extent of impacted soil outside of the holder is limited to within 5 ft of the walls. Based upon the additional investigation and RI soil borings, the only impacts noted outside the holder footprint were small lenses within the semi-confining unit and, as such, are not considered to require remediation.

In summary, MGP tar material has been identified in a limited area within and immediately outside of the former sub-grade octagonal holder foundation. A limited thickness of heavily-weathered tar interspersed in the fill material was observed in the bottom of the holder, particularly within the deeper, inner perimeter. Lesser indications of tar impacts, to a maximum thickness of 4 feet, were noted around exterior portions of the holder. Based on the confirmed proximity of petroleum-related impacts to the east, and the results of soil fingerprint analyses, the exterior impacts to the east/southeast of the holder may include a mixture of tar and petroleum residuals.

Figure 3 presents the horizontal extent of impacted material requiring remediation at the base of the holder. The semi-confining unit was not present within the footprint of the holder. The diameter of the impacted material identified within the holder structure, as illustrated on Figure 3, is approximately 43-ft. The calculated surface area of the defined NAPL-impacted zone is approximately 1,350 square feet. Based on a depth of 12 ft for impacts noted within and outside of the holder structure, and the calculated surface area of the defined NAPL-of approximately 1,350 square feet, the total estimated volume of material in this foot print, to the bottom depth of the NAPL-impacted material, is approximately 600 cy. Of this volume, approximately 300 cy of fill material is present above the defined NAPL-impacted material and 300 cy is NAPL-impacted material. Although not directly related to MGP operations, this fill material generally contains constituents at concentrations above the NYSDEC criteria for clean fill material. At this Site, this material may be used as backfill to a depth of two feet below final grade.

Petroleum Area

Physical and chemical evidence of petroleum was detected consistently within a defined area within the approximate center of the site. As described in the RI, a gas chromatograph (GC) fingerprint of a sample collected from SB-20 (Sample SB-20(5.5-6.0)), advanced in the vicinity of the former oil tanks, exhibited a profile consistent with No. 6 fuel oil. Further south, the impacts appear to be a possible combination of petroleum and MGP tar-type contamination (based on visual appearance, staining and naphthalene/tar-like odor), although no specific source of tar (e.g., identifiable former MGP structure) has been identified in this area of the site.

During the RI and the additional investigations conducted during 2010, impacted material was typically found from 8 to 12 feet below grade with the impacted zone extending slightly deeper, to 14 to 18 feet below grade, in the center of the area at SB-25 and SB-41, respectively. NAPL blebs identified in SB-41were not confirmed by samples from SB-41R collected during the pre-design investigation. This suggests that deeper observations were the result of dragdown during drilling. The bottom of the semi-confining unit ranges from 8 to 12 ft with the deeper values coincident with the deeper NAPL impacts. The base of the semi-confining unit represents the top of the impacted zone. A series of cross sections were developed across the Petroleum Area depicting the stratigraphy and the distribution of heavily impacted material (Figures 4 and 5). As illustrated, the heavily impacted material is present between 8 and 16 ft below ground surface and located within the alluvial sand and silt and cobble zone in the Petroleum Area. The horizontal limit of the heavily impacted soil in the Petroleum Area is shown on Figure 3 and occupies approximately 1,450 square feet.

Encountered NAPL appears to be an LNAPL based on its presence within the upper part of the cobble layer and the sand that immediately underlies the semi-confining unit, as well as the limited evidence of deeper movement of discrete product downward through the cobble zone and into the underlying coarse sand and gravel. During the pre-design investigation, free phase NAPL was only encountered at SB-25R. Blebs of NAPL were noted in soil encountered by borings SB-21R and SB-24R. While completing the hydraulic testing in wells installed in borings SB 21R and SB-24R, emulsified product was present on top of the water column and coated the water level probe. The product was removed during well development and no additional accumulation of product in the wells was observed. The additional boring completed in the vicinity of SB-41(SB-41R) in 2010 encountered blebs of NAPL but not free phase material as was observed at this location during the RI. Product did not accumulate in the recovery well (RW-1) installed within SB-41 during the RI. This suggests that NAPL in the Petroleum Area is limited in volume and mobility.

The horizontal limit of the impacted soil in the Petroleum Area is shown on Figure 3 and occupies approximately 1,450 square feet. Based on NAPL impacts being detected to approximately 16 feet bgs, it is estimated that approximately 860 cy of material is present within the footprint of the Petroleum Area. As with the Holder area, the NAPL-impacted interval is located beneath an average depth of six feet of fill material. Therefore of the 860 cy, approximately 320 cy is fill material and 540 cy is NAPL impacted material.

2.3.3 Groundwater

Three sets of ground water samples were collected during the site investigation activities beginning in 2003. The wells are installed around the perimeter of the site to assess potential for off-site migration. Based on the observations of sheens and odors in the groundwater in the center of the site it is understood that some

impacted groundwater is present on-site. However the results of the analyses indicate that no VOCs or SVOCs were detected in 3 of the 4 wells suggesting the off-site migration is not occurring. The only well that contained detectable concentrations was MW-3 located on the north side of the site near East Smith St. In 2003 low concentrations of xylene were present in this well. However, the only VOC detected in 2008 was chloroform which is likely a laboratory artifact. SVOCs detected were polycyclic aromatic hydrocarbons (PAHs) at individual concentrations less than 2 µg/L with the exception of acenaphthene which was detected at a concentration of 9.4 µg/L. The detection of SVOCs at this location is consistent with the observation of a sheen and petroleum odors in the soil from SB-12 located approximately 5 ft east of MW-3. However, as stated in the RI Report, the source of these constituents is not clear as previous site ground water studies by other consultants for the nearby Varlaro property (located on the corner of West Smith and Dewey Streets, northeast of the site) had encountered a range of fuel-type contaminants on the subject site, including petroleum product. These fuel type contaminants were attributed to a possible combination of on-site and off-site sources. In any event, impacted groundwater does not appear to be migrating off of the site.

During the 2011 groundwater pumping test, groundwater samples were collected from wells KW-02 and PW-01. The sample from KW-02 represented water within the zone containing impacted soil, while the sample from PW-01 represented water below the zone containing impacted soil. The groundwater samples from both zones were analyzed for chemical oxygen demand (COD), volatile organic compounds (VOCs), oil & grease, semi-volatile organic compounds (SVOCs), total polychlorinated biphenyls (PCBs), target compound list (TCL) metals and total dissolved solids (TDS).

PCBs were not detected in either sample. VOCs and SVOCs including benzene and polynuclear aromatic hydrocarbons (PAHs) typical of former MGP operations were detected in the sample (KW-02) representing water within the zone containing impacted soil. The sample from KW-02 also had measurable oil & grease (9.5 mg/l) and COD (36 mg/l). Both samples contained dissolved solids and metals as expected.

The absence of signs of potential off-site migration of site contaminants is not surprising given the following:

1. Intact nature of the former octagonal holder foundation and its apparent ability to retain water.
2. Shallow groundwater gradient.
3. The fine-grained nature of the impacted soils with relatively low permeability.

Therefore, based on the lack of evidence of off-site contaminant migration and the provision of public water in the area, site groundwater is not believed to present a risk.

2.3.4 Soil Vapor

Soil vapor samples were collected from 4 locations on the property to assess the potential for vapor migration from the site as outlined in the RI Report. A sample from a fifth location was attempted but the soil permeability at this location was too low to obtain a sample as detailed in the RI Report (TRC, 2009). Although several constituents detected in soil vapor samples may potentially be associated with former MGP operations, all of the compounds are frequently associated with other, non-MGP related sources such as fuel oils and gasoline. At least one documented petroleum spill in the vicinity of the site may have contributed to identified site contamination. The majority of the other detected volatile compounds are more likely associated with other non-MGP sources, such as refrigerants, solvents, and other petroleum products. Based on a review of the data, NYSDEC and NYSDOH has concurred that while several of the compounds detected in the soil vapor samples may be associated with former site MGP operations, they were detected at low concentrations and do not pose a health risk to site occupants or neighbors.

3 DEVELOPMENT OF REMEDIAL ACTION OBJECTIVES AND PROPOSED REMEDIAL ACTION

3.1 GENERAL

This Section presents the RAOs for the site and the proposed RA to address the RAOs. To develop the RAOs, a qualitative exposure assessment is presented along with the identification of potential Standards, Criteria and Guidance (SCGs). To assist in the development of the proposed RA, a description of the volume of impacted media and physical limitations to remediation is presented along with a discussion of potential future uses of the site.

3.2 DEVELOPMENT OF REMEDIAL ACTION OBJECTIVES (RAOS)

Remedial action objectives (RAOs) are goals set for impacted environmental media identified which provide protection of human health and the environment. RAOs form the basis for the proposed remedial action by providing overall goals for site remediation and are based on engineering, risk based information, and potential Standards, Criteria and Guidance (SCGs).

3.2.1 Qualitative Exposure Assessment

A qualitative exposure assessment identifies and evaluates three components:

1. The existence of a source of chemical
2. A mechanism or pathway by which a chemical can be released from the source
3. The existence of scenarios by which humans can be exposed to the source

The qualitative exposure assessment for on-site and off-site areas is as follows:

Surface Soil: Dermal contact, inhalation, or accidental ingestion of surface soil.

On-site –Potentially complete exposure pathway for trespassers, utility workers, and construction workers. Carcinogenic PAHs identified in one of six samples.

Off-site –No potentially complete exposure pathway. Site related constituents have not been detected off-site.

Subsurface Soil: Dermal contact, inhalation, or accidental ingestion of subsurface soil.

On-site –Potentially complete exposure pathway for utility workers, and construction workers. PAHs, CPAHs, and NAPL/tar identified in soils at depths greater than 6 ft below grade.

Off-site –No potentially complete exposure pathway. Site related constituents have not been detected off-site.

Ground Water: Dermal contact, inhalation, or accidental ingestion of ground water.

On-site – Potentially complete exposure pathway for utility workers and construction workers. BTEX and PAHs detected in on-site groundwater in source areas.

Off-site –No potentially complete exposure pathways. Off-site ground water was not found to contain site-related constituents above screening criteria.

Soil vapor: Inhalation

On-site- No potentially complete exposure pathways. Although compounds detected in site soil vapor samples may be associated with former site MGP operations, they were detected at low concentrations that do not pose a health risk to the site occupants or neighbors. If any new structures are built on-site, the potential for contaminated soil vapor to intrude into the indoor air will be evaluated. If the potential is determined to exist, appropriate control measures will be incorporated into the design of the new structure.

Off-site -No potentially complete exposure pathways. Although compounds detected in site soil vapor samples may be associated with former site MGP operations, they were detected at low concentrations that do not pose a health risk to the site occupants or neighbors.

3.2.2 Identification of Potential Standards, Criteria, and Guidance (SCGs)

To assist in the development of RAOs and a proposed remedial action, SCGs were evaluated for this site. As defined in NYSDEC's DER-10, SCGs are promulgated requirements ("standards" and "criteria") and non-promulgated guidance ("guidance") which govern activities that may affect the environment and are used at various stages of investigation and remediation of a site.

There are three types of SCGs: chemical-, location-, and action-specific SCGs. Chemical-specific SCGs are health- or risk-based numerical values or methodologies which, when applied to site-specific conditions, result in the establishment of numerical values. These values establish the acceptable amount or concentration of a chemical that may be found in, or discharged to the ambient environment. Location-specific SCGs set restrictions on activities based on the characteristics of the site or immediate environs. Action-specific SCGs set controls or restrictions on particular types of remedial actions once the remedial actions have been identified as part of a remedial alternative. The identification of potential SCGs is documented in Table 1.

3.2.3 Remedial Action Objectives

Based on the findings of the previous site investigations described in Section 2, the qualitative exposure assessment presented above, and the identified SCGs, the proposed RAOs for the Herkimer Former MGP Site are to prevent, eliminate, or reduce to the extent practicable:

i. Ingestion/direct contact with contaminated soil

ii. Inhalation of or exposure to contaminants volatilizing from contaminants in the soil

iii. Discharge of contaminants to groundwater.

3.3 DEVELOPMENT OF PROPOSED REMEDIAL ACTION

Elements considered in the development of the proposed RA include:

- RAOs described above
- The areas and volumes of impacted media
- Physical limitations to remediation
- The potential future use of the site

3.3.1 The Areas and Volumes of Impacted Media

As more fully described in Section 2.3.2, the calculated surface area of the defined NAPL-impacted zone in the Holder Area is approximately 1,350 square feet. The total estimated volume of material in this foot print, to the bottom depth of the NAPL-impacted material at a depth of 12 ft below grade, is approximately 600 cy. Of this volume, approximately 300 cy of unimpacted fill material is present above the defined NAPL-impacted material and 300 cy is NAPL-impacted material. Although not directly related to MGP operations, the fill material generally contains constituents at concentrations above the NYSDEC criteria for fill material.

The horizontal limit of the impacted soil in the Petroleum Area is shown on Figure 3 and occupies approximately 1,450 square feet. Based on NAPL impacts being detected to approximately 16 feet bgs, it is estimated that approximately 860 cy of material is present within the footprint of the Petroleum Area. As with the Holder Area, the NAPL-impacted interval is located beneath an average depth of six feet of unimpacted fill material. Therefore of the 860 cy, approximately 320 cy is unimpacted fill material and 540 cy is NAPL impacted material.

3.3.2 Physical Limitations to Remediation

Site conditions present challenges to remediation at this site. Specifically, the small size of the site, the residential surroundings, and the relatively shallow ground water are physical characteristics that complicate remediation and need to be considered during development of a proposed RA for the site.

The small size of the site and presence of overhead utilities around the site perimeter complicate staging and movement of construction equipment or materials, on-site treatment of remediation wastes and construction water, and sheeting and shoring that may be necessary for excavation activities. The limited area makes extensive excavation difficult due to the limited room to stage excavation materials or trucks awaiting loading. The presence of overhead utilities around the site perimeter will need to be considered when mobilizing equipment and materials to the site.

