RECORD OF DECISION

Niagara Mohawk Power Corporation Superfund Site
Operable Unit 2

City of Saratoga Springs

Saratoga County, New York

March 29, 2013

PREPARED BY:

U.S. Environmental Protection Agency
Region II

DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

Niagara Mohawk Power Corporation Superfund Site
City of Saratoga Springs, Saratoga County, New York
Operable Unit (OU) 2

Superfund Site Identification Number: NYD980664361

STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) presents the selected remedy for contaminated subsurface soil and groundwater in an area referred to as the OU 2 Project Area of the Niagara Mohawk Power Corporation Site (Site) in the City of Saratoga Springs, Saratoga County, New York. The selected remedy was chosen by the U.S. Environmental Protection Agency (EPA) in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, 42 U.S.C. §§ 9601-9675, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision document explains the factual and legal basis for selecting the OU 2 remedy. The attached index (see Appendix III) identifies the items that comprise the Administrative Record upon which the selected remedy is based.

The New York State Department of Environmental Conservation (NYSDEC) was consulted on the planned remedy for OU 2 in accordance with CERCLA §121(f), 42 U.S.C. § 9621(f), and it concurs with the selected remedy (see Appendix IV).

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from the Site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

DESCRIPTION OF THE SELECTED REMEDY

The response action described in this document represents the second and final phase, or second operable unit, for the Site. It addresses the remaining contaminated soil and ground water at the Site. The selected remedy described in this document involves the in-situ solidification/stabilization (ISS) of soils in the Old Red Spring Area[1] and encapsulation of non-aqueous phase liquid (NAPL)-impacted[2] subsurface soil underneath a section of Excelsior

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1. The Old Red Spring Area consists of a municipally-owned property containing the Old Red Spring well and part of a paved parking lot owned by a corporation and used by a commercial business located west of the Old Red Spring well.
2. NAPL is concentrated contamination, typically oil-like, that forms a separate phase and does not

Avenue; enhanced biodegradation of contamination in subsurface soil and groundwater; monitoring of groundwater; and institutional controls. The major components of the selected remedy include:

1. Treating via ISS NAPL-impacted soil in the Old Red Spring Area. This remedy component includes removing the top five feet of surface soil to account for the increase in volume of the solidified material to allow room for two feet of clean backfill;

2. Removing surface soil (i.e., up to two feet below grade) in areas not targeted for ISS in the Old Red Spring Area and restoring the area with imported clean fill underlain by a demarcation layer;

3. Enhancing biodegradation of contaminated subsurface soil and groundwater in the Old Red Spring Area by the application of amendments, such as organic nutrients, oxygen-releasing compounds, and/or chemical products;

4. Plugging and abandoning the existing Old Red Spring water well and installing a replacement well with double casing;

5. Installing a containment barrier wall and a subsurface mat to encapsulate NAPL-impacted soil under Excelsior Avenue;

6. Conducting long-term groundwater monitoring including periodic sampling of monitoring wells and analysis for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and metals;

7. Implementing institutional controls (ICs) at the properties in the OU 2 Project Area, which would include the development of environmental easements/restrictive covenants to be filed in the property records of Saratoga County.

   The ICs relating to soil exposure would require compliance with an EPA-approved Site Management Plan (SMP) and would:

   a) be imposed for all areas where Contaminants of Concern (COCs) exceed unrestricted use Soil Cleanup Objectives (SCOs) at 6 New York Code of Rules and Regulations (NYCRR) §375-6.3(b);

   b) prevent any disturbance of the implemented remedy under Excelsior Avenue and in the areas of ISS in the Old Red Spring Area; and

   c) prohibit single family housing and vegetable gardening, but would allow for

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dissolve readily in water.

recreational and/or commercial use of the Old Red Spring Area, which New York State defines as "restricted-residential" use.

The ICs relating to groundwater exposure would restrict the use of the shallow groundwater aquifer throughout the OU 2 Project Area and would require compliance with the SMP. The ICs would restrict construction of new buildings throughout the OU 2 Project Area unless an evaluation of the potential for vapor intrusion is conducted, and mitigation, if necessary, is performed in compliance with an EPA-approved SMP;

8. Developing an SMP to ensure the effectiveness of the engineering and institutional controls, as well as the long-term groundwater monitoring, periodic reviews and certifications; and

9. Restoring disturbed areas (including vegetated surfaces, parking lots, roadways, sidewalks, curbs, etc.) following the completion of remedial construction activities by replacing them to their original pre-construction condition and topographic contours.

The environmental benefits of the selected remedy may be enhanced by consideration, during the design, of technologies and practices that are sustainable in accordance with EPA Region 2's Clean and Green Energy Policy and NYSDEC's Green Remediation Policy.[3] This will include consideration of green remediation technologies and practices.

DECLARATION OF STATUTORY DETERMINATIONS

The selected remedy meets the requirements for remedial actions set forth in Section 121 of CERCLA, 42 U.S.C. § 9621 in that it: 1) is protective of human health and the environment; 2) meets a level or standard of control of the hazardous substances, pollutants, and contaminants which at least attains the federal and state requirements that are legally applicable or relevant and appropriate to the remedial action; 3) is cost-effective; and 4) utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable. The remedy also satisfies the statutory preference for treatment as a principal element of the remedy (i.e., it reduces the toxicity, mobility, or volume of hazardous substances, pollutants, or contaminants as a principal element through treatment) through the use of ISS and the addition of biological or other amendments to soil and groundwater in the Old Red Spring Area.

Because the selected remedy will result in hazardous substances, pollutants, or contaminants remaining on the OU 2 Project Area above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted no less often than once every five years to ensure that the remedial action remains protective of human health and the environment.

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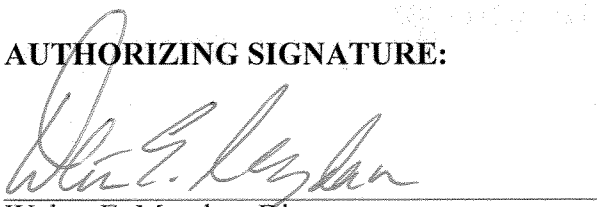
3. Additional information can be found at http://epa.gov/region2/superfund/green_remediation and http://www.dec.ny.gov/docs/remediation_hudson_pdf/der31.pdf.

DATA CERTIFICATION CHECKLIST

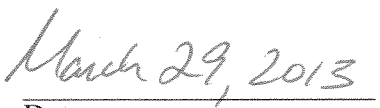
The following information is included in the Decision Summary section of this ROD which immediately follows this declaration.

- Chemicals of concern and their respective concentrations (see ROD, pages 7, 8 and 9; Table 1);
- Baseline risk represented by contaminants of concern (see ROD, pages 14 and 15; and Tables Appendix III Table 2);
- Cleanup levels for contaminants of concern and the basis for these levels (Tables 3 and 4);
- Manner of addressing source materials constituting the principal threats (see ROD, page 34);
- Current and reasonably-anticipated future land use assumptions and current and potential future beneficial uses of groundwater relied upon in the baseline risk assessment (see ROD pages 9 and 12)
- Potential land uses that will be available at the OU 2 Project Area of the Site as a result of the Selected Remedy (see ROD pages 9);
- Estimated capital costs, annual operation and maintenance (O&M) costs, and total present worth costs discount rate, and the number of years over which the remedy cost estimates are projected (see ROD page 18 and Table 2); and
- Key factors that led to selecting the remedies (i.e., how the Selected Remedy provides the best balance of tradeoffs with respect to the balancing and modifying criteria, highlighting criteria key to the decisions) (See ROD pages 36-40).

AUTHORIZING SIGNATURE:



Walter E. Mugdan, Director
Emergency and Remedial Response Division
U.S. Environmental Protection Agency, Region II



Date

RECORD OF DECISION FACT SHEET
EPA REGION II

Site:

Site Name:	Niagara Mohawk Power Corporation Superfund Site – OU 2
Site Location:	City of Saratoga Springs, Saratoga County, New York
HRS Score:	35.48 (1988)
Listed on the NPL:	February 1990

Record of Decision:

Date Signed:	March 29, 2013
Selected Remedy:	In-situ solidification/stabilization for the Old Red Spring Area and encapsulation of non-aqueous phase liquid (NAPL)-impacted subsurface soil in a section of Excelsior Avenue; enhanced biodegradation of contamination in subsurface soil and groundwater; groundwater monitoring; and institutional controls.
Capital Cost:	$4,600,000
Annual O&M Cost:	$110,880
Present Worth Cost:	$6,500,000

Lead:

Lead Agency:	U.S. Environmental Protection Agency – Region II Emergency and Remedial Response Division
Primary Contact:	Maria Jon, Remedial Project Manager (212) 637-3967
Secondary Contact:	Salvatore Badalamenti, Section Chief (212) 637-3314
Main PRP:	National Grid

Waste:

Waste Type:	Residual coal tar containing polycyclic aromatic hydrocarbons (PAHs) and some volatile organic compounds (VOCs)
Waste Origin:	Historical coal tar waste from a former manufactured gas plant
Contaminated Media:	Groundwater and soil

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ATTACHMENTS

DECISION SUMMARY

SITE NAME, LOCATION AND DESCRIPTION

The Niagara Mohawk Power Corporation (NMPC) Superfund site (Site) is located in the City of Saratoga Springs, Saratoga County, New York. The Site includes a 7-acre property that was formerly owned by NMPC and is currently owned by the National Grid (referred to as the NMPC Property or National Grid Property). The NMPC Property is bounded on the north by Route 50, on the south by Excelsior Avenue, on the east by East Avenue and on the west by property formerly owned by the former Spa Steel Products Company, Inc. (Spa Steel Property), and currently owned by Spa Hotel II, LLC. The Site includes the NMPC Property and other properties that became contaminated by operations at the NMPC Property. A site location map is provided in Figure 1.