Logistical constraints associated with the small size for the site are compounded by the presence of residences in the vicinity of the site. Odor and vapor emissions related to open excavations will be a significant consideration as will noise and vibration due to truck traffic and the installation of sheeting to facilitate excavations.

The presence of ground water at approximately 7 ft below grade will require dewatering for deeper excavations. To remove certain areas of contamination in the Petroleum Area, excavations may need to extend to approximately 16 ft below grade, into the higher permeability sand and gravel unit. The higher permeability sand and gravel will result in an upward flow of groundwater into the excavation. Groundwater entering excavations will have to be collected and pre-treated or treated, either on-site or off-site, prior to discharge. The presence of cobbles will result in difficulties in driving sheeting for lateral support of deep excavations.

Assuming that sheeting can be driven in the Petroleum Area to a depth of 45 feet to support an excavation 16 feet deep, it is estimated that it will be necessary to sheet approximately 2,250 square feet to facilitate the excavation. Based on the results of the groundwater pumping test, the estimated inflow into the sheeted excavation would be between 100 and 200 gpm (O'Brien & Gere, 2011).

The excavation of MGP-impacted material will result in the generation of greenhouse gases associated with excavation activities, off-site transportation of the excavated material, and the importation of clean backfill to the site. The relative quantity of greenhouse gases generated will be proportional to the quantity of material excavated.

3.3.3 Potential Future Use

This site is zoned C2 – General Commercial. Under this zoning, the property can be used for multiple dwellings for the aged (by special permit), retail, restaurant, hotel, theater, bowling, skating rink, veterinarian, gas sales and garage for auto repair. The property owner has discussed a variety of future uses. These include a garage, light commercial, or parking. National Grid will work with the property owner during the development of the design to accommodate (to the extent possible) the owner's future plans, recognizing that the remedy will require the imposition of an environmental easement.

3.3.4 Proposed Remedial Action

Based on the RAOs, the nature and extent of contamination present at the site, the nature of constraints present at this site, and the planned future use of the site, the proposed remedial action for this site is:

- Removal and stockpiling of the upper 2 to 6 ft. of fill. This may include areas that are not subject to further excavation as described below, and also includes the upper 2 ft. that have chemical concentrations that exceed 6NYCRR Restricted Residential Use SCOs.
- Removal and off-site disposal of source material (defined as soil containing tar, NAPL, or blebs) from the holder area to a depth of up to 12 ft below grade.
- Removal and off-site disposal of impacted material from the Petroleum Area to a depth of 16 ft below grade. Placement of the excavated and stockpiled on-site fill material back into the excavation.
- Covering the excavations, and any on-site area with contaminants exceeding 6NYCRR Restricted Residential Use SCOs, with a minimum of 2 ft of clean fill from an off-site source.
- Imposing an environmental easement, and implementing a Site Management Plan that will include an Institutional and Engineering Control Plan, a Monitoring Plan (including groundwater monitoring as described in Section 8.5), and Operation and Maintenance Plan.

The elements of the proposed remedial action are described in more detail in Section 5.

3.4 EVALUATION OF THE PROPOSED REMEDIAL ACTION

The appropriateness of the proposed remedial action is documented by assessment of the proposed remedial action with respect to nine evaluation criteria that encompass statutory requirements and overall feasibility and acceptance. The nine evaluation criteria include:

- Overall protectiveness of human health and the environment
- Compliance with the SCGs
- Long-term effectiveness and permanence
- Reduction of toxicity, mobility, or volume through treatment
- Short-term effectiveness
- Implementability
- Cost
- Support agency acceptance
- Community Acceptance

The preamble to the NCP (Federal Register 1990) indicates that, during remedy selection, these nine criteria should be categorized into three groups: threshold criteria, primary balancing criteria, and modifying criteria. The two threshold criteria, overall protection of human health and the environment, and compliance with SCGs, must be satisfied for an alternative to be eligible for selection. Long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost are primary balancing criteria that are used to balance the trade-offs between alternatives that meet the threshold criteria. The modifying criteria are state and community acceptance, which are formally considered after public comment is received on the Proposed Remedial Action. The New York State TAGM entitled *Selection of Remedial Actions at Inactive Hazardous Waste Sites*, (NYSDEC 1990) and NYSDEC's Department of Environmental Remediation (DER)-10 draft guidance entitled *Technical Guidance or Site Investigation and Remediation* (NYSDEC 2009) were also considered during development of the proposed remedial action.

The evaluation of the proposed remedial action with respect to these criteria is described below.

3.4.1 Overall Protection of Human Health and the Environment

Overall protection of human health

Protection of human health is provided through:

1. Removal of the MGP holder and heavily impacted soils in the vicinity of the holder and the Petroleum Area to the extent practical.

2. Institutional controls precluding groundwater use.

3. Restricting activities that may result in exposure to residual impacted on-site soil and groundwater.

Overall protection of the environment

Off-site migration of MGP related contaminants have not been observed under existing conditions.

3.4.2 Compliance with Standards, Criteria and Guidance (SGCs)

Compliance with chemical-specific SCGs

The proposed remedial action relies on excavation of soils and institutional controls to address on-site soil and ground water SCGs. Off-site migration of MGP-related contaminants have not been observed under existing conditions.

Compliance with location-specific SCGs

There were no potential location specific SCGs identified.

Compliance with action-specific SCGs

Action specific SCGs will be addressed during construction. Construction activities will be conducted consistent with air quality standards and in accordance with OSHA safety requirements.

Wastes generated will be managed, transported and disposed of in accordance with applicable State and Federal requirements.

3.4.3 Long-Term Effectiveness and Permanence

Magnitude of residual risk

The proposed remedial action will provide long-term effectiveness and permanence through adequate and reliable mitigation of exposures to soil and groundwater. Excavation of the MGP holder and heavily impacted soil in the vicinity of the Holder Area and the Petroleum Area provides protection against potential exposure to contaminated soils. Soils remaining on-site with contamination exceeding 6NYCRR Restricted Residential Use SCOs will be covered with a minimum of 2 ft of clean fill from an off-site source. There are no observed off-site impacts to ground water and the site and surrounding areas are served by public water.

Adequacy and reliability of controls

Institutional controls are a reliable means of managing risks due to the presence of residual contamination in on-site ground water and soils. There are no observed off-site impacts to groundwater and the site and surrounding areas are served by public water.

3.4.4 Reduction of Toxicity, Mobility, or Volume through Treatment

Treatment processes used and materials treated

Treatment is not a component of the proposed remedial action.

Amount of hazardous material destroyed or treated

Approximately 840 cy of material of source material will be disposed of off-site. Of this volume, approximately 300 cy will come from the holder area and 540 cy come from the Petroleum Area.

Degree of expected reduction in toxicity, mobility, or volume

Excavation of the MGP holder and source material from the holder area and impacted soil from the Petroleum Area will reduce the volume of MGP – related material present at the site. Approximately 840 cy of MGP-related material will be excavated from the area of the MGP holder and the Petroleum Area under the proposed remedial action.

Degree to which treatment is irreversible

Treatment is not a component of the proposed remedial action.

Type and quantity of residuals remaining after treatment

An unknown quantity of residual MGP-related material will remain on-site. Exposure to this residual material will be controlled by covering with a minimum of 2 ft of clean fill and the imposition of institutional controls. Off-site migration of MGP related constituents has not been observed.

3.4.5 Short-Term Effectiveness

Protection of community during remedial actions

Excavation activities may present odor, dust, and vapor exposures to nearby residents. Engineering controls, including dust, volatile emissions, and surface water runoff controls will be implemented to protect the community. It will be necessary to develop and implement a traffic control plan to mitigate the impact of truck traffic associated with off-site disposal of excavated material and importation of clean backfill material.

Monitoring during construction will be conducted in accordance with the NYSDOH Generic Community Air Monitoring Plan (CAMP).

Protection of workers during remedial actions

Excavation activities may present odor, dust, and vapor exposures to workers during construction. Engineering controls, including dust, volatile emissions, and surface water runoff controls will be implemented to protect workers during construction.

Environmental impacts

Dust, volatile emission, and surface runoff controls will be instituted to minimize impacts to the environment during implementation of this alternative.

Time until remedial action objectives are achieved

The proposed remedial action will achieve the RAOs upon completion of construction. Off-site migration of site related contaminants has not been observed.

3.4.6 Implementability

Ability to construct and operate the proposed remedial action

The proposed excavation can be implemented although excavation support systems (sheeting or trench boxes) will likely be required. Groundwater entering the excavations will require collection and treatment. There is the potential for the generation of noise, vibrations, odors, and dust for the duration of the activities. Engineering controls will be necessary to control these. Truck traffic associated with the off-site disposal of excavated material and the importation of clean backfill may result in traffic congestion.

Reliability of the proposed remedial action

Excavation is a reliable technology to remove impacted material. Covering with a minimum of 2 ft of clean soil is a reliable means of controlling exposure to residual contaminants. Institutional controls are reliable means of managing risks associated with site ground water and soils.

Ease of undertaking additional remedial actions, if necessary

Additional remedial actions, if necessary, could be readily implemented.

Ability to monitor effectiveness of the remedy

The removal of source material will be visually evident coincident with excavation. Following excavation, documentation samples will be collected and analyzed to quantify the concentration of site-related constituents remaining on-site. Since off-site impacts to ground water have not been observed under existing conditions, post-construction monitoring will not be necessary.

Availability of off-site treatment, storage and disposal services

Disposal services are readily available for the management of excavated impacted soil.

Availability of necessary equipment, specialists, and materials

Necessary equipment, specialists and materials are readily available.

3.4.7 Cost

The estimated capital cost to implement the proposed remedial action is $ 3,992,000. This amount includes $ 2,555000 in direct capital costs and $ 1,437,000 in indirect capital costs. Direct costs include materials, labor, and equipment necessary to construct the proposed remedial action. Indirect costs include contingencies, engineering, construction management, legal fees, and bonds. The estimated present worth for 30 years of operation, maintenance and monitoring is $190,000 for a total present worth cost of $4,182,000 A detailed cost estimate is provided as Table 2.

4 PRE-DESIGN INVESTIGATIONS

4.1 GENERAL

Data collected during the RI and the additional investigations conducted by O'Brien & Gere during 2010 and 2011 are adequate to define the extent of contamination horizontally and vertically for purposes of design. Adequate data also exists for the design of excavation support systems and construction water handling and treatment systems.

A topographic and boundary survey of the site will be conducted to verify existing mapping and surface features for design purposes. The survey will include property lines, existing pavements, and other site features.

5 REMEDIAL DESIGN

5.1 GENERAL

The selected remedy includes the following major components:

- Removal and stockpiling of the upper 2 to 6 ft. of fill. This may include areas that are not subject to further excavation as described below and also includes the upper 2 ft. that have chemical concentrations that exceed 6NYCRR Part 375.6 Restricted Residential Use SCOs.
- Removal and off-site disposal of source material (defined as tar, NAPL, or blebs) from the holder area to a depth of 12 ft below grade.
- Removal and off-site disposal of impacted material from the Petroleum Area to a depth of 16 ft below grade.
- Placement of the excavated and stockpiled on-site fill material back into the excavation.
- Covering the excavations, and any on-site area with contaminants exceeding 6NYCRR Restricted Residential Use SCOs, with a minimum of 2 ft of clean fill from an off-site source.
- Imposing an environmental easement, and implementing a Site Management Plan that will include an Institutional and Engineering Control Plan, a Monitoring Plan (including groundwater monitoring as described in Section 8.5), and Operation and Maintenance Plan.

Each of these components is described in more detail in the following subsections. This Section also describes the Biddable Quality Documents and supporting plans that will be developed to implement the RA.

5.1.1 Establishment of Site Controls

Recognizing that the Site is in a residential neighborhood, a key consideration will be minimizing the short term impacts of construction. Potential impacts include noise, dust, odors, vapor emissions, surface water runoff, and traffic congestion.

The specifications for excavation, listed in Section 5.2.2, will require the contractor to achieve applicable performance standards for air emissions, including dust and odors, and will provide a degree of flexibility in the choice of methods to achieve compliance. Requirements for handling water encountered during construction will also be presented.

Allowable working hours and permissible noise levels will be specified in accordance with any pertinent local requirements. Recognizing the limited working area at the site and the proximity to Williams and West Smith streets, the specifications will require the contractor to develop a Traffic Control Plan to detail the steps that will taken to minimize the disruption to local traffic. The contractor will be required to provide site security during construction.

5.1.2 Removal and Stockpiling the Upper 2 to 6 ft. of Fill

As described in Section 2, fill having the characteristic of urban fill material is present across the site from the surface to depths between 4 and 6 ft below grade. The entire depth of fill material will be removed from above the former holder foundation and the Petroleum Area where deeper excavations are to be subsequently performed. Additional fill material outside of the plan area of deeper excavation exhibiting chemical concentrations in the upper 2 ft. exceeding 6NYCRR Restricted Residential Use SCOs will be removed to a minimum depth of 2 ft. Additional fill areas may also be removed within the area of the site. The removed material will be stockpiled on-site for use in backfilling the deeper excavations to a maximum depth of two feet below the anticipated final grade.

5.1.3 Removal of Impacted Material

As previously described and shown on Figure 2, the foundation of a former gas holder is located in the south western portion of the site. Residual quantities of weathered, non-mobile tar were identified within the former holder foundation. Soils exterior of the holder were also impacted by this material to the approximate depth of the bottom of the holder. Physical and analytic evidence of limited quantities of NAPL was detected in the bottom of the holder, immediately beneath the bottom of the holder, and around the north, east, and southern

side of the holder. The bottom of the holder occurs between 6 and 8 ft below grade. The depths of observed impacts appear to be limited to a depth of 12 ft below grade both within and outside of the holder.

The Petroleum Area is impacted by heavy oil with a relatively limited VOC component. Some MGP waste is present at the southern end of the Petroleum Area. The bulk of the contaminants in the Petroleum Area are present in the lower permeability interbedded fine sand silt and clay present in this area to a depth between approximately 10 and 12 ft below grade.

The proposed remedial action calls for excavation of the former gas holder foundation and source material (defined as tar, NAPL, or blebs) to a depth of 12 ft below grade. In the Petroleum Area, excavation will be conducted to a depth of approximately 16 ft below grade.

It is anticipated that sidewall support of the excavations will be required. This may be accomplished by installing sheeting or utilizing trench boxes. As described above, approximately the upper 6 feet of fill will be removed and stockpiled. Material below the upper 6 feet will be removed to the horizontal limits shown on Figure 3 and depths of approximately 12 feet and 16 feet below grade in the gas holder and Petroleum Area, respectively.

Provisions will be incorporated into the design and construction contract for the removal of up to 200 gallons per minute (gpm) of water entering the excavation. It is anticipated that the collected water will be pre-treated (if required) on-site and discharged to the Village of Herkimer Waste Water Treatment Facility (WWTF) using existing Village conveyance piping for subsequent treatment. O'Brien & Gere has contacted the Village of Herkimer Water/Sewer Superintendent to discuss potential for the Village WWTF to accept water that may be generated during excavation. Based on information collected during the pumping test regarding the estimated flow rate and chemical quality of the groundwater, the Water/Sewer Superintendent believes that the WWTF will be able to accept the water, depending on the timing of construction. It is unlikely that the WWTF could receive this water during the springtime due to high flows from other sources. The Village has submitted the water quality data to the NYSDEC Division of Water to confirm that it will be acceptable for the WWTF to receive the water. If acceptable to the NYSDEC, water from the excavation will likely be discharged to the WWTF for treatment.

If the anticipated flow rate of up to 200 gpm is exceeded, or if the Village of Herkimer WWTF cannot accept the construction water, then the excavations will be conducted in saturated (wet) conditions as described by the NYSDEC in a letter dated January 5, 2011 (NYSDEC, January 25, 2011). At the conclusion of excavation, a quantity of water equivalent to one volume of the remaining saturated depth (12 feet for the gas holder area and 16 feet for the Petroleum Area) will be removed and treated as necessary.

5.1.4 Backfill and Cover

The excavation made to remove impacted material will be backfilled to a maximum of two feet below grade with the stockpiled site fill material. A soil cover consisting of minimum of 2 feet of clean material meeting NYSDECs backfill criteria presented in 6NYCRR Part 375 will be placed over the deep excavations area and fill areas with chemical concentrations exceeding 6NYCRR Restricted Residential Use SCOs. A demarcation layer will be placed between the cover and soils that potentially have chemical concentrations exceeding 6NYCRR Restricted Residential Use SCOs. National Grid may propose to use other cover material such as asphalt or other paving material to meet the intended use of the property, subject to NYSDEC approval. In general, the site will be restored to the grades existing prior to the initiation of construction.

The remedial design will show the limits of the site-wide cover along with associated grading. A cross section will be provided showing the inclusion of a demarcation layer at the bottom of the cover. Specifications will be prepared for the selected cover system including testing provisions to demonstrate that off-site material brought on-site is from a clean source.

5.1.5 Institutional Controls

Institutional controls in the form of an environmental easement will be implemented to limit future site activities and inform future property owners of the residual contaminants at the site. The environmental

easement will limit the use and development of the property to commercial/industrial use. Groundwater use at the site will be prohibited.

A Site Management Plan will also be prepared as a component of the institutional controls. The Site Management Plan will include:

- Provisions for the management of the final cover system to restrict excavation below the demarcation layer. In the event excavation is necessary below this layer, the Site Management Plan will include procedures for soil characterization, handling, health and safety, and disposal.
- Provisions for the evaluation of vapor intrusion in the event that buildings are developed on the site, including a discussion of potential mitigation methods.

The Site Management Plan will be submitted to the NYSDEC for review and approval following remedy completion.

As required by the Consent Order, the institutional controls will be agreed to in writing by the property owner.

5.2 CONTENTS OF BIDDABLE QUALITY DOCUMENTS

Biddable quality documents will include contract drawings and specifications. The documents will be provided as a draft to the NYSDEC. Following the resolution of comments received from the NYSDEC, the documents will be stamped and signed by a New York State Licensed Professional Engineer and resubmitted for final NYSDEC approval.

5.2.1 Contract Drawings

It is anticipated that the Contract Drawings will include:

Title Sheet (including Drawing Index)

G-1 Existing Site Plan

G-2 Site Preparation Plan

G-3 Erosion and Sediment Control Plan

G-4 Fill Removal and Stockpile Plan

G-5 Excavation and Backfill Plan

G-6 Cover and Final Grading Plan

G-7 Miscellaneous and Cover Details

5.2.2 Technical Specifications

The following Technical Specifications, including Special Provisions, are anticipated to be necessary to implement the Remedial Action.

SPECIAL PROVISIONS

SP-1 General Construction Sequence

SP-2 Work Schedule

SP-3 Contract Work Area Security

SP-4 Notices

SP-5 NYSDEC Review

SP-6 Lines, Grades and Elevations

SP-7 Progress and Coordination Meetings

SP-8 Emergency Calls

SP-9 Existing Utilities

SP-10 Dust Monitoring and Control Program

SP-11 Contractor's Construction Quality Control Plan

SP-12 Vibration Minimization and Monitoring Plan

SP-13 Borrow Materials

SP-14 Retention of Records

SP-15 Reporting Requirements

SP-16 Emergency Response

SP-17 Odor Control

SP-18 Staging Plan

SP-19 Utilization of On-Site Materials

SP-20 Existing Monitoring Wells

SP-21 Supplemental Information

TECHNICAL SPECIFICATIONS

DIVISION 1 – GENERAL REQUIREMENTS

Section 01300 Surveys

DIVISION 2 – SITEWORK

Section 02003 Field Office Trailer

Section 02006 Health and Safety

Section 02007 Perimeter Air Monitoring and Dust Control Plan

Section 02009 Project Photographs

Section 02110 Storm Water Pollution Prevention Plan

Section 02141 Construction Water Management

Section 02145 Groundwater Monitoring Well Decommissioning

Section 02211 Clearing and Grubbing

Section 02221 Earthwork

Section 02223 Embankment

Section 02225 Structural Excavation, Backfill and Compaction

Section 02229 Rock Removal

Section 02231 Selected Fill

Section 02241 Off-Site Transportation and Disposal

Section 02270 Erosion and Sediment Control

Section 02278 Geotextiles

Section 02400 Steel Sheet Piling

Section 02503 Restoration of Surfaces

Section 02981 Topsoil and Seeding

5.3 COMMUNITY ENVIRONMENTAL PROTECTION PLAN (CEPP)

A CEPP will be developed to describe controls, monitoring, and work practices to be implemented during construction to address potential short term impacts to the public and environment during construction of the RA. The CEPP will include:

- A summary of the Community Air Monitoring Plan (CAMP) contained in the Health and Safety Plan (HASP).
- An identification of temporary measures to be implemented to protect the public adjacent to the site from exposure.
- A Vapor/Odor Management Plan to identify measures to be taken during construction to monitor and control the generation of vapors or odors.
- Methods to monitor noise and vibrations during construction, including vibration monitoring of adjacent structures if driving of sheet piles is required.
- Measures to secure the site from trespassers.
- Erosion and sediment control measures to comply with the substantive requirements of a storm water management permit.
- A Traffic Control Plan
- A Waste Management Plan

The CEPP will present a concise summary of controls, monitoring, and work practices to be implemented, recognizing that the details will be included in the technical specifications. Several of the plans to be developed are described in more detail in the following subsections.

5.3.1 Community Protection Measures

The Contractor will be required to implement several measures to provide protection to the community adjacent to the Herkimer Site. These include:

- the CAMP described in Section 5.3.2
- the Vapor/Odor Management Plan described in Section 5.3.3
- monitoring of noise and vibrations as described in Section 5.3.4
- the provision of site security as described in Section 5.3.5
- implementation of Stormwater Pollution Protection Plan as described in Section 5.3.6
- implementation of the Traffic Control Plan described in Section 5.3.7.
- implementation of the HASP described in Section 6

5.3.2 Community Air Monitoring Program (CAMP) to be Included in the Health and Safety Plan (HASP)

The technical specification for the HASP to be prepared by the Contractor will include requirements for the development of a Community Protection/Community Air Monitoring Plan (CAMP), including provisions for monitoring of ground intrusive activities within 20 feet of a potentially exposed structure or individual. The CAMP will be specified to be in accordance with NYSDOH guidance. The specification will include the provision that the Contractor is to prepare and implement an Employee and Community Protection Plan (ECPP) in

accordance with OSHA Standard 29 CFR 1910.120(h), NYSDEC, TAGM HWR89-4031, and the New York State Department of Health (NYSDOH) Generic Air Monitoring Plan.

The HASP is more fully described in Section 6.

5.3.3 Vapor/Odor Management Plan

The Contractor will be required to prepare a Vapor/Odor Management Plan that will detail methods to be implemented to control vapors and odors emanating from excavations and stockpiles from site. control The Contract Documents will include a Special Provision detailing the requirements for the Contractor's Odor Control Plan which will describe provision to control odors emanating from excavations and stockpiles of soil and material. The primary measure to be implemented in order to mitigate or limit generation of odors will be the minimization of exposed waste material surface area, to the extent practical. Secondary measures will include use of approved products to mask objectionable odors. Odor control measures that may be used, depending upon specific means and methods, include:

- Odor suppression foams
- Bio-Solve
- Piian Flexi-Fog system or equivalent
- Water spray
- Polyethylene sheeting (for covering excavation faces, material stockpiles, etc.)
- Commercial grade fans

The contractor will be required to have the selected odor control methods and materials (e.g. foaming agents) available on-site. In the event that these, or other primary and secondary measures, do not adequately control odors, then the excavation will be discontinued until alternate measures can be implemented.

5.3.4 Control of Noise and Vibrations

The specifications will make it the Contractor's responsibility to take adequate measures to keep noise levels produced by construction equipment to safe and tolerable limits as set forth by the Occupational Safety and Health Administration (OSHA), the Environmental Protection Agency (EPA) and the New York State industrial Code Guidelines and Ordinances. All construction equipment presenting a potential noise nuisance will be provided with noise muffling devices.

The Contractor will be required to conduct a structural survey of houses adjacent to the areas where excavation will occur. The structural survey will include a visual inspection of the exterior of the residential foundations along with photographic documentation of the exterior condition of the residences prior to construction. The Contractor will be required to develop a Vibration Minimization and Monitoring Plan to be implemented during the installation and removal of sheet pile if sheet piling is installed to facilitate excavation. During any sheet pile installation and removal activities, the Contractor will be required to monitor and maintain the peak particle velocity to less than 0.5 inches/sec at any structure in the vicinity of sheet pile installation. If the peak particle velocity exceeds 0.5 inches/sec the Contractor will be required to stop sheet pile installation activities and propose alternate pile installation procedures and equipment to reduce the vibrations.

5.3.5 Site Security

The specifications will require that the Contractor provide all elements of work area security necessary to prevent the entry of unauthorized persons onto the property. This will include, but not be limited to, the provision of temporary fencing around active work areas.

5.3.6 Stormwater Pollution Prevention Plan (SWPP)

Because the site is less than 1 acre in size a Stormwater Pollution Prevention Plan will not be required. An erosion and sediment control plan and details will be prepared in accordance with the latest version of the "New York Standards and Specifications for Erosion and Sediment Control" published by the NYSDEC.

5.3.7 Traffic Control Plan

A performance specification will be developed detailing the requirements for a Traffic Control Plan including, but not limited to, the designation of haul roads to and from the site. The specification will require that the Contractor develop the Traffic Control Plan in consultation with the Village of Herkimer. The Contractor will be required to provide all traffic control as necessary according to local, state, and federal requirements. The Contractor will be required to keep main public roads to the site open at all times unless prior arrangements are made with the appropriate authorities. Prior to the start of Construction activities, the Contractor and the Engineer will make a joint condition survey of roads to be used by the Contractor. The condition survey will be performed using a video camera. During the video survey, the Engineer and Contactor will verbally document pre-existing damage to the roadways and the location of the damage.

5.3.8 Waste Management Plan

A performance specification will be developed requiring the Contractor to prepare a Waste Management Plan. The Waste Management Plan will address all wastes generated for off-site disposal or on-site use as backfill if excavated material meets NYSDEC requirements. The Waste Management Plan will include waste sampling requirements and waste disposal determinations. The Waste Management Plan prepared by the Contractor will comply with the requirements of this specification.

The Waste Management Plan will outline the proposed sequence and methods for waste excavation, on-site placement, or off-site disposal. The Waste Management Plan will include:

- Waste sampling requirements,
- Methods for determining waste disposal requirements
- The name and location of the off-site facility(ies) to which the waste is to be shipped
- The type and quantity of waste to be shipped to each facility
- The expected schedule for the shipment of waste material
- The method of transportation
- The names of licensed waste haulers
- Procedures for manifest management

5.4 CONTRACTOR'S REMEDIAL ACTION CONTINGENCY PLAN (RACP)

The specification will require the Contractor to prepare a Remedial Action Contingency Plan (RACP). This plan will describe the provisions required for responding to site-related emergencies that could potentially occur during remedy implementation. The RACP will, at a minimum, present the following components:

- A Spill Response Plan (SRP) for addressing spills that might occur on-site during remedial construction activities. The SRP will describe the methods, means, and facilities required to prevent soil, water, structure, equipment and material impacts caused by spills; provide information regarding spill containment and cleanup, and provide information related to decontamination measures.
- Procedures that Contractor's personnel will take in response to an emergency.
- Designation of an emergency coordinator.
- A list of emergency equipment and evacuation plans.
- Procedures and routes for emergency vehicular access/egress.
- Procedures for evacuation of personnel from the.
- A listing of contact personnel with phone numbers and procedures for notifying each party.

Contact personnel are to include, at a minimum the following:

- National Grid
- Project Engineer
- Fire officials
- Local, county, and state Police
- Local hospital(s)
- NYSDEC 24-hour Spill Hotline
- Routes to local hospital(s), including written directions and a map that depicts the location of the site relative to the hospital(s)

Prior to the start of site operations, the Contractor will be required to attend necessary meetings with local officials and/or those responsible for local emergency management and public safety (to include fire, police, hazardous material response teams, hospitals and local health officials for purposes of coordinating the RACP with any emergency response efforts that would be performed by such agencies.