This Record of Decision (ROD) addresses the second Operable Unit (OU) for the Site, which includes contaminated subsurface soils and groundwater in an area of the Site referred to as the OU 2 Project Area. This contamination was first identified in 2006, after an earlier ROD for the Site (now designated as OU 1) had been issued and largely implemented. The OU 2 Project area is approximately 0.5 acres in size and is bounded to the north by the former Spa Steel Property and the National Grid Property, to the south by High Rock Avenue, to the east by Warren Street, and to the west by property owned by The Mill, LLC (a remediated and delisted NYSDEC inactive hazardous waste site, number 546036, known as the Van Raalte Knitting Mill Site that contains a paved parking lot for a commercial business (Figure 2). The OU 2 Project Area contains: 1) a section of Excelsior Avenue; 2) a section of the paved parking lot on The Mill, LLC property; and 3) a small green space owned by the City of Saratoga Springs that contains an active bedrock groundwater well, referred to as the Old Red Spring, and an associated pavilion (Figure 3).

SITE HISTORY AND ENFORCEMENT ACTIVITIES

Beginning in 1868, gas for use in lighting and heating was manufactured at the Niagara Mohawk Property from coke, coal and petroleum oils. Gas manufacturing operations continued at this location until 1929. The early gas production operations generated a dense, oily liquid known as coal tar and other waste materials, which were by-products of the gas production processes. These wastes, which contain hazardous substances, were disposed of at various locations on the NMPC Property. Manufactured gas operations resulted in areas of soil, sediment, and groundwater contamination.

As described in the OU 1 ROD and other documents, surface soil, subsurface soil and groundwater samples were collected to characterize the nature and extent of contamination in areas outside of the OU 2 Project Area. The primary contaminants of concern in coal tar include: volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs). The VOCs of concern include benzene, toluene, ethylbenzene and total xylenes. These compounds are collectively known as BTEX. The SVOCs of concern are primarily a group of chemicals referred to as polycyclic aromatic hydrocarbons (PAHs). See Table 1. The source of the BTEX and PAH contamination found on Site is the coal tar or non-aqueous phase liquid (NAPL) which has migrated through the subsurface at the Site.

In 1982, NMPC notified EPA that its Saratoga Springs property was once the location of a gas manufacturing facility and that its corporate predecessors disposed of coal tar on the NMPC Property. Environmental investigations consisting of soil borings, a geophysical survey, installation of five groundwater monitoring wells, soil and groundwater sampling and analysis, and sediment sampling and analysis were performed in 1985. The results of the investigations indicated the presence of PAHs and some VOCs in groundwater, soil, and sediment.

Based on the findings of environmental studies conducted, EPA proposed the Site for inclusion in the National Priorities List (NPL) in June 1988, and subsequently placed it on the NPL in February 1990. In September 1989, EPA entered into an administrative consent order requiring NMPC to conduct a remedial investigation/feasibility study (RI/FS) to determine the nature and extent of contamination at the Site and to evaluate cleanup alternatives. This RI/FS led to what is now designated as OU 1 ROD, which was issued in September 1995. The ROD called for the following actions:

- Excavation and off-Site disposal of highly contaminated soil and areas containing coal tar waste found on the Niagara Mohawk Property; installation of subsurface barriers, drains and groundwater collection sumps to contain contaminated groundwater to address dense non-aqueous phase liquid (DNAPL) at the Niagara Mohawk Property; installation of an asphalt cap to minimize infiltration by precipitation; institutional controls to prevent future residential use of the property; and long-term groundwater monitoring;

- Excavation and disposal of contaminated soil in the vicinity of the former Excelsior Avenue Skating Rink that exceeded cleanup levels established for the protection of groundwater quality and to permit residential use of this property;

- Groundwater monitoring in the vicinity of the Skating Rink property to measure improvement in the groundwater quality;

- Removal of contaminated sediments on the Niagara Mohawk Property and in Spring Run Creek; and

- Elimination of the transport of contaminants via the underground storm sewer by:

    1) diverting storm water flow through the brick sewer upstream of the Niagara Mohawk Property to the twin box culvert storm sewer, so no storm water will flow through the Niagara Mohawk Property;

    2) disconnecting the storm sewer at the southeast corner of the NMPC Property and constructing a collection sump at this location to prevent any groundwater which infiltrated the sewer from leaving the property;

    3) cleaning the downstream section of the sewer from the southeast corner of the Niagara Mohawk Property to the storm sewer outfall, near Interstate 87;

    4) sealing infiltration spots along a section of the brick storm sewer, downstream of the southeast corner of the Niagara Mohawk Property where it is disconnected from the concrete box culvert; and

    5) repairing the break in the brick sewer near the confluence of Loughberry Creek and Village Brook. The materials generated from cleaning the brick sewer would be disposed of properly off-Site.

On May 15, 1997, a Consent Decree (CD) between the United States and NMPC was entered by the Court for the Northern District of New York. The objectives of the CD were for NMPC to implement the 1995 OU 1 ROD pursuant to the CD and an attached Statement of Work, to draft work for approval by EPA to implement the remedy selected in the 1995 ROD, and to reimburse EPA for its response costs.

In September 2001, an Explanation of Significant Differences (ESD) was signed, which described changes to the September 1995 ROD. The ESD modified the cleanup approach for the former Skating Rink property and a section of the abandoned brick storm sewer, and also documented that the historic brick Round House located on the NMPC Property would be preserved.

In July 2006, additional subsurface soil and groundwater contaminated with residual coal tar was identified outside of the NMPC Property's barrier wall and on the adjacent former Spa Steel property. Subsurface soil impacted with residual coal tar was identified in a small, approximately 0.35 acre portion of the Spa Steel property. Naphthalene was detected in the subsurface soil at 5,430 milligrams per kilogram (mg/kg) and benzo(a)pyrene was detected at 116 mg/kg. Benzene was detected in the groundwater at 5,800 micrograms per liter (ug/L), and total xylenes were

detected at 690 ug/L.

This portion of the Spa Steel property with the subsurface soil and groundwater contamination is located immediately to the west of the NMPC Property. This contamination did not migrate through the barrier wall surrounding the NMPC Property, since monitoring wells immediately outside of the containment wall did not show any DNAPL or dissolved constituents. Instead, contaminants had migrated to the Spa Steel property before the OU 1 remedial action had been implemented.

In July 2006, EPA's Environmental Response Team (EPA-ERT) began a supplemental investigation to determine the extent of the soil and groundwater contamination beyond the former Spa Steel property. The data show that residual coal tar is present south of the former Spa Steel property, underneath and south of Excelsior Avenue. In February/March 2008, May 2009, and October/November 2009, National Grid conducted additional soil and groundwater investigations to further define the nature and extent of residual coal tar impacts to the south and southwest of the NMPC Property. An FS was prepared to evaluate cleanup alternatives to address this contamination and was finalized in July 2012. EPA designated this newly discovered contamination as OU 2.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

The FS Report, which incorporates the results of the RI, and the Human Health Risk Assessment report describe the nature and extent of the soil and groundwater contamination in the OU 2 Project Area, identify the risk to public health and the environment and evaluate remedial alternatives to address the contamination at the OU 2 Project Area of the Site. EPA and NYSDEC's preferred remedy for this contamination and the basis for that preference were identified in a Proposed Plan issued in February 2013. These documents, including the Proposed Plan, were made available to the public in information repositories maintained at the EPA Docket Room in the Region 2 offices at 290 Broadway, 18th Floor, New York, New York and the Saratoga Springs Public Library, Reference Section, 49 Henry Street Saratoga Springs, New York 12866.

A notice of the commencement of the public comment period, the public meeting date, a description of the preferred remedy, EPA contact information and the availability of the above-referenced documents was published in *The Saratogian*, a local newspaper, on February 26, 2013. A 30-day public comment period ran from February 26 until March 28, 2013. EPA held a public meeting on March 7, 2013 at 7:00 pm at the Saratoga Spa State Park Administration Building to present the findings of the RI/FS and to answer questions from the public about the Niagara Mohawk Power Corporation OU 2 Project Area, the remedial alternatives considered and the proposed remedy.

Responses to the comments received at the public meeting and in writing during the public comment period are included in the Responsiveness Summary (see Appendix V).

SCOPE AND ROLE OF OPERABLE UNIT

Site remediation activities are sometimes segregated into different phases or operable units, so that remediation of different environmental media or areas of a site can proceed separately. Such a phased approach results in an expeditious remediation of the entire site. EPA has designated two operable units for the Site as described below.

The first Operable Unit (OU 1) addressed contaminated soil, groundwater and sediment in the following five areas as noted above: 1) the NMPC Property, which is a former manufactured gas plant; 2) an approximate 2.3-acre property referred to as the former Skating Rink property; 3) an abandoned underground brick storm sewer; 4) sections of Spring Run Creek; and 5) the Spa Steel Property, approximately 0.35 acres in size. National Grid has been implementing the OU 1 under the 1997 consent decree.

OU 2 addresses the remediation of contaminants present in subsurface soils including the remediation of source material in the form of non-aqueous phase liquid (NAPL) that has migrated from the NMPC Property and has impacted subsurface soil and groundwater in the Old Red Spring area. This NAPL-impacted subsurface soil acts as a reservoir which contains contamination which can then migrate to groundwater if untreated, and therefore it constitutes principal threat waste.[4]

SUMMARY OF SITE CHARACTERISTICS

As noted above the OU 2 Project Area is bounded to the north by the former Spa-Steel Property and the NMPC Property, to the south by High Rock Avenue, to the east by Warren Street and to the west by The Mill, LLC property. The former Spa Steel property and the National Grid Property are located to the north of Excelsior Avenue. An active bedrock groundwater well, referred to as the Old Red Spring, and an associated pavilion are located in the eastern portion of

4. Principal threat wastes are source materials containing hazardous substances that act as a reservoir which then can migrate to groundwater, surface water, or air, or act as a source for direct exposure. These materials are highly toxic, highly concentrated, or highly mobile and, generally, cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur.

the OU 2 Project Area, within a small "green space" area. The Old Red Spring well extends down to the deep bedrock groundwater zone (deeper than 150 feet below grade), which is separated from the overburden groundwater zone by thick clay and till confining layers. Depth to overburden groundwater in the OU 2 Project Area ranges between 5 and 10 feet below ground surface (bgs). The horizontal hydraulic gradient in the OU 2 Project Area is generally in the southeast direction and the vertical hydraulic gradient is upward through the confining units.

Several layers of varying thickness underlay the OU 2 Project Area soils. First is approximately 8-12 feet of urban fill material,[5] underneath that is a layer of peat/clayey silt approximately 6-8 feet thick, followed by a sand layer approximately 3-8 feet thick, an approximately 50 feet thick silty clay layer, and an approximately 50 feet thick layer of Till (see page 6 and Figure 5 for more details). The silty clay unit encountered between 11-25 feet bgs throughout the Site as a confining layer which keeps liquids from passing through it.

Soil and groundwater investigations were conducted in the OU 2 Project Area from 2008 to 2011. Coal tar in the form of NAPL was found in the subsurface soil and groundwater. NAPL from the NMPC Property has migrated downward to the silty clay surface which serves as a confining unit. Upon reaching the silty clay confining unit, the NAPL has spread horizontally following along the contours of the clay surface and the hydraulic gradient. The ultimate path that the NAPL took depended on the degree of slope of the clay surface and the magnitude of the hydraulic gradient. The hydraulic gradient on the former Spa Steel property and the OU 2 Project Area is in the southeast direction, but NAPL has migrated in the southwest direction from the former National Grid Property (i.e., across the hydraulic gradient). As such, it appears that the surface of the confining clay unit is the primary controlling mechanism for the NAPL migration to the west and southwest of the National Grid Property. This is further supported by the boring logs of monitoring wells where the clay layer is slightly depressed in the area of monitoring wells MW-EPA-05 and MW-EPA-08 (see Figures 4 and 5). NAPL has been observed in both of these areas and the distribution of NAPL is generally consistent with the undulations in the clay surface.

Additional information regarding the nature and extent of NAPL and contaminants of concern (COCs) (e.g., benzene, toluene, ethylbenzene, total xylenes (BTEX) and PAHs) in the OU 2 Project Area soil and groundwater is provided below.

Site Geology/Hydrogeology

The geology beneath the OU 2 Project Area property consists of urban fill material (fine to medium-grained sand with clay, rock fragment, brick fragment, and some construction debris)

5. The urban fill at this Site is sand with clay, rock and brick fragments, and some construction debris.

approximately 8-12 feet thick; peat/clayey silt approximately 6-8 feet thick; fine to coarse sand approximately 3-8 feet thick; silty clay approximately 50 feet thick and approximately 50 feet of till (poorly sorted mix of boulders, cobbles, gravel, sand, silt, and clay) underlain by bedrock identified as the Canajoharie Shale.

The silty clay unit is encountered between 15-25 feet bgs throughout the Site and rises to the east where it is encountered approximately 8-10 feet bgs. The silty clay unit serves as a confining layer.

The groundwater table occurs within the fine to coarse sand and fill material, peat material and clayey silt material, ranging in depth of 5-10 feet bgs. The groundwater flow direction is generally southeast across the OU 2 Project Area.

Soil

The surface soil for the OU 2 Project Area is generally fill (fine to medium-grained sand with clay, rock fragment, brick fragment, and some construction debris), and in some areas is covered by asphalt pavement. Results of analysis of shallow soil samples collected in the OU 2 Project Area revealed that contaminants are present in one surface soil sample (SS-06-02) at low concentrations. This surface soil was collected on the north side of Excelsior Avenue, and the only contaminants detected were benzo(k)fluoranthene at 1.9 milligrams per kilogram (mg/kg) and chrysene at 3 mg/kg.

During the RI, approximately 43 soil borings were drilled within the OU 2 Project Area. Analytical results of subsurface samples indicate that soil samples collected from 11 soil borings contained COCs. NAPL-impacted soil was observed in boring SS-06-04 at 17.5 feet bgs. Monitoring well MW-EPA-08 was installed at this boring location. Analytical results of a soil sample collected at this location detected benzo(a)pyrene at 120 mg/kg, benzo(k)fluoranthene at 62 mg/kg, chrysene at 150 mg/kg, naphthalene at 2000 mg/kg, ethylbenzene at 300 mg/kg, and total xylenes at 289 mg/kg. At location NG-14 impacted soil was observed at 21 feet bgs and benzo(a)pyrene was detected a 17 mg/kg, benzo(k)fluoranthene at 11 mg/kg, chrysene at 21 mg/kg and naphthalene at 180 mg/kg.

NAPL was observed in subsurface soils at depths from 11 feet bgs to 25 ft bgs at seven locations within the OU 2 Project Area (i.e., NG-14, NG-15, NG-17B, NG-28, SS-06-03, SS-06-08, and SS-06-14). At these locations, the depth of observed NAPL generally corresponds to the depth of the confining clay unit surface. The confining clay unit has been observed to be a good capillary barrier to further downward migration of NAPL. No NAPL has been observed below the surface of this clay unit in any soil boring installed within or adjacent to the OU 2 Project Area.

NAPL has been observed in the OU 2 Project Area in small quantities (i.e., droplets, stains, sheens), over relatively thin (i.e., 0.1 to 2-foot) intervals, and in discontinuous areas throughout the OU 2 Project Area. NAPL is encountered at depths greater than 11 feet below grade beneath Excelsior Avenue and greater than 15 feet below grade in the Old Red Spring Area.

Groundwater

The results of the groundwater investigation conducted indicate the presence of COCs dissolved in the shallow overburden groundwater in the OU 2 Project Area. During the May 2009 sampling event, groundwater samples collected from monitoring wells MW-EPA-02, MW-EPA-04, MW-EPA-05, MW-EPA-07, and MW-EPA-08 contained one or more COCs at concentrations that exceeded the NYSDEC Class GA standards and/or federal Maximum Contaminant Levels (MCLs).

Contaminants detected in monitoring well MW-EPA-05 were or included ethylbenzene at 920 ug/L (groundwater standard[6] = 5 ug/L), benzene at 650 ug/L (groundwater standard = 1 ug/L), toluene at 100 ug/L (groundwater standard = 5 ug/L), total xylenes at 710 ug/L (groundwater standard = 5 ug/L), acenaphthene at 3,000 ug/L (groundwater standard = 20 ug/L), anthracene at 1,500 ug/L(groundwater standard = 50 ug/L), benzo(a)anthracene at 690 ug/L (groundwater standard = 0.002 ug/L), benzo(b)fluoranthene at 220 ug/L (groundwater standard = 0.002 ug/L), chrysene at 740 ug/L (groundwater standard = 0.002 ug/L), fluoranthene at 1,400 ug/L (groundwater standard = 50 ug/L), phenanthrene at 4,800 ug/L (groundwater standard = 50 ug/L), pyrene at 2,000 ug/L (groundwater standard = 50ug/L), and naphthalene at 9,600 ug/L (groundwater standard = 10 ug/L).

Groundwater samples collected during 2009 from monitoring wells MW-EPA-09, MW-EPA-10, MW-SS-09-06, MN-SS-08-05, all located just beyond and downgradient of the OU 2 Project Area, were all non-detect for the COCs.

The Old Red Spring well water extends down to the deep bedrock groundwater zone (deeper than 150 feet bgs). The shallow overburden and deep aquifers are isolated from each other by over 50 feet of a confining silty clay and an additional 50 feet of till. Historical groundwater samples collected from the Old Red Spring well indicate that the well does not contain any COCs.

Based on the results of soil and groundwater sampling conducted in the OU 2 Project Area, the groundwater contamination is limited to the shallow overburden groundwater underlying the OU 2 Project Area. The levels of contamination in the groundwater do not appear to be mobile, are

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6. The groundwater standard listed in the table is the more stringent of the state or federal standard.

not currently migrating away from the OU 2 Project Area, and do not show a significant area-wide impact on groundwater.

Based on the OU 2 Project Area investigation data, soil vapor intrusion south of Excelsior Avenue is not a current exposure concern. If the areas near the Old Red Spring are developed in the future, additional soil vapor intrusion evaluation should be conducted.