The Contractor will also be required to contact the local medical facility selected for inclusion in the HASP and RCAP to ensure that the said facility is willing and capable of providing the medical support necessary for potential site hazards and emergencies.

5.5 CONSTRUCTION QUALITY CONTROL PLAN (CQCP)

The specifications will require that the Contractor prepare and implement a Construction Quality Control Plan (CQCP) for the work to outline quality control procedures and protocols to be implemented during construction, incorporating the detailed procedures and requirements presented in the specifications. The CQCP will include:

- *Responsibility and Authority:* The responsibility and authority of organizations and key personnel involved in regulating, design, and construction of the remedial system will be presented. Appropriate lines of communication between involved parties will be delineated.
- *Construction Quality Control Personnel Qualifications:* The qualifications of the CQC personnel, including required training and experience will be presented in the CQC Plan.
- *On-Site Observation:* The observations and tests that will be used to document that the construction meets the design criteria, plans, and specifications will be detailed.
- *Sampling and Testing Methods:* Sampling and testing methods, frequencies, acceptance and rejection criteria, and corrective measures detailed in the technical specifications will be addressed in the CQC Plan.
- *Documentation:* Reporting requirements for construction quality control activities will be described. These will include daily summary reports, data sheets, meeting minutes, photographs, record drawings, problem identification and corrective measure reports, and final documentation.

6 CONSTRUCTION PHASE HEALTH AND SAFETY REQUIREMENTS

The technical specifications for the project will require that the Contractor develop a Health and Safety Plan (HASP) for personnel working at the site, detailing health and safety measures to be implemented and observed by construction personnel. The specifications will require that the HASP be developed by a Certified Industrial Hygienist (CIH) in accordance with requirements presented in 29 CFR parts 1910 and 1926, the USEPA's standard Operating Safety Guides, NIOSH "Occupational Safety and Health Guidance for Hazardous Waste Activities," local regulations, and National Grid health and safety requirements. The technical specification for the HASP will include provisions for a Community Air Monitoring Plan (CAMP).

The HASP will be developed by a certified health and safety professional. The site-specific HASP will, at a minimum, address the following elements:

- Program organization and responsibilities
- Health and safety risk or hazard analysis for each site task and operation
- Employee training
- Required PPE for each site task and operation
- Medical surveillance requirements
- Frequency and types of air monitoring, personnel monitoring, and environmental sampling techniques and instrumentation to be used
- Site control measures
- Decontamination measures
- Emergency response plan
- Confined space entry procedures (when applicable)
- Handling of drums and containers (when applicable)
- Spill containment program (when applicable)
- Exclusion zone security and entry procedures
- Occupational Safety and Health Administration (OSHA) Requirements in 29 CFR 1920.120, and citations adopted by reference.

6.1 PROGRAM ORGANIZATION AND RESPONSIBILITIES

The RA Contractor will be required to identify the lines of authority, responsibility, and communication in the HASP. The Contractor will also be required to provide an organization chart and resumes of the Contractor's key personnel involved in all phases of the construction activities. In addition, the Contractor will be required to identify and assign a Site Health and Safety Officer (SHSO) for the project. The SHSO will be required to be responsible to the Contractor and have the authority and knowledge necessary to implement the site-specific HASP and verify compliance with applicable safety and health requirements.

6.2 HEALTH AND SAFETY RISK ANALYSIS

To identify and evaluate specific site hazards for determining the appropriate safety and health control procedures, documents contained in the Administrative Record will be available for the Contractor's review prior to and during his development of the site-specific HASP.

The Contractor, as a minimum, is required by the referenced regulations to obtain the following information to the extent available prior to allowing employees on-site:

- Location and size of the site
- Description of the site operations and tasks to be performed

- Approximate duration of each operation and task
- An evaluation including the chemical and physical properties of the known or suspected hazardous substances and health hazards
- An evaluation of known or potential safety hazards associated with each task
- Known or suspected pathways of hazardous substance dispersion pertinent to each operation and task
- Site topography and accessibility
- Status and capabilities of emergency response teams.

6.3 EMPLOYEE TRAINING

Employees performing on-site activities and the supervisors and management responsible for the site will be trained to the level required by their job function as specified by OSHA 29 CFR 1910.120(e) prior to the start of work at the site. Each employee, manager and supervisor will also receive eight hours of refresher training annually. Written certification of the successful completion of the necessary training is required by the regulations.

Employees who have been designated as responsible for responding to on-site emergencies are also required to receive additional training meeting the requirements of 29 CFR 1910.120(q) in how to respond to such emergencies prior to the start of site work.

6.4 PERSONNEL PROTECTION

Engineering controls, work practices, the use of PPE, or a combination of these will be implemented by the Contractor during site operations to protect employees from exposure to hazardous substances, and safety and health hazards as required by 29 CFR 1910.120(g).

A written personal protective equipment (PPE) program including, but not limited to, the following elements will be required to be incorporated into the Contractor's site-specific HASP:

- PPE selection based on site hazards
- Duration of site operations
- PPE use and limitations
- PPE maintenance and storage
- PPE decontamination and disposal
- PPE training and proper fit
- Procedures for donning and doffing PPE
- PPE inspection prior to, during, and after use
- Evaluation of the effectiveness of the PPE program
- Heat stress and cold injury prevention while using PPE

6.5 MEDICAL SURVEILLANCE

The RA Contractor will establish and implement a Medical Surveillance Program (MSP) for employees engaged in on-site operations, consistent with 29 CFR 1910.120(f). The MSP will include physical examinations performed by or under the supervision of a licensed physician. The written opinion of the attending physician on the employee's ability to perform the required work will be obtained by the Contractor and provided to the employee.

The Contractor will retain an accurate record of the required medical surveillance information for the appropriate period as specified in 29 CFR 1910.20.

6.6 MONITORING

In the site-specific HASP, the Contractor will establish a monitoring program in accordance with 29 CFR 1910.120(h) in order to select and maintain proper administrative and engineering controls, work practices, and PPE. The monitoring program will include administrative and engineering controls to reduce potential harm from hazardous substances and activities for persons living in the vicinity of the site. Air monitoring will be performed to identify and quantify airborne levels of hazardous substances. Particulate matter downwind should not exceed 100 $\mu g/m^3$ above the upwind particulate level. If it does, dust suppression techniques should be employed, and work may continue unless particulate levels exceed 150 $\mu g/m^3$ above the upwind particulate level., as specified in the NYSDOH CAMP and the document entitled *Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites*. A copy of the Generic CAMP is included as Attachment A.

The site-specific HASP will establish action levels for monitored parameters and describe the actions which will be implemented if an established action level is exceeded.

The Contractor shall provide to the Engineer for review the Employee and Community Air monitoring Plan (ECAMP). The ECAMP shall address the following:

- Personnel, instruments, and materials necessary to perform air monitoring
- Specific air monitoring methods, sampling media, and sample analyses to be implemented
- Proposed responses to levels above Contractors action levels

6.7 SITE CONTROL

The Contractor will establish a site control program as part of the site-specific HASP to reduce the possibility of contact with contaminants present before work begins, and will modify this program as new information becomes available. The following information, as a minimum, will be included in the site control program, unless covered elsewhere in the HASP:

- A site map
- Site work zones
- Use of a "buddy system"
- Site communications including altering means for emergencies
- Standard operating procedures
- Identification of the nearest medical assistance

6.8 DECONTAMINATION

The RA Contractor will develop and implement decontamination procedures as required by 29 CFR 1910.120(k) which will minimize employee contact with hazardous substances or equipment that has contacted hazardous substances. The RA Contractor will also develop and implement decontamination procedures for heavy equipment and tools.

6.9 EMERGENCY RESPONSE PLAN

The Contractor will develop and implement an emergency response plan as a section of the site-specific HASP, meeting the requirements of 29 CFR 1910.120(l). The emergency response plan will address, as a minimum, the following elements:

- Pre-planning of site operations to prevent emergencies
- Personnel roles, lines of authority, and communication

- Emergency recognition and prevention
- Evacuation routes and procedures
- Safe distances and places of refuge
- Site security control measures
- Decontamination procedures which are not covered elsewhere in the HASP
- Emergency medical treatment and first aid
- Emergency alerting and response procedures
- Measures to review on-site response and follow up
- Emergency and personal equipment kept at the site for emergencies

6.10 CONFINED SPACE ENTRY

The Contractor will include confined space entry procedures in the site-specific HASP as required by 29 CFR 1910.120(b).

6.11 HANDLING OF DRUMS AND CONTAINERS

Drums or containers encountered during site operations containing (or potentially containing) hazardous substances will be handled, transported, labeled, and disposed of in accordance with 29 CFR 1910.120(j). In general, contents of drums or containers and drums and containers will be disposed of off-site. Any drums or containers used during site operations will meet the applicable regulations for the wastes they contain.

6.12 SPILL CONTAINMENT PROGRAM

The Contractor will include a spill containment program in the site-specific HASP meeting the requirements of 29 CFR 1910.120(j), which will be implemented to contain and isolate a hazardous substance, in the event that a spill may occur during transfer.

6.13 EXCLUSION ZONE SECURITY AND ENTRY

The Contractor will delineate work zones (i.e. work within the limits of the areas to be capped) in which specific operations or tasks will occur, and shall institute specific site entry and decontamination procedures at designated control points in accordance with the provisions set forth in 29 CFR 1910.120. As a minimum, three work zones will be established to perform this work: an exclusion/contamination zone, a contamination reduction zone, and a support/clean zone. A map or diagram showing the work zones and a description of the associated security control plan shall be included in the site-specific HASP.

7 IMPLEMENTATION OF REMEDIAL ACTION

This Section describes the steps that will be taken to implement the Remedial Action following NYSDEC approval of the Contract Drawings and Technical Specifications.

7.1 CONTRACTOR PROCUREMENT

National Grid will pre-qualify contractors to submit bids to implement the Remedial Action based on demonstrated experience in completing similar projects. The pre-qualified contractors will be supplied with the Contract Drawings and Technical Specifications along with contractual provisions and bid forms. A pre-bid meeting will be held at the site. The project will be described and the Contract Documents will be reviewed, highlighting key areas such as Health and Safety, Community Air Monitoring, and odor and vapor control requirements among others. Contractor's questions will be entertained and addressed by an addendum to be prepared following the pre-bid meeting.

Following a bid period estimated to be between 4 and 6 weeks, the contractor's bids will be received, reviewed, and a contractor selected to construct the Remedial Action.

7.2 CONTRACTOR SUBMITTALS

Following entering into a contract to construct the Remedial Action, the Contractor will submit the various plans described in Sections 5 and 6 for review by National Grid and, as appropriate, the NYSDEC. Submittals are anticipated to include, but not necessarily be limited to, the following:

- Community Environmental Protection Plan (CEPP) including
  - Community Air Monitoring Program (CAMP)
  - Vapor/Odor Management Plan
  - Stormwater Pollution Prevention Plan (SWPP)
  - Traffic Control Plan
  - Waste Management Plan
- Contractor's Remedial Action Contingency Plan (RACP)
- Construction Quality Control Plan (CQCP)
- Contractor's Health and Safety Plan (HASP)

These plans will be reviewed by National Grid or its representative to monitor compliance with the approved RAWP and the technical specifications. Following National Grid's acceptance of these documents, they will be provided to NYSDEC if so requested. Work will not be initiated until these plans have been accepted by National Grid and NYSDEC as appropriate.

In addition to these plans, there may also be additional technical submittals required by the technical specifications that will be submitted and reviewed and accepted during the course of the project prior to incorporation of the subjects of these submittals into the work.

7.3 CONSTRUCTION SEQUENCE

It is anticipated that the construction of the Remedial Action will be completed in the following general sequence:

1. The Contractor will set up field offices, including temporary utilities, staging and decontamination areas and provide for site security. Worker and community health and safety measures will be instituted. Construction water management facilities will be established.
2. Erosion and sediment controls will be established.
3. Monitoring wells will be abandoned as necessary.

4. Required site preparation, including clearing and grubbing of the work area will be conducted.
5. Construction water pre-treatment system will be mobilized.
6. On-site urban fill material will be removed to depths between 2 and 6 ft. below grade and stockpiled on-site for subsequent use as backfill.
7. Sheeting will be driven around the deep excavation area. Alternately, trench boxes may be utilized for excavation support.
8. Impacted material within the limits of the excavation support, including the former holder foundation, tar, NAPL and petroleum impacted soils will be excavated and either stockpiled for testing to evaluate disposal options or direct loaded for off-site disposal. During excavation, water entering the excavation will be collected and handled as construction water in accordance with the specifications.
9. The excavation will be backfilled. The lower portions of the excavation will be backfilled with the stockpiled on-site fill material to a maximum depth of 2 ft below the final grade.
10. The deep excavation area and areas of the site where fill material exhibits chemical concentrations exceeding 6NYCRR Restricted Residential Use SCOs will be covered with a minimum of 2 ft of off-site soil meeting NYSDEC backfill criteria presented in 6NYCRR Part 375. A demarcation layer, consisting of a geotextile or other easily discernible material will be placed over soils 6NYCRR Restricted Residential Use SCOs prior to placement of the 2 ft cover. The 2 ft cover will include a minimum of 6 inches of topsoil. The cover and other disturbed areas of the site will be seeded or otherwise restored as called for in the design. A new monitoring well will be installed in the vicinity of the Petroleum Area.
11. Upon completing the work described above and otherwise required under the contract, the Contractor will demobilize their equipment and facilities from the site. Areas outside of the work area will be restored to a condition equivalent to or better than that which existed prior to the initiation of the work.

The Contractor will be responsible for scheduling and coordinating the completion of the Work in an effective and efficient manner in accordance with the Contract Documents. The actual sequence utilized by the Contractor may differ from the general sequence described above.

8 POST CONSTRUCTION

8.1 GENERAL

This Section describes activities to be implemented following the completion of construction.