Vapor intrusion generally occurs when there is a migration of volatile chemicals from contaminated groundwater or soil into an overlying building. Volatile chemicals can emit vapors that may migrate through subsurface soils and into indoor air spaces of overlying buildings in ways similar to that of radon gas seeping into homes. Typically, the chemical concentration levels are low or, depending on site-specific conditions, vapors may not be present at detectable concentrations. In buildings with low concentrations of volatile chemicals, the main concern is whether the chemicals may pose an unacceptable risk of chronic health effects due to long-term exposure to these low levels. While vapor intrusion data was not collected in the OU 2 Project Area, this potential pathway was evaluated as part of the risk assessment discussed below.

CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES

The OU 2 Project Area is currently zoned as Transect Zone 5 (T-5) Neighborhood Center. The intent of this zoning classification is a mixed-use neighborhood center meant to accommodate a variety of non-residential and residential uses, building types and lot sizes, and the district is meant to provide linkages to adjacent neighborhoods conducive to pedestrian activity.

Current land uses in the OU 2 Project Area are commercial and recreational. Specifically, the OU 2 Project Area consists of a section of Excelsior Avenue, a section of a paved parking lot which serves an adjacent commercial building, and a small green space that includes the Old Red Spring well and associated pavilion. Land uses surrounding the OU 2 Project Area include a mixture of commercial (e.g., office building, car dealership, hotel) and residential (e.g., apartments, condominiums) properties. Future land use at the OU 2 Project Area is expected to remain the same.

All potable water in and around the OU 2 Project Area is from public water supply sources and the aquifer underlying the OU 2 Project Area is classified by the State of New York as a potential future drinking water source.

SUMMARY OF SITE RISKS

As part of the RI/FS, a baseline risk assessment was conducted to estimate the current and future effects of contaminants on human health and the environment. A baseline risk assessment is an analysis of the potential adverse human health and ecological effects of releases from hazardous substances from a Site in the absence of any actions or controls to mitigate such releases, under current and future land, groundwater, surface water, and sediment uses. The baseline risk assessment generally includes a human health risk assessment and an ecological risk assessment. It provides the basis for taking action and identifies the contaminants and exposure pathways that need to be addressed by the remedial action.

This section of the ROD summarizes the results of the baseline human health risk assessment that was conducted for the Site. The ecological risk assessment found the groundwater plume is not discharging to any surface water (i.e., Spring Run Creek). Since COCs have not been discharged to surface water, a complete exposure pathway to ecological receptors does not exist. Thus, there is no unacceptable risk to ecological receptors associated with this operable unit. The baseline human health risk assessment considered exposure to COCs in the overburden groundwater at the OU 2 Project Area assuming no active remediation or institutional controls.

Human Health Risk Assessment

A baseline Human Health Risk Assessment (HHRA) is an analysis of the potential adverse human health effects caused by hazardous substance exposure in the absence of any actions to control or mitigate exposure under current and future land uses. The HHRA focused on COCs associated with the current and future use of the OU 2 Project Area groundwater from the shallow overburden (above the silty clay layer) and the bedrock aquifer (i.e., Old Red Spring).[7] The vapor intrusion pathway was also evaluated relative to receptors such as commercial workers and members of the fitness gym adjacent to the OU 2 Project Area.

A four-step human health risk assessment process was used for assessing Site-related cancer risks and non-cancer health hazards. The four-step process is comprised of:

- *Hazard Identification* – identifies the COCs at a site based on several factors such as

7. The HHRA is titled "Human Health Risk Assessment - Niagara Mohawk Power Corporation Saratoga Springs Former Manufactured Gas Plant Site Old Red Spring Subarea (EPA ID#: NYD980664361), Saratoga Springs, New York," dated January 2013, and is part of the Administrative Record**.**

toxicity, frequency of occurrence, and concentration;

- *Exposure Assessment* – estimates the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathways by which humans are potentially exposed (i.e., ingesting contaminated groundwater);

- *Toxicity Assessment* – determines the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of adverse effects (response); and

- *Risk Characterization* – summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site-related risks. During this step, contaminants with concentrations that exceed federal Superfund guidelines for acceptable exposure are identified. These guidelines are 10^{-4} to 10^{-6}, or one-in-ten-thousand to one-in-a-million excess occurrences, for cancer, and a Hazard Index (HI) of greater than 1.0 for non-cancer health hazards. Chemicals with concentrations that exceed these guidelines are then considered COCs for the site and are typically those that will require remediation. The uncertainties associated with the risk calculations are also evaluated under this step.

These steps, as applied to OU 2 of this Site, are described below.

Hazard Identification

The HHRA focused on shallow overburden and bedrock groundwater in the OU 2 Project Area. Groundwater samples from the shallow overburden were collected in 2006, 2008, and 2009. Samples were analyzed for VOCs, SVOCs, and inorganic substances (iron and manganese). A total of 32 groundwater samples were collected from 16 monitoring wells in the shallow overburden in the OU 2 Project Area during three years of sampling (2006, 2008, and 2009). An evaluation of data usability concluded that the analytical groundwater data are suitable for use in the HHRA.

All OU 2 groundwater data collected since 2006 was considered in the screening of COCs. Potential COCs were screened against residential tap water concentrations associated with a risk level of 1×10^{-6} or a chemical-specific Hazard Quotient (HQ) = 1. All known human carcinogens were selected as COCs regardless of risk level. The HHRA identified a wide range of VOCs, SVOCs, and metals as COCs. The main COCs were: benzene, ethylbenzene, 1,1'-biphenyl, 2-methylnaphthalene, naphthalene, dibenzofuran, fluorene, pyrene, manganese and iron.

Exposure Assessment

Appendix III, Table 1 provides the Conceptual Site Model for exposures to OU 2 Project Area groundwater. As has been noted, no wells in the affected area are currently used for potable water purposes, and the land use in the vicinity of the Project Area is a mixture of commercial and residential properties.

Groundwater at the Site is classified by New York State as Class GA, fresh groundwater. The best usage of Class GA waters as defined in the New York Code of Rules and Regulations (NYCRR) is as a source of potable water supply (6 NYCRR ' 701.18). According to 6 NYCRR §701.18, all freshwater groundwater in New York State is classified as Class GA. Currently, the City of Saratoga Springs receives its drinking water from three sources including surface water from the Loughberry Lake Watershed and groundwater from the Geyser Crest and Interlaken well systems; these sources are not hydraulically connected to the OU 2 Project Area. Although Site groundwater is not used as a potable source and there are city requirements for use of municipal water supplies, this baseline HHRA was conducted in the absence of institutional controls consistent with USEPA (1989) guidance. The Project Area is currently zoned as Transect Zone 5 (T-5) Neighborhood Center, which means the OU2 Project Area is currently used for both residential and commercial purposes.

Therefore, the HHRA focused on the following receptors:

Future Adult/Child Residents: Ingestion of, dermal contact with, and inhalation of vapors while showering from groundwater. Future adult/child residents could also be exposed to vapors in indoor air emanating from overburden groundwater in the Old Red Spring Area. A comparison of the concentrations in the overburden groundwater to the vapor intrusion screening levels identified several chemicals above screening levels for vapor intrusion. Should the Site usage change in the future, measures should be taken to mitigate this pathway if necessary. The need or scope of any potential mitigation methods would need to be evaluated once the nature of the future use was identified.

Commercial Workers: Commercial workers at the nearby building may be exposed to vapors in indoor air emanating from overburden groundwater at this location. Consistent with USEPA (2002a) guidance, the vapor intrusion investigation focused on wells within 100 feet horizontally or vertically of a structure (e.g., occupied building). The comparison of groundwater data for wells within 100 feet of the occupied building (MW-EPA-06, MW-SS-09-06, MW-SS-09-07, and MW-EPA-03) to screening levels indicated the concentrations were below the USEPA (2002a) screening criteria, and as such, no COCs were identified for the vapor intrusion pathway based on current land use.

Exposure Point Concentrations (EPCs) in groundwater were estimated using either the maximum

detected concentration of a COC, or determined statistically by calculating the 95%, 97.5% or 99% upper-confidence limit of the average concentration. Chronic daily intakes were calculated based on the reasonable maximum exposure (RME), which is the highest exposure reasonably anticipated to occur at the Site. The RME is intended to represent a conservative exposure scenario that is still within the range of possible exposures. Central tendency exposures (CTE) representing typical or average exposures were also developed. Appendix III, Table 2 presents the OU 2 COC EPCs that were used, the range of detected concentrations, the frequency of detection, and the statistical method used to determine the EPC. A complete summary of all exposure scenarios can be found in the HHRA.

Toxicity Assessment

Under current EPA guidelines, the likelihood of carcinogenic risks and non-cancer hazards due to exposure to site-related chemicals are considered separately. Consistent with current EPA policy, it was assumed that the toxic effects of the site-related chemicals would be additive. Thus, cancer risks and non-cancer hazards associated with exposures to individual COCs were summed to indicate the potential cancer risks and non-cancer hazards associated with mixtures, respectively.

Toxicity data for the human health risk assessment were provided by the Integrated Risk Information System (IRIS) database, the Provisional Peer Reviewed Toxicity Values, or another source that is identified as an appropriate reference for toxicity values consistent with EPA's directive on toxicity values (OSWER Directive 9285.7-53, December 5, 2003**).** This information is presented in Appendix III, Tables 3A and 3B (non-cancer toxicity data summary for oral/dermal and inhalation) and Appendix III, Tables 4A and 4B (cancer toxicity data summary for oral/dermal and inhalation). Additional toxicity information for all COCs is presented in the HHRA.

Risk Characterization

Quantitative estimates of carcinogenic risks and non-carcinogenic hazards were calculated as part of the risk characterization. The risk characterization evaluates potential health risks based on estimated exposure intakes and toxicity values. For carcinogens, risks are estimated as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to a potential carcinogen. For non-carcinogens hazards are calculated by comparing an exposure level over a specified time period (e.g., lifetime) with an oral Reference Dose (RfD) derived for a similar exposure period.

To assess the overall non-carcinogenic effects posed by more than one contaminant, EPA has developed the Hazard Quotient (HQ) and Hazard Index (HI). The HQ is the ratio of the chronic daily intake of a COC to the RfD for the chemical. The RfD is an estimate of a daily exposure

level for the human population, including sensitive subpopulations, that is thought to be protective over a lifetime of exposure. The inhalation Reference Concentration (RfC) is used for the inhalation assessment. The HQs are summed for all COCs within an exposure pathway (e.g., ingestion of groundwater) and across pathways (i.e., inhalation, ingestion and dermal) to determine the HI. When the HI exceeds 1, there may be a concern for potential non-carcinogenic health effects if the COCs in question are believed to cause similar toxic effects.

For carcinogens, risks are generally expressed as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to a potential carcinogen. The excess lifetime cancer risk was determined for each COC by multiplying the COC-specific exposure dose by the cancer slope factor for oral or dermal exposures. The resulting cancer risk estimates are expressed in scientific notation as a probability (e.g., 1×10^{-6}). The risks of individual COCs are summed for each pathway to develop a total cancer risk estimate. An excess lifetime cancer risk of 1×10^{-4} indicates that one additional incidence of cancer may occur in a population of 10,000 people who are exposed under the conditions identified in the assessment. The range of acceptable risk is 1×10^{-4} to 1×10^{-6} of an individual developing cancer over a 70-year lifetime from exposure to the COCs under specific exposure assumptions. Therefore, sites with carcinogenic risk below the risk range for an RME do not generally require cleanup based upon carcinogenic risk under the NCP.[8]

A summary of the carcinogenic risks and non-cancer health hazards associated with the contaminants for each exposure pathway is contained in Appendix III, Tables 5a and 5b.

Summary of Risks to Future Residents (Adult and Child)

The carcinogenic risks calculated for future adult residents under the RME scenario was 2×10^{-3} (two in 1,000) which exceeds the acceptable risk range of 10^{-4} (one in 10,000) to 10^{-6} (one in a 1,000,000). The risk is due primarily to ingestion of benzene and naphthalene in the groundwater. The total estimated adult cancer risk under CTE conditions is 2×10^{-4} (2 in 10,000) which is within the upperbounds of the risk range. The main COCs for the CTE individual are benzene and naphthalene. The risk summary is provided in Appendix III, Table 5A.

The sum of all estimated RME cancer risks for the child resident is 6×10^{-4} (6 in 10,000). The total estimated child cancer risk under RME conditions exceeds the risk range. The main COCs contributing to the risk posed were benzene and naphthalene. The total estimated child cancer risks under CTE conditions is 2×10^{-4} (2 in 10,000). The total estimated cancer risk under the

8. See 40 CFR §300.430, and "Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions," OSWER Directive #9355.0-30 (1991).

CTE conditions is within the upper bounds of the risk range. The main COCs are the same as the RME assessment. The risk summary is provided in Appendix III, Table 5B.

The non-cancer Hazard Index (HI) for adult resident receptors is 91 under RME conditions and 37 under CTE conditions, which both exceed the goal of protection of an HI of 1. The primary COCs in groundwater contributing to the total HI are benzene, 1,1'-biphenyl, ethylbenzene, 2-methylnaphthalene, dibenzofuran, fluorene, naphthalene, pyrene, iron and manganese. The non-cancer hazard summary is provided in Appendix III, Table 5A.

For child resident receptors, the total estimated HI is 94 under RME conditions and 65 under CTE conditions. The primary COCs are benzene, dibenzofuran, fluorene, naphthalene, pyrene, 2-methylnaphthalene, and manganese. The HI for the RME and CTE individuals exceeds the goal of protection of an HI of 1. The risk summary is provided in Appendix III, Table 5B.

An evaluation of cancer risks and non-cancer hazards associated with showering were found to be below the cancer risk range and an HI of 1 for all potential future residents.

Uncertainties

The procedures and inputs used to assess risks in this evaluation, as in all such assessments, are subject to a variety of uncertainties. The main sources of uncertainty in the HHRA are described below.

Uncertainty in environmental sampling and analysis can arise in part from the potentially uneven distribution of contaminants in the media sampled. The sampling locations may not accurately reflect the range, frequency, and distribution of chemicals at the Site. There are also uncertainties associated with the analytical methods and instruments used in the analysis of the samples. These uncertainties are generally likely to have a low impact on the risk assessment.

The selection of COCs can also lead uncertainty to the risk assessment, but the EPA uses a conservative approach that assures protection of human health, so it is unlikely that chemicals that should be COCs are overlooked. The main risk driver COCs were benzene, ethylbenzene, 1,1'-biphenyl, 2-methylnaphthalene, naphthalene, dibenzofuran, fluorene, pyrene, manganese and iron. However, several chemicals were not evaluated in the HHRA based on a lack of toxicity values. The lack of toxicity values may result in a potential underestimate of cancer risks and non-cancer health hazards.

Uncertainties can also be associated with the selection of exposure points and pathways and the estimation of EPCs. At this Site, the calculation of EPCs is based on the calculation of upper confidence limits. The RME assumptions incorporated in the HHRA are intended to be conservative and may overestimate risk.

Uncertainties are also associated with the toxicity information used to conduct the risk assessment. The availability and quality of toxicity data affect the ability of experts to derive toxicity criteria and the quality/quantity of the toxicity criteria that are derived. Uncertainties in toxicological data occur in extrapolating both from animals to humans and from high to low doses of exposure, as well as from the difficulties in assessing the toxicity of a mixture of chemicals. These uncertainties are addressed by making conservative assumptions concerning risk and exposure parameters throughout the assessment. As a result, the risk assessment provides upper bound estimates of the risks to populations near the Site and is not likely to underestimate actual risks related to the Site.

More specific information concerning public health risks, including a quantitative evaluation of the degree of risk associated with various exposure pathways, is presented in the HHRA report.

Basis for Action

NAPL impacted soils act as a source to the groundwater above levels that are protective of human health, therefore, an action is warranted to address the contaminated soils and to address the NAPL in the soils/saturated zone. In addition, there is a potential risk from inhalation of VOC vapors due to the contaminated groundwater underlain the OU 2 Project Area should buildings be constructed in this area.

The excess cancer risk and non-cancer health hazards associated with future human ingestion of groundwater are above acceptable levels under baseline conditions. The response action selected in this ROD is necessary to protect the public health, welfare or the environment from actual or threatened releases of hazardous substances into the environment.

Ecological Risk Assessment

As part of the OU 2 Remedial Investigation, soil and groundwater sampling was conducted to delineate the extent of the NAPL plume that migrated from the National Grid Property before the OU 1 remedial action was implemented. Contaminant migration from the National Grid Property to the OU 2 Project Area has occurred underground across the top of the subsurface clay layer at 15 - 24 feet bgs. NAPL concentrations have been observed in subsurface soil samples at depths greater than 15 feet. Groundwater samples were collected from monitoring wells screened across the entire thickness of the overburden aquifer or upper aquifer. Groundwater data indicate that contamination is currently limited to the OU 2 Project Area and is not migrating beyond OU 2 Project Area. Further, the groundwater plume is not currently discharging to any surface water (i.e., Spring Run Creek). Since COCs are not discharging to surface water, a complete exposure pathway to ecological receptors does not exist. Thus, there is no unacceptable risk to ecological receptors associated with this operable unit.

REMEDIAL ACTION OBJECTIVES

Remedial Action Objectives (RAOs) have been developed for OU 2 for the protection of public health and the environment based on findings in the RI. The RAOs are organized by media of concern, specify contaminant type and exposure pathways, and are based on Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considered (TBC) criteria and other guidance documents that will be utilized to establish soil and groundwater cleanup objectives that eliminate or mitigate the significant threat to the public health and environment. The Site-specific RAOs are indicated below:

- Eliminate the migration of contaminants within the subsurface soils and further into groundwater;

- Remove, treat or contain principal threat waste;

- Protect human health by preventing exposure to contaminated soil, groundwater, and soil vapor; and

- Restore shallow groundwater to levels that meet state and federal standards within a reasonable time.

DESCRIPTION OF REMEDIAL ALTERNATIVES

CERCLA §121(b)(1), 42 U.S.C. §9621(b)(1), mandates that remedial actions must be protective of human health and the environment, cost-effective, comply with ARARs, and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions which employ, as a principal element, treatment to permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants and contaminants at a Site. CERCLA §121(d), 42 U.S.C. §9621(d), further specifies that a remedial action must attain a level or standard of control of the hazardous substances, pollutants, and contaminants, which at least attains ARARs under federal and state laws, unless a waiver can be justified pursuant to CERCLA §121(d)(4), 42 U.S.C. §9621(d)(4).

Remedial alternatives for the OU 2 Project Area are summarized in this section. Detailed descriptions of the remedial alternatives for addressing the contamination associated with the Site can be found in the FS Report. The No Action Alternative is considered in accordance with the requirement in Section 300.430(e)(6) of the NCP (40 CFR §300.430(e)(6)) and provides a baseline for comparison with the other alternatives.