8.2 SITE MANAGEMENT PLAN

At the conclusion of construction, a Site Management Plan will be prepared. The Site Management Plan will include:

- Provisions for the management of the final cover system to restrict excavation below the demarcation layer. In the event excavation is necessary below this layer, the Site Management Plan will include procedures for soil characterization, handling, health and safety, and disposal.
- Provisions for the evaluation of vapor intrusion in the event that buildings are developed on the site, including a discussion of potential mitigation methods.
- Methods to comply with the environmental easement.

The Site Management Plan will be submitted to the NYSDEC for review and approval following remedy completion.

8.3 ENVIRONMENTAL EASEMENT

An environmental easement will be executed to impose land use restrictions and requirements needed to protect current or future uses from residual contamination. It is anticipated that the environmental easement will prohibit the use of site ground water for potable purposes and limit excavation on site to areas above the demarcation layer. In the event that excavation beneath the demarcation layer is necessary, the environmental easement will require that the site owner coordinate excavation activities in advance with National Grid.

Documentation of the property owner's agreement to establish and maintain the environmental easement will be provided along with the environmental easement.

8.4 FINAL ENGINEERING REPORT

At the completion of construction, a Final Engineering Report (FER) will be prepared documenting the remedial action. The FER will include:

- a description of the RA as constructed pursuant to the approved Remedial Design, including variations, if any, from the approved Remedial Design
- copies of executed manifests documenting the off-site transport and disposal of materials
- a description of the required institutional controls
- the SMP by reference
- "As-built" drawings stamped and signed by a New York State licensed Professional Engineer
- final engineering certification of the RA signed by a New York State licensed Professional Engineer

8.5 POST CONSTRUCTION OPERATION AND MAINTENANCE REQUIREMENTS

The remedy will remove the majority of MGP impacted material from the holder area and Petroleum Area. The proposed remedy does not include any active systems. Site maintenance requirements will be detailed in the Site Management Plan.

Existing monitoring wells MW-1, MW-2, and MW-4 will be sampled annually for a period of 3 years. Collected samples will be analyzed for VOCs, SVOCs, and TAL metals. These results will be compared to the results of pre-remediation sampling rounds conducted during the site investigation activities (*circa* 2003). A new well will be installed in the vicinity of the petroleum area near SB-41R. Samples will be collected annually from this well for a period of 5 years. Collected samples will be analyzed for VOCs, SVOCs, and TAL metals. At the conclusion of

the 3 and 5 year monitoring periods, National Grid and the NYSDEC will review the need for continued monitoring.

The Site Management Plan will include provisions for an annual inspection of the cover system.

In the event that it becomes necessary to excavate below the demarcation layer, the Owner will be required to contact National Grid so that procedures for health and safety, soil handling, characterization, and disposal can be implemented.

A periodic review of the site will be conducted within 18 months of the issuance of an Assignable Release and Covenant Not to Sue by the NYSDEC. The schedule for subsequent periodic reviews will be established by the NYSDEC following completion of the initial periodic review.

9 SCHEDULE TO IMPLEMENT REMEDIAL ACTION WORK PLAN

This section presents schedule milestones for implementation of the RAWP at the Herkimer Former MGP Site:

Project Milestone	Anticipated Date
Submit Revised Draft RAWP to NYSDEC	September 30, 2011
Receive Comments on Draft RAWP from NYSDEC	October6, 2011
Final RAWP to NYSDEC	October 19, 2011
NYSDEC Approval of Final RAWP	October 31, 2011
Complete Pre-design Investigations	January 27, 2012
Submit Draft Contract Drawings and Technical Specifications to NYSDEC	April 27, 2012
Receive Comments on Draft Contract Drawings and Technical Specifications from NYSDEC	To Be Determined (TBD)
Final Contract Drawings and Technical Specifications to NYSDEC	TBD
NYSDEC Approval of Contract Drawings and Technical Specifications	TBD
Complete Contractor Procurement	TBD
Complete Remedial Construction	6 month duration
Draft Final Engineering Report to NYSDEC	TBD
Receive Comments on Draft Final Engineering Report from NYSDEC	TBD
Final Engineering Report to NYSDEC	TBD
NYSDEC Approval of Final Engineering Report	TBD

The anticipated dates are presented as targets for planning purposes only and should be viewed as non-binding in nature. National Grid will use reasonable efforts to meet these targets, but surrounding conditions, including but not limited to, resource allocations, new priority sites, or unanticipated conditions encountered in the field may alter the anticipated milestone dates.

The estimated time for construction is based on experience with similar projects, estimates of production rates, and the time required for various major components of construction. The Contract Documents will require the Contractor to summit a schedule for the construction phase. The selected Contractor may propose a schedule that differs in duration from that shown above. The estimated construction duration does not include time associated with delays due to prolonged periods of inclement weather.

Due to concerns with the ability of the Herkimer WWTF to receive water generated during construction during the wetter winter and spring months, the schedule anticipates construction occurring during the drier summer months. National Grid will discuss the actual time for the implementation of the RA with the NYSDEC as the design progresses.

10 COMMUNITY RELATIONS SUPPORT

This section describes the activities that will be performed by National Grid to provide support to the NYSDEC in connection with community relations at the Herkimer Former MGP Site. Implementation of community relations for the RA activities at the site will be coordinated by NYSDEC. National Grid will assist in the preparation and addendum to the approved Citizen Participation Plan should the NYSDEC decide that an addendum is required.

It is anticipated that NYSDEC will take the lead role in performing the community relations program with activities such as the preparation of a Community Relations Plan (CRP); production and distribution of fact sheets; establishment and maintenance of a site information repository; development and maintenance of a site mailing list; and organizing and providing logistical support for public meetings. National Grid will support the NYSDEC's CRP if requested by the NYSDEC as described below.

10.1 ATTENDANCE AND TECHNICAL SUPPORT AT PUBLIC MEETING

National Grid will be available to attend public meetings to be organized by NYSDEC. At the direction of NYSDEC, National Grid will provide technical presentations regarding the nature of the activities at the site. As necessary, National Grid will provide available visual aids, such as charts, slides, or handouts fashioned from available maps or figures to support these technical presentations.

10.2 PREPARATION OF FACT SHEETS OR UPDATES

At the direction of the NYSDEC, National Grid will assist in the preparation and updates of text and graphics to be incorporated into periodic fact sheets to be issued by the NYSDEC.

10.3 PREPARATION OF A RESPONSIVENESS SUMMARY

If requested by the NYSDEC, National Grid will assist in the preparation of responses to the comments received from citizens during the public meeting and public comment period, and the responses given by the NYSDEC to those comments. Distribution of the Responsiveness Summary will be performed by the NYSDEC.

10.4 ASSISTANCE TO NYSDEC WITH PUBLIC NOTICES

If requested by the NYSDEC, National Grid will assist in placing public notices in print.

REFERENCES

Federal Register. 1990. *National Oil and Hazardous Substances Pollution Contingency Plan*. 40 CFR 300. March 8, 1990.

Foster Wheeler, 2002. *Site-Specific Work Plan for Site Characterization*, Herkimer Non-Owned Former MGP Site, Herkimer, New York.

New York State Department of Environmental Conservation (NYSDEC). 1990. *Technical and Administrative Guidance Memorandum (TAGM) 4031 Fugitive Dust Suppression and Particulate Monitoring Program.* October 1989.

NYSDEC, 1990. *Technical and Administrative Guidance Memorandum (TAGM) 4030 for the Selection of Remedial Actions at Inactive Hazardous Waste Sites.* May 1990.

NYSDEC, 2002. Voluntary Consent Order (VCO Index No. D0-001-001).

NYSDEC, 2009. *Draft DER-10 Technical Guidance for Site Investigation and Remediation.*

NYSDEC, 2011. *Herkimer (Smith St.), Herkimer County Non-Owned Foremre MGP Site #V00471-6* (Letter), January 5, 2011.

O'Brien & Gere, 2010. *Herkimer Former MGP Site, National Grid, Additional Pre-Design Activities,* (Letter), August 4, 2010.

O'Brien & Gere, 2011, Herkimer *Former MGP Site, National Grid* (Letter), June 24, 2011.

TRC, 2003. *Initial Site Characterization/Interim Remedial Measure (IRM) Study*, Niagara Mohawk – A National Grid Company Former MGP Site, Herkimer New York.

TRC, 2005. *Supplemental Site Characterization*, National Grid Herkimer (Smith Street) Non-Owned Manufactured Gas Plan (MGP) Site.

TRC, 2009. *Remedial Investigation Report*, Herkimer Former MGP Site, West Smith Street Herkimer, NY, Site # V00471-6.

Table 1
National Grid
Herkimer Former MGP Site
EVALUATION OF POTENTIAL SCGs

Medium/Location/ Action	Citation	Requirements	Comments	Potential SCG
Potential chemical-specific SCGs				
	6 NYCRR 700.1 - Definitions	Promulgated state regulation that provides ground water definitions.	Fresh ground water is defined as ground water with a chloride concentration equal to or less than 250 mg/L or a total dissolved solids concentration (TDS) equal to or less than 1,000 mg/L.	Yes
Water	6 NYCRR 701 - Classifications - Surface Waters and Ground Waters	Promulgated state regulation that provides ground water classifications.	6 NYCRR Part 701.15 states that Class GA ground water is fresh ground water, and the best use of Class GA ground water is potable use.	Yes
	6 NYCRR 702 - Derivation and Use Of Standards and Guidance Values	Promulgated state regulation that provides NYSDEC with procedures for deriving standards and guidance values.	Not applicable, relevant or appropriate because this regulation is administrative in nature. Standards are defined in specific promulgated state regulations for ground water, surface water and soil. Guidance values are provided in regulatory guidance documents.	No
	6 NYCRR 703 - Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations	Promulgated state regulation that provides water quality standards for surface water and ground water. Also provides Maximum Allowable Concentrations for discharge to Class GA ground waters of the state.	Potentially applicable to site ground water and surface water. Potentially applicable to discharges to ground or unsaturated zone.	Yes
	6 NYCRR 705 - References	Promulgated state regulation that lists Federal statutes or regulations referenced in 6 NYCRR Parts 700 through 704.	Not applicable, relevant or appropriate because this regulation is administrative in nature.	No
	6 NYCRR 706 - Appendices to Parts 700 - 705	Promulgated state regulation that provides NYSDEC with procedures for deriving standards and guidance values to protect aquatic life from acute and chronic effects.	Not applicable, relevant or appropriate because this regulation is administrative in nature. Standards are defined in specific state promulgated regulations for ground water, surface water and soil. Guidance values are provided in regulatory guidance documents.	No
	NYS TOGS 1.1.1 – Ambient Water Quality Standards and Guidance Values and Ground Water Effluent Limitations	Unpromulgated state guidance that summarizes ground water standards and guidance values. Guidance values are provided where standards are not available.	Potentially applicable for site ground water, where more stringent than promulgated SCGs.	Yes
	40 CFR 131 - Water Quality Standards	Promulgated federal regulation that describes the requirements and procedures for developing, reviewing, revising, and approving water quality standards by the states. Provides federally promulgated water quality standards for certain states. Federally promulgated water quality standards do not exist for New York.	Not applicable, relevant or appropriate because this regulation is administrative in nature. Water quality standards are defined in state promulgated regulations.	No
	40 CFR Part 141 - Drinking Water Standards	Promulgated federal regulation that establishes primary drinking water regulations applicable to public water systems.	Not applicable, relevant or appropriate because site ground water is not used as drinking water source.	No

Table 1
National Grid
Herkimer Former MGP Site
EVALUATION OF POTENTIAL SCGs

Medium/Location/ Action	Citation	Requirements	Comments	Potential SCG
Potential chemical-specific SCGs (continued)				
Soil	6 NYCRR Part 375-6 Remedial Program Soil Cleanup Objectives	Promulgated state regulation that provides guidance for soil cleanup objectives for various property uses.	Potentially applicable to site soil. Soil cleanup objectives for the protection of ground water are potentially applicable. Unrestricted use soil cleanup objectives for the protection of public health are potentially applicable.	Yes
	NYSDEC TAGM HWR-94-4046 - Recommended soil cleanup objectives	Unpromulgated state guidance that provides recommended soil cleanup objectives.	Potentially applicable for site soil constituents that are not addressed in 6 NYCRR Part 375.	Yes
	NYSDEC TAGM HWR-02-4061 - Management of Coal Tar Waste and Coal Tar Contaminated Soils and Sediment from Former Manufactured Gas Plants (MGPs)	Provides criteria for excluding coal tar waste and impacted soils from former MGPs which exhibit the hazardous characteristic for benzene (D018) from the hazardous requirements of 6 NYCRR parts 370 - 374 and 376 when destined for thermal treatment.	Potentially applicable for site soil intended to be treated via thermal treatment.	Yes
	USEPA Soil Screening Guidance (1996)	Guidance that provides methodology for developing site-specific soil screening levels. Also provides generic soil screening levels based on default assumptions.	Potentially relevant and appropriate to site soil.	Yes