The construction time for each alternative reflects only the time required to construct or implement the remedy and does not include the time required to design the remedy, negotiate the performance of the remedy with the potentially responsible party, or procure contracts for design and construction. Each of the alternatives, except for Alternative 1, includes plugging and replacement of the Old Red Spring well. Replacement of the Old Red Spring well refers to only the underground, non visible components of the well. The existing and visible pavilion and fountain above ground would not be replaced, moved or impacted. The underground well structure is old and not likely to have been double cased when it was constructed. The remedial action will result in significant earth moving activity in very close proximity to the underground and possibly fragile well. Such activity could result in the contaminants from the shallow aquifer moving into the deeper aquifer through the well. A new well with double casing would protect the integrity of the clay layer protecting the deeper aquifer supplying the Old Red Spring.

Alternative 1: No Action

Capital Cost	$0
Present Worth of Annual Operation/Maintenance (O&M) Cost	$0
Total Present Worth Cost:	$0
Construction Time:	$0

Section §300.430(e)(6), of the NCP (40 CFR §300.430(e)(6)), requires that the "no action" alternative be considered as a baseline for comparison with other alternatives. For the OU 2 Project Area, the no-action remedial alternative would not include any physical remedial measures to address the contamination present in subsurface soil and groundwater. If no remedial action is taken, contaminants already present in the soils will remain in place and will continue to impact the underlying groundwater. Contaminants will remain in the OU 2 Project Area soils for long periods of time with little or no decrease in concentration.

Because this alternative would result in contaminants remaining on-Site above levels that allow for unlimited use and unrestricted exposure, CERCLA requires that the Site be reviewed at least once every five years.

Alternative 3A – In-situ stabilization or (ISS) (Old Red Spring Area) and Encapsulation of NAPL-Impacted Soil (Excelsior Avenue); and Enhanced Biodegradation of Contamination in Soil and Groundwater

Capital Cost	$4,600,000

Present Worth of Annual O&M Cost:	$1,900,000
Total Present Worth Cost:	$6,500,000
Construction Time:	6 months

The major components of Alternative 3A include the following:

1. Treating via ISS NAPL-impacted soil in the Old Red Spring Area. This component includes removing the top 5 feet of surface soil to account for the increase in volume of the solidified material and to allow for 2 feet of clean backfill;

2. Removing surface soil (i.e., up to two feet below grade) in areas not targeted for ISS in the Old Red Spring Area and restoring with imported clean fill underlain by a demarcation layer;

3. Enhancing biodegradation of contaminated subsurface soil and groundwater in the Old Red Spring Area by the application of amendments, such as organic nutrients, oxygen-releasing compounds, and/or chemical products;

4. Plugging and abandoning the existing Old Red Spring water well and installing a replacement well with double casing;

5. Installing a containment barrier wall and a subsurface mat to encapsulate NAPL-impacted soil under Excelsior Avenue;

6. Conducting long-term groundwater monitoring including periodic sampling of monitoring wells and analysis for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and metals;

7. Implementing institutional controls (ICs) at the properties in the OU 2 Project Area, which would include the development of environmental easements/restrictive covenants to be filed in the property records of Saratoga County. The ICs relating to soil exposure would require compliance with an EPA-approved Site Management Plan (SMP) and would:

    a) be imposed for all areas where COCs exceed unrestricted use SCOs (6 NYCRR Section 375-6.3(b));

    b) prevent any disturbance of the implemented remedy under Excelsior Avenue and in the areas of ISS; and

c) prohibit single family housing and vegetable gardening, but would allow for recreational and/or commercial use of the Old Red Spring Area, which New York State defines as "restricted-residential" use.

The ICs relating to groundwater exposure would restrict the use of the shallow groundwater aquifer throughout the OU 2 Project Area and would require compliance with the SMP. The ICs would also restrict construction of new buildings throughout the OU 2 Project Area unless an evaluation of the potential for vapor intrusion is conducted, and mitigation, if necessary, is performed in compliance with an EPA-approved SMP.

8. Developing an SMP to ensure the effectiveness of the engineering and institutional controls, as well as the long-term groundwater monitoring, periodic reviews and certifications, and

9. Restoring disturbed areas (including vegetated surfaces, parking lots, roadways, sidewalks, curbs, etc.) following the completion of remedial construction activities by replacing them to their original pre-construction condition and topographic contours.

Alternative 3A would include the removal of the top surface soil (5 feet of soil below grade in the area targeted for ISS treatment and 2 feet of soil on the area not targeted for ISS) in the Old Red Spring Area. This surface soil removal would allow for the increase in volume of the solidified material and allow for 2 feet of backfill.

The ISS process would stabilize Site media (i.e., soil and groundwater) containing COCs as well as some additional surrounding soil into a solid mass (micro-encapsulation), thereby preventing any further migration of COCs and NAPL beyond the stabilized mass. ISS bench-scale testing to ensure the right combination of ISS materials would be required prior to implementing this alternative.

This alternative would include construction of a low-permeability containment barrier wall as a horizontal cap to cover NAPL-impacted soil beneath Excelsior Avenue. The containment barrier wall would be constructed through jet grout applications. The jet grout would consist of a mixture of Portland cement, bentonite, water and other acceptable materials, which can achieve the strength and permeability of compact clay. The barrier wall would extend from a subsurface elevation (e.g., below existing utilities) and would be keyed into the underlying clay unit. Additionally, alternative 3A would include construction of a subsurface mat over the top of the barrier wall system and beneath subsurface utilities to encapsulate the NAPL-impacted soil. The containment barrier wall and mat would tie into the existing sheet pile barrier wall north of Excelsior Avenue, on the former Spa Steel Property. On the south side of Excelsior Avenue, the containment barrier wall and mat would tie into the northern portion of the ISS monolith.

Following the completion of remedial construction activities**,** the Old Red Spring Area including vegetated surfaces, parking lots, roadways, sidewalks, curbs, etc., would be restored to original pre-construction condition and topographic contours. Disturbed surfaces in the Excelsior Avenue area would be restored with imported clean fill material and asphalt. Surface restoration details would be developed as part of the remedial design for this alternative.

NAPL and contaminated soil which adversely impact groundwater would be stabilized and/or contained. Alternative 3A would also include the addition of amendments including oxygen-releasing materials and organic nutrients to enhance the biodegradation of residual COCs that would be present in soil and groundwater beyond the area of ISS treatment. Injection wells would be installed along the downgradient edge of the ISS treatment area to apply the amendments. Additional details regarding enhancing biodegradation of contamination in the subsurface soil and groundwater using amendments, such as nutrients, oxygen, or chemical products, and the specific amendment and application measures would be developed as part of the remedial design.

Alternative 3A would also include a groundwater monitoring component similar to the other alternatives to confirm that groundwater standards and guidance values are achieved.

Alternative 3B – Excavation (Old Red Spring Area) and Encapsulation of NAPL-Impacted Soil (Excelsior Avenue); Enhanced Biodegradation of* Contamination in *Soil & Groundwater.

Capital Cost:	$6,700,000
Present Worth of Annual O&M Cost:	$1,900,000
Total Present Worth Cost:	$8,600,000
Construction Time:	8 months

The major components of Alternative 3B include the following:

1. Excavating and removing NAPL-impacted soil in the Old Red Spring Area;

2. Removing 2 feet of surface soil below grade in areas not impacted by NAPL-impacted subsurface soil in the Old Red Spring Area and restoring with imported clean fill underlain by a demarcation layer;

3. Enhancing biodegradation of contaminated subsurface soil and groundwater in the Old Red Spring Area by the application of amendments, such as organic nutrients, oxygen-releasing compounds, or chemical products;

4. Plugging and abandoning the existing Old Red Spring well and installing a replacement well with double casing;

5. Installing a containment barrier wall and a subsurface mat to encapsulate NAPL and contaminated soil under Excelsior Avenue;

6. Conducting long-term groundwater monitoring;

7. Implementing ICs at the properties in the OU 2 Project Area, which would include the development of environmental easements/restrictive covenants to be filed in the property records of Saratoga County. The ICs relating to soil exposure would require compliance with an EPA-approved SMP and would:

    a) be imposed for all areas where COCs exceed unrestricted use SCOs (6 NYCRR Section 375-6.3(b));

    b) prevent any disturbance of the implemented remedy under Excelsior Avenue and;

    c) prohibit single family housing and vegetable gardening, but would allow for recreational and/or commercial use of the Old Red Spring Area, which New York State defines as "restricted-residential" use.

    The ICs relating to groundwater exposure would restrict the use of the shallow groundwater aquifer throughout the OU 2 Project Area and would require compliance with the SMP. The ICs would also restrict construction of new buildings throughout the OU 2 Project Area unless an evaluation of the potential for vapor intrusion is conducted, and mitigation, if necessary, is performed in compliance with an EPA-approved SMP.

8. Developing an SMP to ensure the effectiveness of the engineering and institutional controls, as well as the long-term groundwater monitoring, periodic reviews and certifications; and

9. Restoring disturbed areas (including vegetated surfaces, parking lots, roadways, sidewalks, curbs, etc.) following the completion of remedial construction activities by replacing them to their original pre-construction condition and topographic contours.

Alternative 3B includes all of the aspects of the Alternative 3A (as discussed above) except that, in Alternative 3B, the NAPL and NAPL-impacted soil under the Old Red Spring Area would be excavated and properly disposed of off-Site.

Alternative 3B would include the excavation of approximately 4,200 cubic yards (cy) of soil, from the surface to depths of approximately 15 to 24 feet below grade, to address NAPL-impacted soil in the Old Red Spring Area. In addition, excavation activities would be conducted using conventional construction equipment (such as backhoes, excavators, front-end loaders, dump trucks, etc.). Excavation areas would be dewatered to facilitate soil removal. Based on the proposed extent/depth of excavation activities, excavation support systems (such as steel sheet pile walls) would be required. A temporary excavation enclosure equipped with a vapor collection and treatment system would also be constructed over the proposed excavation area to reduce the potential for migration of vapors and nuisance odors during excavation activities.

All subsurface and overhead utilities within the excavation limits would be temporarily (or permanently) relocated as part of this remedial alternative. For the purpose of developing this alternative, it is estimated that the bottom three feet of soil adjacent to the clay layer contains the highest quantities of NAPL and would be transported off-Site for treatment/disposal via low-temperature thermal desorption. The remaining non-hazardous excavated soil would be transported for off-site disposal at a solid waste landfill or reused on-Site if the soil met the applicable backfill requirements and the SCOs for unrestricted use 6 NYCRR Section 375-6.3(b).

The groundwater removed from the excavation areas would be treated via a temporary on-Site treatment system to applicable standards and discharged to the local Publicly Owned Treatment Works (POTW) via the sanitary sewer. Treatment of water at the existing system on the National Grid Property would be evaluated as part of the remedial design for this alternative. Excavation areas would be restored with imported clean fill (or excavated soil suitable for re-use) material underlain by a demarcation layer to match the previously existing lines and grades.

Alternative 4 – ISS (Old Red Spring Area) and Containment and Surfactant/Cosolvent Flushing (Excelsior Avenue) of NAPL-impacted Soil; Enhanced Biodegradation of Groundwater

Capital Cost:	$4,500,000
Present Worth of Annual O&M Cost:	$1,900,000
Total Present Worth Cost:	$6,400,000
Construction Time:	7 months

The major components of Alternative 4 include the following:

1. Treating via ISS NAPL-impacted soil in the Old Red Spring Area. This component includes removing the top surface soil (5 feet of soil below grade) to account for the increase in volume of the solidified material and to allow for 2 feet of backfill;

2. Removing surface soil (i.e., up to two feet below grade) in areas not targeted for ISS in the Old Red Spring Area and restoring with imported clean fill underlain by a demarcation layer;

3. Enhancing biodegradation of subsurface impacts via application of amendments, such as organic nutrients, oxygen-releasing compounds, or chemical products;

4. Plugging and abandoning the existing Old Red Spring well and installing a replacement well with double casing;

5. Surfactant/cosolvent flushing of NAPL-impacted soil under Excelsior Avenue,

6. Installing a containment barrier wall around NAPL-impacted soil under Excelsior Avenue;

7. Installing a groundwater extraction well within the barrier wall for hydraulic control under Excelsior Avenue;

8. Conducting long-term groundwater monitoring;

9. Implementing ICs at the properties in the OU 2 Project Area, which would include the development of environmental easements/restrictive covenants to be filed in the property records of Saratoga County. The ICs relating to soil exposure would require compliance with an EPA-approved SMP and would:

    a) be imposed for all areas where COCs exceed unrestricted use SCOs (6 NYCRR Section 375-6.3(b));

    b) prevent any disturbance of the implemented remedy under Excelsior Avenue and in the areas of ISS; and

    c) prohibit single family housing and vegetable gardening, but would allow for recreational and/or commercial use of the Old Red Spring Area, which New York State defines as “restricted-residential” use.

    The ICs relating to groundwater exposure would restrict the use of the shallow groundwater aquifer throughout the OU 2 Project Area and would require compliance

with the SMP. The ICs would also restrict new construction throughout the OU 2 Project Area unless an evaluation of the potential for vapor intrusion is conducted, and mitigation, if necessary, is performed in compliance with an EPA-approved SMP.

10. Developing an SMP to ensure the effectiveness of the engineering and institutional controls, as well as the long-term groundwater monitoring, periodic reviews and certifications; and

11. Restoring disturbed areas (including vegetated surfaces, parking lots, roadways, sidewalks, curbs, etc.) following the completion of remedial construction activities by replacing them to their original pre-construction condition and topographic contours.

Alternative 4 would include the removal of the top layer of surface soil (5 feet of soil below grade in the area targeted for ISS treatment and 2 feet of soil on the area not targeted for ISS) in the Old Red Spring Area. This surface soil removal would allow for the increase in volume of the solidified material.

Alternative 4 includes addressing NAPL-impacted soil in the Old Red Spring Area through ISS treatment. The ISS process would stabilize soil and groundwater containing NAPL into a solid mass (micro-encapsulation), as well as soil surrounding NAPL (macro-encapsulation), thereby preventing migration of COCs and NAPL beyond the stabilized mass. ISS bench-scale testing for selection of appropriate materials would be required prior to implementing this alternative.

Alternative 4 includes surfactant/cosolvent flushing of NAPL-impacted soil under Excelsior Avenue. Surfactant/cosolvent flushing is an in-situ remediation approach that enhances recovery of NAPL by flushing a surfactant/cosolvent solution through the NAPL-impacted material using a network of injection and extraction wells. Reduction of the NAPL mass occurs by increasing the solubility of the NAPL constituents in the flushing solution or by increasing NAPL mobility with reduction of the interfacial tension between the NAPL and soil. NAPL mobility and recovery can also be increased by reducing the NAPL viscosity. This is an approach that increases the mobility and bulk recovery of the NAPL and is typically more efficient than a solubilization approach. Potential surfactant/cosolvent mixtures would be confirmed based on the NAPL's physiochemical properties. For this application, the remediation goal would be to remove COCs from the NAPL and achieve reduction of COCs mass flux from the NAPL to groundwater.

At many manufactured gas facilities, NAPLs have been sufficiently weathered such that the more soluble COCs, (e.g., benzene and naphthalene), have already been removed from the NAPL. At sites, such as this one, where the NAPL is a continuing source of COCs, including BTEX and PAHs, surfactant/cosolvent flushing will enhance the weathering process by increasing the dissolution of COCs from the NAPL, thus significantly reducing potential impacts

to groundwater posed by the remaining NAPL. Prior to implementing this alternative, a bench-scale treatability study would be conducted to select the appropriate surfactant/cosolvent mixture and to confirm the ability of the mixture to remove the COCs from the NAPL.

The design of this alternative would include ten injection wells and six extraction wells to flush the treatment zone under Excelsior Avenue. Extracted groundwater containing the surfactant/cosolvent additional surfactant/cosolvent, and reinjected solution and dissolved COCs would be stored in tanks, treated to remove the COCs, mixed with additional surfactant/ cosolvent, and re-injected.

The containment barrier wall is the same as that described under Alternative 3A, a jet grout containment barrier to address NAPL under Excelsior Avenue. The jet grout barrier wall would tie into the existing barrier wall, north of Excelsior Avenue and would tie into the ISS monolith south of Excelsior Avenue. Based on the depth of NAPL observed below Excelsior Avenue and in the Old Red Spring Area, and consistent with the depth of the containment barrier walls on the National Grid and Spa Steel Properties, it has been assumed that the barrier wall within Excelsior Avenue would be installed to a depth of 30 feet below grade. Final barrier wall depth and other construction details would be confirmed as part of the remedial design for this alternative.

Amendments, such as organic nutrients, oxygen-releasing compounds, or chemical products, would be added to enhance the biodegradation of low level contamination that would be present in soil and groundwater beyond the limits of ISS, containment and surfactant/cosolvent treatment areas. As described under Alternative 3A, application wells would be installed along the downgradient edge of the treatment area and containment barrier wall.

Alternative 4 includes installation of a groundwater extraction well within the containment area under Excelsior Avenue to maintain an inward gradient. This alternative also includes plugging and abandonment of the existing Old Red Spring well and installation of a replacement well with double casing following remedial construction.

Following the completion of remedial construction activities, disturbed surfaces (including vegetated surfaces, parking lots, roadways, sidewalks, curbs, etc.) would be replaced to their original pre-construction condition and topographic contours.

Alternative 4 would also include the same groundwater monitoring component as the other alternatives. Periodic groundwater monitoring would be conducted to confirm groundwater flow direction and verify the extent and concentrations of residual dissolved phase COCs.

Alternative 6 – Excavation and Off-site Disposal of Contaminated Soil to Unrestricted Use; and Groundwater Monitoring

Capital Cost:	$9,200,000
Present Worth of Annual O&M Cost:	$1,600,000
Total Present Worth Cost:	$10,800,000
Construction Time:	12 months

The major components of Alternative 6 include the following:

1. Excavating all soil in the Old Red Spring Area and Excelsior Avenue that contains COCs at concentrations greater than NYSDEC SCO's for unrestricted use (6 NYCRR Section 375-6.3(b));

2. Plugging and abandoning the existing Old Red Spring well and installing a replacement well with double casing; and

3. Dewatering groundwater in the OU Project Area as part of the soil excavation and conducting groundwater monitoring.

Alternative 6 would include the excavation of approximately 9,900 cy of soil extending to depths of 18 to 24 feet below grade. Excavation activities would be conducted using conventional construction equipment such as backhoes, excavators, front-end loaders, and dump trucks. Excavation areas would be dewatered to facilitate soil removal. Based on the proposed extent/depth of excavation activities, excavation support systems (such as steel sheet pile walls) are anticipated to be required for the excavation activities. A temporary excavation enclosure equipped with a vapor collection and treatment system would also be constructed over the proposed excavation area to reduce the potential for migration of vapors and nuisance odors during excavation activities. All subsurface and overhead utilities within the excavation limits would temporarily (or permanently) be relocated.