Table 1
National Grid
Herkimer Former MGP Site
EVALUATION OF POTENTIAL SCGs

Medium/Location/ Action	Citation	Requirements	Comments	Potential SCG
Potential location-specific SCGs (continued)				
100-year flood plain	6 NYCRR 373-2.2 - Location standards for hazardous waste treatment, storage, and disposal facilities -100-yr floodplain	Promulgated state regulation requiring that hazardous waste treatment, storage, or disposal facilities located in a 100-yr floodplain must be designed, constructed, operated and maintained to prevent washout of hazardous waste during a 100-yr flood.	Not applicable or relevant and appropriate because the site is not located in the 100-year floodplain.	No
	Executive Order 11988 - Floodplain Management	Executive order requiting EPA to conduct activities to avoid, to the extent possible, the long- and short- term adverse impacts associated with the occupation or modification of floodplains. The procedures also require EPA to avoid direct or indirect support of floodplain development wherever there are practicable alternatives and minimize potential harm to floodplains when there are no practicable alternatives.	Not applicable or relevant and appropriate because the site is not located in the 100-year floodplain.	No
	40 CFR Part 264.18(b) - Standards For Owners And Operators Of Hazardous Waste Treatment, Storage, And Disposal Facilities - General Facility Standards - Location Standards - Floodplains	Promulgated federal regulation requiring that hazardous waste treatment, storage, or disposal facilities located in a 100-yr floodplain must be designed, constructed, operated and maintained to prevent washout of hazardous waste during a 100-yr flood.	Not applicable or relevant and appropriate because the site is not located in the 100-year floodplain.	No
	6 NYCRR 500 - Floodplain Management Regulations Development Permits	Promulgated state regulations providing permit requirements for development in areas of special flood hazard (floodplain within a community subject to a one percent or greater chance of flooding in any given year, i.e., 100-yr floodplain).	Not applicable or relevant and appropriate because the site is not located in the 100-year floodplain.	No
Within 61 meters (200 ft) of a fault displaced in Holocene time	40 CFR Part 264.18(a) - Standards For Owners And Operators Of Hazardous Waste Treatment, Storage, And Disposal Facilities - General Facility Standards - Location Standards - Seismic considerations	Promulgated federal regulation precluding new treatment, storage, or disposal of hazardous waste within 200 ft of a fault displaced in the Holocene time.	Not applicable or relevant and appropriate. Site is not located within 200 ft of a fault displaced in Holocene time, as listed in 40 CFR 264 Appendix VI. None listed in New York State.	No
Habitat of an endangered or threatened species	6 NYCRR 182	Promulgated state regulation that provides requirements to minimize damage to habitat of an endangered species.	Not applicable or relevant and appropriate, unless endangered or threatened wildlife species, rare plants or significant habitats have been identified at the site. **Note:** not anticipated to be present.	No

Table 1
National Grid
Herkimer Former MGP Site
EVALUATION OF POTENTIAL SCGs

Medium/Location/ Action	Citation	Requirements	Comments	Potential SCG
Potential location-specific SCGs (continued)				
Habitat of an endangered or threatened species (cont.)	Endangered Species Act	Provides a means for conserving various species of fish, wildlife, and plants that are threatened with extinction.	Not applicable or relevant and appropriate, unless endangered or threatened wildlife species, rare plants or significant habitats have been identified at the site. **Note:** not anticipated to be present.	No
	50 CFR Part 17 - Endangered and Threatened Wildlife and Plants	Promulgated federal regulation that requires that federal agencies ensure authorized, funded, or executed actions will not destroy or have adverse modification of critical habitat.	Not applicable or relevant and appropriate, unless endangered or threatened wildlife species, rare plants or significant habitats have been identified at the site. **Note:** not anticipated to be present.	No
Historical property or district	National Historic Preservation Act	Remedial actions are required to account for the effects of remedial activities on any historic properties included on or eligible for inclusion on the National Register of Historic Places.	Not applicable or relevant and appropriate, unless site is identified as a historic property. **Note:** not anticipated to be a historic property.	No
	36 CFR Part 65 - National Historic Landmarks Program	Promulgated federal regulation requiring that actions must be taken to preserve and recover historical/archeological artifacts found.	Not applicable or relevant and appropriate, unless site is identified as a historic historic landmark. **Note:** not anticipated to be a historic landmark.	No
	36 CFR Part 800 - Protection Of Historic Properties	Promulgated federal regulation requiring that remedial actions must take into account effects on properties in or eligible for inclusion in the National Registry of Historic Places.	Not applicable or relevant and appropriate, unless site is identified as a historic place. **Note:** not anticipated to be eligible for inclusion on the National Registry of Historic Places.	No
Wilderness area	Wilderness Act 50 CFR Part 35 - Wilderness Preservation and Management	Provides for protection of federally-owned designated wilderness areas.	Not applicable or relevant and appropriate. Site not located in wilderness area.	No
Wildlife refuge	National Wildlife Refuge System Administration Act 50 CFR Part 27 - Prohibited Acts	Provides for protection of areas designated as part of National Wildlife Refuge System.	Not applicable or relevant and appropriate. Site not located in wildlife refuge.	No
Wild, scenic, or recreational river	Wild and Scenic Rivers Act	Provides for protection of areas specified as wild, scenic, or recreational.	Not applicable or relevant and appropriate. Site not located near wild, scenic or recreational river.	No
Coastal zone	Coastal Zone Management Act	Requires activities be conducted consistent with approved State management programs.	Not applicable or relevant and appropriate. Site not located in coastal zone.	No

Table 1
National Grid
Herkimer Former MGP Site
EVALUATION OF POTENTIAL SCGs

Medium/Location/ Action	Citation	Requirements	Comments	Potential SCG
Potential location-specific SCGs (continued)				
Coastal barrier	Coastal Barrier Resources Act	Prohibits any new Federal expenditure within the Coastal Barrier Resource System.	Not applicable or relevant and appropriate. Site not located in coastal barrier.	No
Protection of waters	33 U.S.C. 1341 - Clean Water Act Section 401, State Water Quality Certification Program	States have the authority to veto or place conditions on federally permitted activities that may result in water pollution.	Not applicable or relevanat and appropriate. No discharges to surface water.	No
Potential action-specific SCGs				
Water discharge	6 NYCRR 700 - Definitions, Samples and Tests	Promulgated state regulation that provides NYSDEC with procedures for sampling and analysis of ground water, surface water or effluent samples for the purpose of making a determination of compliance or noncompliance of sewage, industrial waste or other waste discharges.	Not applicable, relevant and appropriate because this regulation is administrative in nature. Effluent sampling requirements would be defined under State Discharge Elimination System (SPDES) requirements.	No
	6 NYCRR 701 - Classifications-Surface Waters and Groundwaters	Promulgated state regulation that establishes classifications of surface water and ground water in New York State. Provides general condition that discharges shall not cause impairment of the best usages of the receiving water as specified by the water classifications at the location of discharge and at other locations that may be affected by such discharge. Also establishes that ground water classifications apply to all ground waters of the state.	Not applicable, relevant and approporiate since there are no anticipated discharges to surface water.	No
	6 NYCRR 703 - Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations	Promulgated state regulation that provides water quality standards for surface water and ground water. Also provides Maximum Allowable Concentrations for discharge to Class GA ground waters of the state.	Not applicable, relevant and approporiate since there are no anticipated discharges to surface water.	No
	6 NYCRR 704 - Criteria Governing Thermal Discharges	Promulgated state regulation that provides criteria for thermal discharges to surface waters.	No thermal discharges are anticipated as part of alternatives.	No
	6 NYCRR Parts 750 - 758 - State Pollution Discharge Elimination System (SPDES)	Promulgated state regulation requiring that discharges to surface waters must be in accordance with substantive SPDES requirements.	Not applicable, relevant and approporiate since there are no anticipated discharges to surface water.	No

Table 1
National Grid
Herkimer Former MGP Site
EVALUATION OF POTENTIAL SCGs

Medium/Location/ Action	Citation	Requirements	Comments	Potential SCG
Potential action-specific SCGs (continued)				
Water discharge (cont.)	40 CFR 122 - EPA Administered Permit Programs: The National Pollutant Discharge Elimination System (NPDES)	Promulgated federal regulation that implements the National Pollutant Discharge Elimination System (NPDES) Program. The NPDES program requires permits for the discharge of "pollutants" from any "point source" into "waters of the United States. **Note:** New York State has a state program (State Pollutant Discharge Elimination System- SPDES) that has been approved by the USEPA for the control of wastewater and stormwater discharges in accordance with the Federal Clean Water Act.	Not applicable, relevant and approporiate since there are no anticipated discharges to surface water.	No
	40 CFR 123 - State Program Requirements	Promulgated federal regulation that provides the procedures EPA will follow in approving, revising, and withdrawing State programs and the requirements State programs must meet to be approved under the National Pollutant Discharge Elimination System (NPDES) of the CWA. **Note:** New York State has a state program (State Pollutant Discharge Elimination System- SPDES) that has been approved by the USEPA for the control of wastewater and stormwater discharges in accordance with the Federal Clean Water Act.	Not applicable or relevant and appropriate because this regulation is administrative in nature. Federal CWA requirements are complied with through the state permit requirements under the SPDES regulations (6 NYCRR 750).	No
	40 CFR 129 - Toxic Pollutant Effluent Standards	Promulgated federal regulation that provides effluent standards for Aldrin/Dieldrin, DDT, Endrin, Toxaphene, Benzidine, and PCBs into navigable waters.	Not applicable, relevant or appropriate since Aldrin/Dieldrin, DDT, Endrin, Toxaphene, Benzidine, or PCBs have not been identified as chemical parameters of interest (CPOIs) for this site.	No
	40 CFR 136 - Guidelines Establishing Test Procedures for The Analysis Of Pollutants	Federal guidance providing test procedures for NPDES programs.	Not applicable, relevant or appropriate since SPDES/NPDES discharges are not anticipated.	No
	40 CFR 403 - General Pretreatment Regulations Fof Existing And New Sources of Pollution	Federal pretreatment requirements for water discharges to POTWs or	Potentially applicable for alternatives where water is discharged to the sewer or directly to a POTW.	Yes
Modifications in streams	6 NYCRR 608 - Use and Protection Of Waters	Promulgated state regulation that provides requirements for the disturbance of protected (classified) streams. Provides restrictions on excavation and placement of fill in navigable waters.	No excavation or filling of river anticipated as part of remedial action.	No
Modifications in streams	16 USC 661 - Fish and Wildlife Coordination Act	Requires protection of fish and wildlife in a stream when performing activities that modify a stream or river.	No modifications to river anticipated as part of remedial action.	No

Table 1
National Grid
Herkimer Former MGP Site
EVALUATION OF POTENTIAL SCGs

Medium/Location/ Action	Citation	Requirements	Comments	Potential SCG
Potential action-specific SCGs (continued)				
Landfilling of solid wastes	6 NYCRR 360. - Solid Waste Management Facilities Landfill Closure	Promulgated state regulation that provides requirements for construction of the final cover of a solid waste landfill.	Landfill closure is not a component of the remedial action.	No
	40 CFR Part 257 - Criteria for Classification of Solid Waste Disposal Facilities and Practices	Promulgated federal regulation that provides criteria for solid waste disposal facilities to protect health and the environment.	A solide waste dsiposal facility will not be constructed as part of the remedial action.	No
Generation and management of solid waste	6 NYCRR 360 - Solid Waste Management Facilities	Promulgated state regulation that provides requirements for management of solid wastes, including disposal and closure of disposal facilities.	Potentially applicable to alternatives including disposal of wastes or residuals generated by treatment processes.	Yes
Land disposal	6 NYCRR 376 - Land Disposal Restrictions	Promulgated federal and state regulations that provide treatment standards to be met prior to land disposal of hazardous wastes.	No hazardous waste anticipated at the site.	No
	40 CFR Part 268 - Land Disposal Restrictions			
	62 FR 25997 - Phase IV Supplemental Proposal on Land Disposal of Mineral Processing Wastes			
Generation of waste	40 CFR 261 - Identification and Listing of Hazardous Waste	Promulgated federal regulation that defines constituent levels that require management of waste as hazardous waste.	Potentially applicable when idenfiying nature of generated wastes.	Yes
General excavation	6 NYCRR 257 - Air Quality Standards	Promulgated state regulation that provides specific limits on generation of SO2, particulates, CO2, photochemical oxidants, hydrocarbons (non-methane), NO2, fluorides, beryllium and H2S from point sources.	No point source air emissions anticipated as part of remedial action.	No
	40 CFR Part 50.1 - 50.12 - National Ambient Air Quality Standards	Promulgated federal regulation that provides air quality standards for pollutants considered harmful to public health and the environment. The six principle pollutants are carbon monoxide, lead, nitrogen dioxide, particulates, ozone, and sulfur oxides.	Potentially applicable when dust generation may result, such as during earth moving, grading, and excavation.	Yes
	NYS TAGM 4031 - Dust Suppressing and Particle Monitoring at Inactive Hazardous Waste Disposal Sites	Unpromulgated state guidance document that provides limitations on dust emissions.	Potentially applicable where more stringent than air-related promulgated standards.	Yes
Construction	29 CFR Part 1910.120 - Occupational Safety and Health Standards - Hazardous Waste Operations and Emergency Response	Promulgated federal regulation requiring that remedial activities must be in accordance with applicable OSHA requirements.	Potentially applicable for construction activities.	Yes
	29 CFR Part 1926 - Safety and Health Regulations for Construction	Promulgated federal regulation requiring that remedial construction activities must be in accordance with applicable OSHA requirements.	Potentially applicable for construction activities.	Yes

Table 1
National Grid
Herkimer Former MGP Site
EVALUATION OF POTENTIAL SCGs

Medium/Location/ Action	Citation	Requirements	Comments	Potential SCG
Potential action-specific SCGs (continued)				
Transportation	6 NYCRR 364 - Waste Transporter Permits	Promulgated state regulation requiring that hazardous waste transport must be conducted by a hauler permitted under 6 NYCRR 364.	No hazardous waste anticipated at the site. Potentially applicable to waste transportation.	Yes
	49 CFR 107, 171-174 and 177-179 - Department of Transportation Regulations	Hazardous waste transport to offsite disposal facilities must be conducted in accordance with applicable DOT requirements.	No hazardous waste anticipated at the site. No hazardous wastes are anticipated to be transported.	No
Thermal treatment	NYSDEC TAGM 4061 (DER-4) - Management of Coal Tar Waste and Coal Tar Contaminated Soils and Sediment from Former Manufactured Gas Plants (MGPs)	Provides criteria for excluding coal tar waste and impacted soils from former MGPs which exhibit the hazardous characteristic for benzene (D018) from the hazardous requirements of 6 NYCRR parts 370 - 374 and 376 when destined for destined for thermal treatment.	Potentially applicable for site soil intended to be treated via thermal treatment.	Yes

Table 2
National Grid
Herkimer Former MGP Site
PROPOSED REMEDIAL ACTION CONSTRUCTION COST ESTIMATE - 16 FT AND 12 FT SHEETED EXCAVATIONS

DIRECT CAPITAL COSTS	UNIT	ESTIMATED QUANTITY	ESTIMATED UNIT COST	ESTIMATED COST		NOTES
1) Deed Restriction						
- Groundwater use Restrictions	LS	1	15,000.00	$15,000		
- Property use Restrictions	LS	1	10,000.00	$10,000		
				SUBTOTAL:	**$25,000**	
2) Site Management Plan	LS	1	20,000.00	$20,000		
				SUBTOTAL:	**$20,000**	
3) General Conditions/Mob/Demob	MO	6	45,000.00	$270,000		- Provision and maintenance of all req'd insurances.Work Plans,Mob/Demob of all equipment, materials, personnel, decontamination pads, dust control. Set-up of temporary utilities. Permits. Temporary roads. Provision and set-up of field offices.
				SUBTOTAL:	**$270,000**	
4) Site Preparation and Excavation Support System						
- Clearing and Grubbing	LS	1	5,000.00	$5,000		- Materials, equipment and labor required to clear and prepare the site
- Removal of Miscellaneous Concrete	SF	2,600	5.00	$13,000		- Unreinforced concrete sidewalks, slabs, etc. assumed 6 inches thick.
- Well Decomissioning	EACH	4	2,000.00	$8,000		- Labor, mat'l and equip. req'd to decommission wells. Collection of associated wastes and disposal
- Silt Fence	LF	650	2.00	$1,300		- Installation, maintenance and dismantling of erosion control (silt fence)
- Installation and Removal of Temporary Sheet Piling	VSF	19,200	50.00	$960,000		- Sheeting installed around limits of two impacted areas of 50 ft x 50 ft each (2,500 sf). Sheet pile assumed to be installed to a depth of 48 ft. Assumes sealed joints.
- Allowance for spudding	VSF	19,200	15.00	$288,000		- Additional cost for spudding along the entire perimeter of the two excavations.
				SUBTOTAL:	**$1,275,300**	
5) Site Excavations						
- 0 - 2 ft Surface (To be stockpiled for reuse)	CY	1,889	15.00	$28,333		- Assumes 2ft over entire site with an area of 25,500 sf
- 2 ft - 5 ft(To be stockpiled for reuse)	CY	556	15.00	$8,333		- Within Limits of Sheeting. Two areas of 2,500 sf each. Depth of 5 ft assumed for conservatism.
- 5 ft-16 ft (Petroleum Area Excavation)	CY	1,019	30.00	$30,556		- Assumes all material from this depth interval within the limits of sheeting will be excavated and disposed of off-site
- 5 ft-12 ft (Holder Excavation)	CY	573	30.00	$17,194		- Assumes all material from this depth interval within the limits of sheeting will be excavated and disposed of off-site
- Removal of Former Holder Foundation	SF	1,350	20.00	$27,000		- Assumed reinforced concrete of 1,350 sf with an average thickness of 1.5 ft
- Filter Fabric (Demarcation Layer)	SF	25,500	2.00	$51,000		- Mirafi 160N
- Stockpiled Fill Placement, Compaction and Grading	CY	2,519	15.00	$37,792		- Reuse of previously stockpiled material
- Fill Placement, Compaction and Grading	CY	0	30.00	$0		- Additional material required to fill in excavations below depth of 5 ft bgs
- Vapor and Odor Control	MO	3	17,000.00	$51,000		- Active odor control system such as Piian Flexi-Fog System
- Construction Water Management	MO	3	100,000.00	$300,000		- Pre-treatment prior to discharge includes: weir tank, bag filters,carbon unit and EQ tank
				SUBTOTAL:	**$551,208**	
6) Site Restoration (0 to 2 ft surface layer)						
- 18 in Fill Placement, Compaction and Grading	CY	1,417	20.00	$28,333		- Select fill embankment material to bring site to grade
- 6 inTopsoil Placement, Compaction and Grading	CY	472	25.00	$11,806		- Select fill topsoil
- Seeding	SF	25,500	0.05	$1,275		- fertlizer, seed and mulch
				SUBTOTAL:	**$41,414**	
7) Off-Site Disposal						
- Waste Characterization	Each	10	1,200.00	$12,000		- Characterization samples collected at a frequency of 1 per 500 tons.
- Truck Load-out Area	SF	11,250	2.00	$22,500		
- Soil Transportation & Disposal	Ton	3,083	100.00	$308,323		- Transportation and Disposal assumes 1,517 cyd of excavated soil from below 5 ft and 222 cyd of excess material excavated above 5 ft not necessary for backfill at 1.7 tons/cy.
- Concrete Transportation and Disposal	Ton	246	100.00	$24,600		- Transportation and Disposal assumes 48 cyd of misc concrete and 75 cyd of Former Holder Foundation.concrete at 2 tons/cy.
				SUBTOTAL:	**$367,423**	
8) Shallow Groundwater Monitoring Well Construction	LS	1	5,000.00	$5,000		- Construction and development of one shallow monitoring well (approx. 20 deep)
				SUBTOTAL:	**$5,000**	
			TOTAL DIRECT CAPITAL COSTS:		**$2,555,000**	

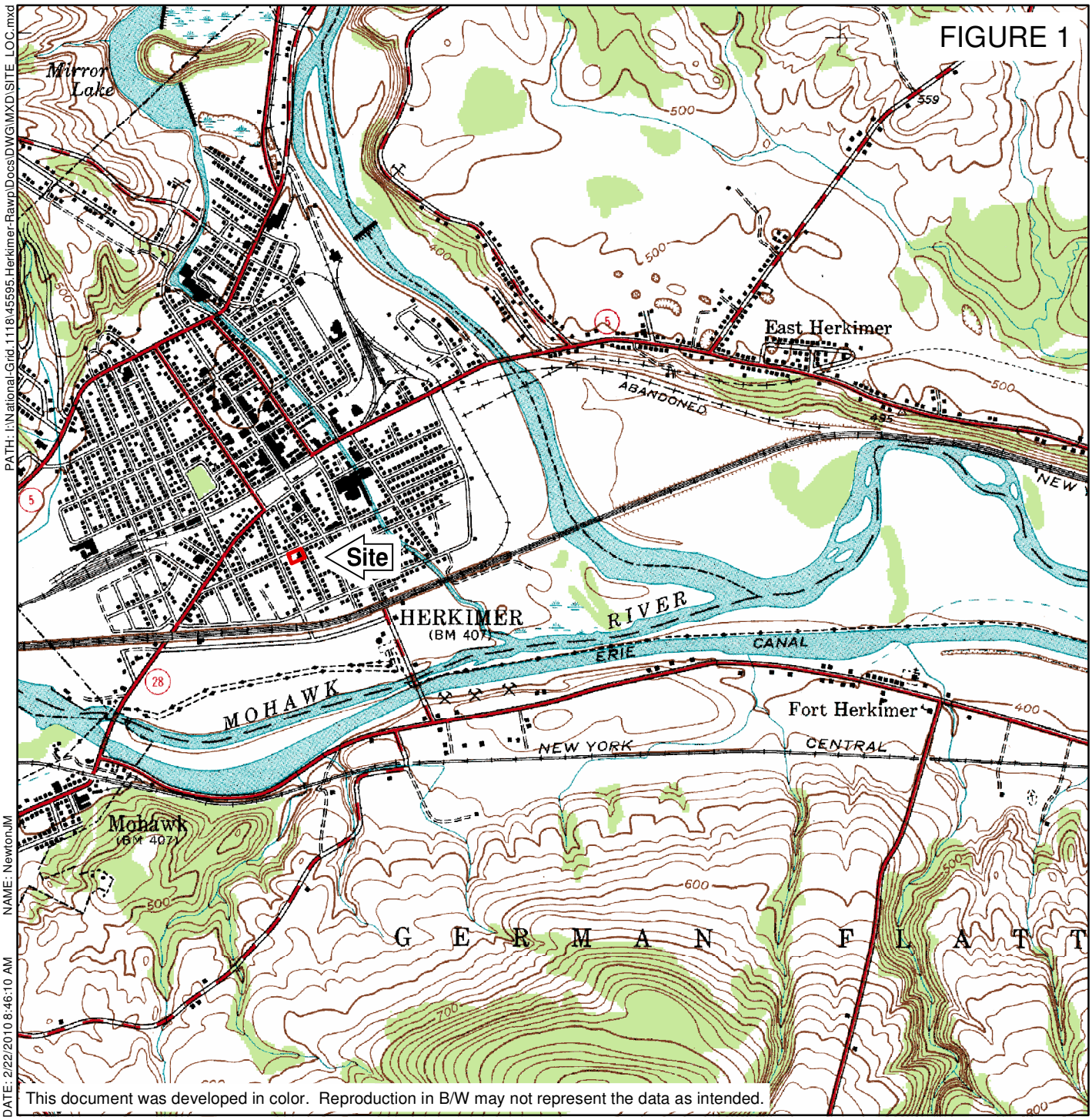
Table 2
National Grid
Herkimer Former MGP Site
PROPOSED REMEDIAL ACTION CONSTRUCTION COST ESTIMATE - 16 FT AND 12 FT SHEETED EXCAVATIONS

TOTAL DIRECT CAPITAL COSTS:

INDIRECT CAPITAL COSTS	UNIT	ESTIMATED QUANTITY	UNIT COST	ESTIMATED COST	
Contingency (25% Direct Capital Costs)	LS	1		$638,750	
Engineering (15% Direct Capital Costs)	LS	1		$383,250	
Construction Management (10% Direct Capital Costs)	LS	1		$255,500	
Legal Fees (5% Direct Capital Costs)	LS	1		$127,750	
Construction Performance Bond (1.25% Direct Capital Costs)	LS	1		$31,938	
		TOTAL INDIRECT CAPITAL COST:			**$1,437,188**
		TOTAL CAPITAL COSTS (ROUNDED):			**$3,992,000**

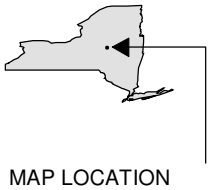
OPERATION, MAINTENANCE, AND MONITORING (OM&M) COSTS:

OM&M COSTS	UNIT	ESTIMATED QUANTITY	UNIT COST	ESTIMATED COST	
Periodic Review	LS	1	10,000	$10,000	- Assumes reviews are conducted every 5 years
Site Inspection	LS	1	3,000	$3,000	- Site inspection
Groundwater Monitoring (Years 1 to 3)	LS	1	4,500	$4,500	- Assumes annual sampling of 4 wells and analyses for VOCs, SVOCs, and TAL metals
Groundwater Monitoring (Years 4 and 5)	LS	1	3,400	$3,400	- Assumes annual sampling of 1 well and analyses for VOCs, SVOCs, and TAL metals
Contingency for Maintenance	LS	1	6,000	$6,000	- Contingency for cap maintenance
Annual Report (Years 1 through 5)	LS	1	10,000	$10,000	- Assumes annual report after each of the first 5 years
		PRESENT WORTH OF OM&M COSTS:			**$190,000**
		TOTAL CAPITAL AND OM&M COSTS (ROUNDED):			**$4,182,000**



ADAPTED FROM: (HERKIMER) USGS QUADRANGLE

NATIONAL GRID
FORMER MGP SITE
HERKIMER, NEW YORK



MAP LOCATION

SITE LOCATION

N

0 1,000 2,000 4,000 6,000 8,000

Feet

FEBRUARY 2010
1118.45595

1:24,000

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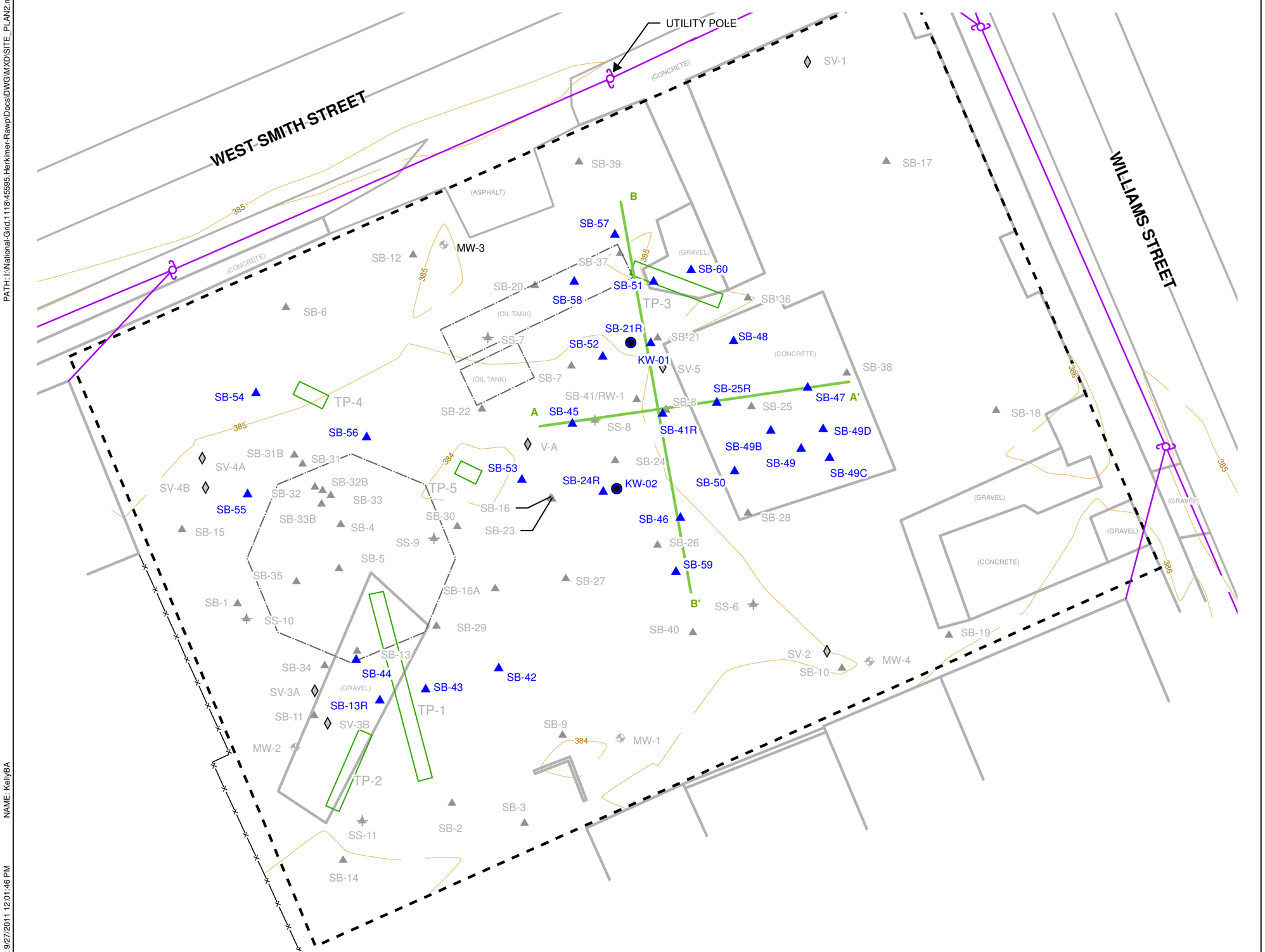
PATH: I:\National-Grid.1118.45595.Herkimer-Rawp\Docs\DWG\MXD\SITE_PLAN2.mxd

FIGURE 2



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N

LEGEND

- CURRENT PROPERTY BOUNDARY

LOCATIONS

- AMBIENT AIR SAMPLE
- MONITORING WELL
- SOIL BORING
- SOIL VAPOR SAMPLE
- SURFACE SOIL SAMPLE
- K-TEST WELL
- ADDITIONAL SOIL BORINGS (JUNE 2010)
- CROSS SECTION LOCATIONS (SEE FIGURES 4 AND 5)
- FORMER MGP STRUCTURE

NATIONAL GRID
FORMER MGP SITE
HERKIMER, NEW YORK

SITE PLAN

0 10 20 40
Feet

SEPTEMBER 2011
1118.45595

O'BRIEN & GERE

NAME: KellyBA
DATE: 9/27/2011 12:01:46 PM

PATH: I:\National-Grid.1118.45595.Herkimer-Rawp\Docs\DWG\MXD\Horizontal_Extent_Soi_Removall.mxd

NAME: NewtonJM

DATE: 8/24/2011 9:56:28 AM

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FIGURE 3

N

LEGEND

- CURRENT PROPERTY BOUNDARY

LOCATIONS

- AMBIENT AIR SAMPLE
- MONITORING WELL
- SOIL BORING
- SOIL VAPOR SAMPLE
- SURFACE SOIL SAMPLE
- K-TEST WELL
- ADDITIONAL SOIL BORINGS (JUNE 2010)
- HEAVILY IMPACTED MATERIAL
- HISTORIC MGP STRUCTURE

NATIONAL GRID
FORMER MGP SITE
HERKIMER, NEW YORK

HORIZONTAL EXTENT OF HEAVILY IMPACTED SOILS

0 10 20 40
Feet

SEPTEMBER 2011
1118.45595

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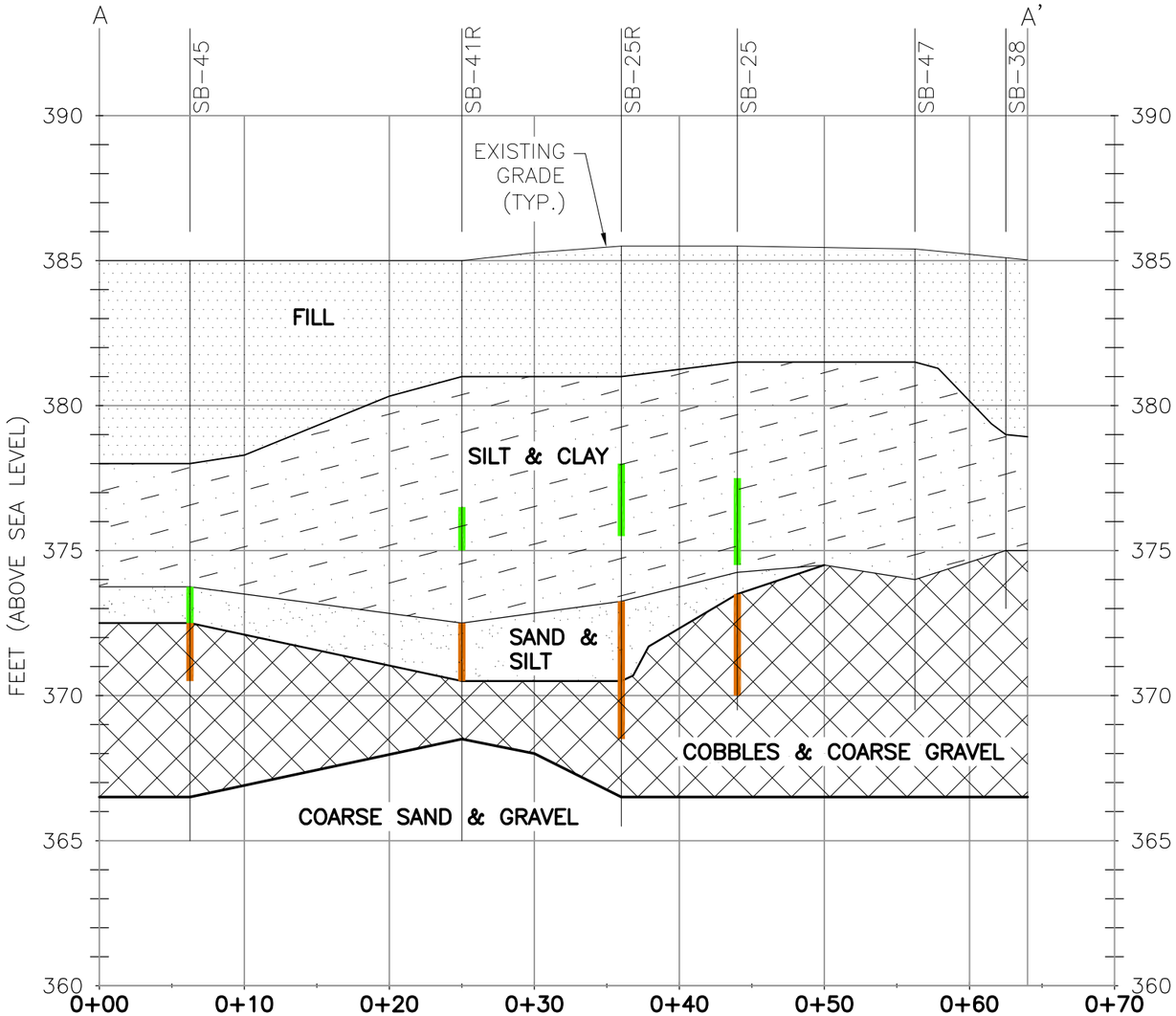
FIGURE 4



CROSS SECTION A–A'

H: 1"=10'
V: 1"=5'

LEGEND

- NAPL BLEBS OR FREE NAPL
- SHEEN OR STAINING
- BORING PROFILES

NATIONAL GRID
FORMER MGP SITE
HERKIMER, NEW YORK

CROSS SECTION A–A'

1"=10' (10 0 10)

1"=5' (5 0 5)

FILE NO. 1113.45595-FIG4
JULY 2010

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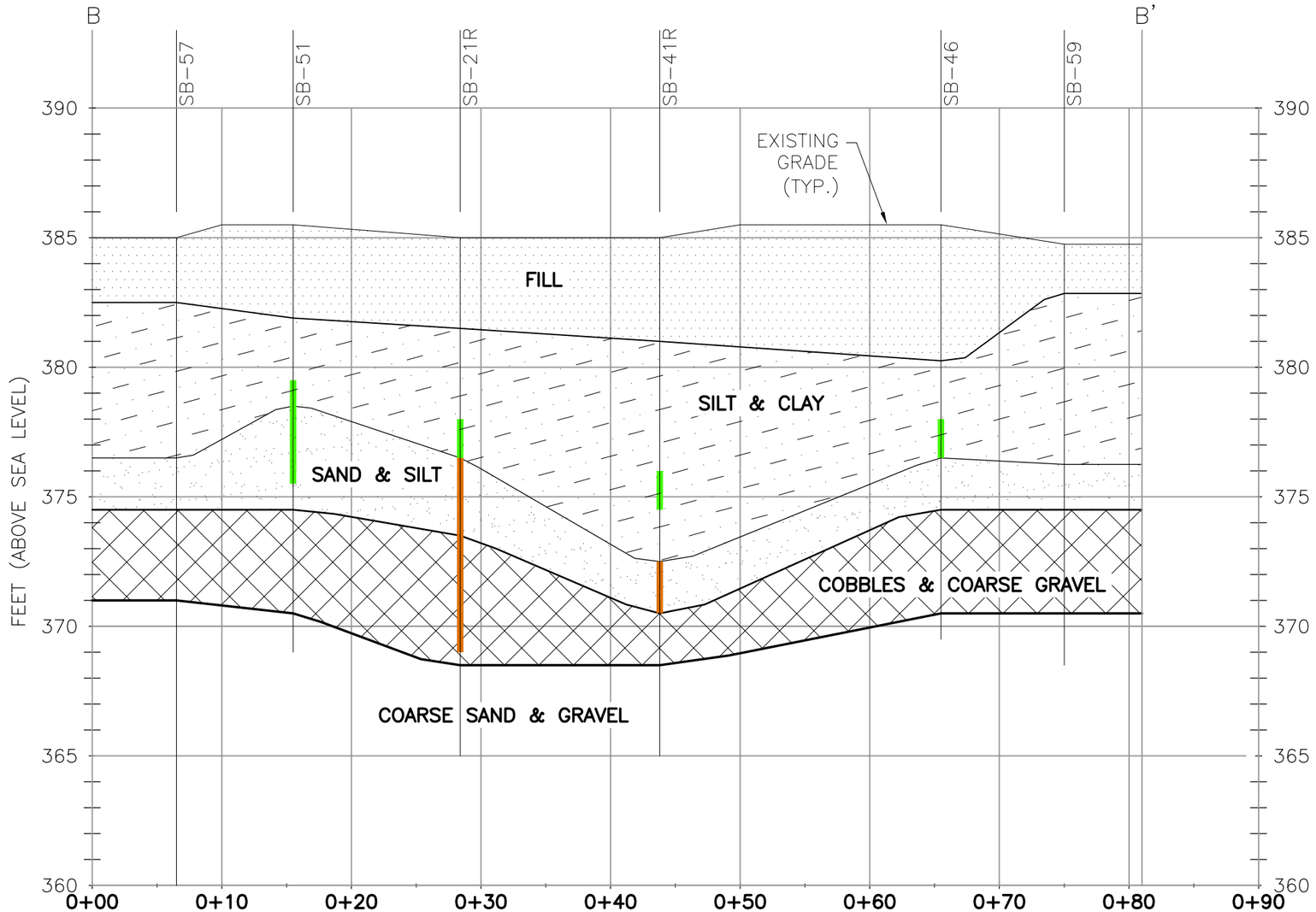
FIGURE 5



LEGEND

NAPL BLEBS OR FREE NAPL

SHEEN OR STAINING

BORING PROFILES

NATIONAL GRID
FORMER MGP SITE
HERKIMER, NEW YORK

CROSS SECTION B–B'

1"=10' 10 0 10

1"=5' 5 0 5

FILE NO. 1113.45595–FIG5
JULY 2010

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CROSS SECTION B–B'

H: 1"=10'
V: 1"=5'

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent 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 investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. “Periodic” monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should 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. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

Appendix 1B
Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.

2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

(a) Objects to be measured: Dust, mists or aerosols;
(b) Measurement Ranges: 0.001 to 400 mg/m3 (1 to 400,000 :ug/m3);
(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m3 for one second averaging; and +/- 1.5 g/m3 for sixty second averaging;
(d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
(e) Resolution: 0.1% of reading or 1g/m3, whichever is larger;
(f) Particle Size Range of Maximum Response: 0.1-10;
(g) Total Number of Data Points in Memory: 10,000;
(h) Logged Data: Each data point with average concentration, time/date and data point number
(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
(l) Operating Temperature: -10 to 50^{o} C (14 to 122^{o} F);
(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m3 (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m3, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see Paragraph 7). Should the action level of 150 ug/m3 continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM10 at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

(a) Applying water on haul roads;
(b) Wetting equipment and excavation faces;
(c) Spraying water on buckets during excavation and dumping;
(d) Hauling materials in properly tarped or watertight containers;
(e) Restricting vehicle speeds to 10 mph;
(f) Covering excavated areas and material after excavation activity ceases; and
(g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m3 action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals or Structures

When work areas are within 20 feet of potentially exposed populations or occupied structures, the continuous monitoring locations for VOCs and particulates must reflect the nearest potentially exposed individuals and the location of ventilation system intakes for nearby structures. The use of engineering controls such as vapor/dust barriers, temporary negative-pressure enclosures, or special ventilation devices should be considered to prevent exposures related to the work activities and to control dust and odors. Consideration should be given to implementing the planned activities when potentially exposed populations are at a minimum, such as during weekends or evening hours in non-residential settings.

If total VOC concentrations opposite the walls of occupied structures or next to intake vents exceed 1 ppm, monitoring should occur within the occupied structure(s). Depending upon the nature of contamination, chemical-specific colorimetric tubes of sufficient sensitivity may be necessary for comparing the exposure point concentrations with appropriate pre-determined response levels (response actions should also be pre-determined). Background readings in the occupied spaces must be taken prior to commencement of the planned work. Any unusual background readings should be discussed with NYSDOH prior to commencement of the work.

If total particulate concentrations opposite the walls of occupied structures or next to intake vents exceed 150 mcg/m^3, work activities should be suspended until controls are implemented and are successful in reducing the total particulate concentration to 150 mcg/m^3 or less at the monitoring point.

Depending upon the nature of contamination and remedial activities, other parameters (e.g., explosivity, oxygen, hydrogen sulfide, carbon monoxide) may also need to be monitored. Response levels and actions should be pre-determined, as necessary, for each site.