For the purpose of developing this alternative, it is estimated that the bottom three feet of soil adjacent to the clay layer contains the highest quantities of NAPL **(**approximately 1,000 cubic yards plus stabilizing admixture) and would be transported off-Site for treatment/disposal via low-temperature thermal desorption. The remaining excavated soil with low levels of contamination would be transported for off-Site disposal as a non-hazardous waste at a solid waste landfill. Water removed from the excavation areas would be treated to appropriate levels via a temporary on-site water treatment system and discharged to the local POTW via the

sanitary sewer. Treatment of extracted groundwater by the existing treatment system on the National Grid Property would also be evaluated as part of the remedial design for this alternative. Excavated areas would be restored with imported clean fill material underlain by a demarcation layer. Following the completion of remedial construction activities, disturbed surfaces (including vegetated surfaces, parking lots, roadways, sidewalks, curbs, etc.) would be replaced to their original pre-construction condition and topographic contours.

Alternative 6 includes abandonment of the existing Old Red Spring well and installation of a new well following remedial construction. Following excavation and backfilling activities, groundwater monitoring would be conducted to confirm that groundwater standards and guidance values are achieved. Because all impacted soil would be removed from the OU 2 Project Area, implementation of institutional controls would not be required.

COMPARATIVE ANALYSIS OF ALTERNATIVES

In selecting a remedy for a site, EPA considers the factors set forth in CERCLA §121, 42 U.S.C. §9621, by conducting a detailed analysis of the viable remedial alternatives pursuant to the NCP, 40 C.F.R. §300.430(e)(9), EPA's *Guidance for Conducting Remedial Investigations and Feasibility Studies*, OSWER Directive 9355.3-01, and EPA's *A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents*, OSWER 9200.1-23.P.d OSWER Directive 9355.3-01. The detailed analysis consists of an assessment of the individual alternatives against each of the nine evaluation criteria at 40 C.F.R. § 300.430(e)(9)(iii) and a comparative analysis focusing upon the relative performance of each alternative against those criteria.

The following "threshold" criteria must be satisfied by any alternative in order to be eligible for selection:

1. *Overall protection of human health and the environment* addresses whether or not a remedy provides adequate protection and describes how risks posed through each exposure pathway (based on a reasonable maximum exposure scenario) are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

2. *Compliance with ARARs* addresses whether or not a remedy would meet all of the applicable, or relevant and appropriate requirements of Federal and State environmental statutes or regulations or provides grounds for invoking a waiver.

The following "primary balancing" criteria are used to make comparisons and to identify the major trade-offs between alternatives:

3. *Long-term effectiveness and permanence* refers to the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met. It also addresses the magnitude and effectiveness of the measures that may be required to manage the risk posed by treatment residuals and/or untreated wastes.

4. *Reduction of toxicity, mobility, or volume via treatment* refers to a remedial technology's expected ability to reduce the toxicity, mobility, or volume of hazardous substances, pollutants or contaminants at a site.

5. *Short-term effectiveness* addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation periods until cleanup goals are achieved.

6. *Implementability* refers to the technical and administrative feasibility of a remedy, including the availability of materials and services needed.

7. *Cost* includes estimated capital and annual operation and maintenance costs, as well as net present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.

The following "modifying" criteria are considered fully after the formal public comment period on the Proposed Plan is complete:

8. *State acceptance* indicates whether, based on its review of the FS and the Proposed Plan, the State supports or opposes the preferred alternative.

9. *Community acceptance* refers to the public's general response to the alternatives described in the Proposed Plan and the FS report and whether the local community agrees with EPA's analyses and preferred alternative.

A comparative analysis of the remedial alternatives based upon the evaluation criteria noted above follows.

Overall Protection of Human Health and the Environment

Alternative 1 would not provide control of exposure to contaminated soils and groundwater, and offers no reduction in risk to human health posed by contaminated soils and groundwater. NAPL and NAPL-impacted soil and groundwater would not be addressed. Groundwater would continue to be impacted by NAPL in the soil for an indefinite period of time. The impacted groundwater would continue to contain one or more COCs at concentrations that exceed the

NYSDEC Class GA standards and/or federal MCLs. While current groundwater data indicate that contamination is currently limited to the OU 2 Project Area and presently is not migrating beyond the OU 2 Project Area, it is possible that NAPL and NAPL-contaminated groundwater in this area could eventually extend beyond the OU 2 Project Area could potentially discharge into Spring Run Creek in the future.

The remaining Alternatives presented would each prevent exposures (i.e., direct contact, ingestion, and inhalation) to impacted soil and groundwater through active, invasive remedial activities. Alternatives 3A, 3B, and 4 would address NAPL and NAPL-impacted soil. Additionally, Alternatives 3A and 3B would include construction of a containment barrier wall and subsurface mat below Excelsior Avenue to encapsulate impacted media and mitigate future exposures. Alternatives 3A, 3B, 4 and 6 would each achieve protectiveness of human health and the environment. Unlike the other active alternatives, Alternative 6 would not require institutional controls to be protective of human health and the environment, since all contaminated soil and groundwater would be removed from the OU 2 Project Area, which would be restored to pre-disposal conditions.

Alternative 3A would rely on ISS treatment and containment and Alternative 3B would rely on excavation and containment. Alternative 4 would utilize a combination of ISS treatment, containment, and surfactant/cosolvent flushing to address NAPL and NAPL- impacted soil. Each alternative would include periodic groundwater monitoring to document the extent of dissolved phase impacts and trends in COC concentrations.

Alternatives 3A, 3B, 4 and 6 would reduce off-Site migration of COCs within the soil and groundwater through stabilization, containment, encapsulation, and treatment with amendments and/or excavation. These four alternatives also would protect the deep aquifer which supplies water for the Old Red Spring well. These alternatives will treat or remove the NAPL, and replace the old underground well structure which is not likely to have been constructed with double casing. Without treating and/or removing the NAPL, and without double casing the well, any future cracks or other compromising of the Old Red Spring well could cause contaminants from the shallow aquifer to move into the well and then move into the deeper aquifer, thus contaminating it.

Compliance with ARARs

EPA has identified New York State's SCOs at 6 NYCRR Section 375-6.3(b) for unrestricted use as an ARAR, TBC or other guideline to address contaminated surface and subsurface soil in the portion of the Old Red Spring Area not targeted for ISS. See Appendix II, Table 3.

ARARS include the chemical-specific ARARs for groundwater, which are the federal or more stringent state MCLs. (See Tables 5a-5c).

Alternative 1 would not meet cleanup levels for soil and groundwater. Contaminants in the soil and groundwater, which exceed the cleanup levels, would remain in place and no measures would be implemented to reduce or eliminate the dissolution of contaminants into the groundwater.

Alternatives 3A, 3B, 4, and 6 would meet the cleanup levels for groundwater and soils, since the contaminated subsurface soil and groundwater would be treated or removed.

Alternatives 3A, 3B, and 4 would address (through ISS treatment, containment, enhanced biodegradation, and/or excavation) NAPL and NAPL-impacted soil and groundwater that contain the greatest concentrations of COCs. These Alternatives would each address the remedial goals for the principal threat waste. Based on the analytical results for soil samples collected to date, soil located outside the stabilization, containment or excavation limits of Alternatives 3A (depicted on Attachment 10), 3B, and 4 would be expected to meet unrestricted SCOs. Alternative 6, excavation of soil containing COCs, would meet unrestricted use SCOs and would address the remedial goals for the principal threat waste through excavation and off-Site disposal and treatment. Groundwater ARARs are expected to be achieved for Alternative 6 through removal of all source soils and dewatering during excavation. Excavated materials, ISS/jet-grout spoils, and process residuals generated during implementation of these alternatives would be required to comply with fugitive dust and VOC emissions requirements.

Long-Term Effectiveness and Permanence

Alternative 1 would not reduce risk in the long term, since the contaminants would not be controlled, treated or removed. Alternative 6 provides the highest degree of long-term effectiveness and permanence, because the impacted soils are permanently removed from the Site. Alternative 4 would utilize a combination of ISS treatment, containment, and surfactant/cosolvent flushing to address NAPL and NAPL-impacted soil. Alternative 3A would address the material most-likely to be encountered during potential future subsurface activities by stabilizing soil in the Old Red Spring Area and encapsulating NAPL and NAPL-impacted soil below Excelsior Avenue through a containment barrier wall and subsurface mat. Alternative 3B would address NAPL and NAPL-impacted soil by excavating soil in the Old Red Spring Area and encapsulation of soil below Excelsior Avenue through the installation of a containment barrier wall and subsurface mat. Alternatives 3A and 3B are considered equally effective as Alternative 6 based on the Site and surrounding property usage and the limited potential for exposures to soil and groundwater containing COCs following the completion of remedial construction activities. All three limit the potential for exposure to soil and groundwater containing COCs following the completion of remedial construction activities. Under Alternative 3A and 4, if future subsurface activities were conducted in the Old Red Spring Area,

activities would likely be conducted in areas restored with imported clean fill placed above stabilized soils.

Reduction of Toxicity, Mobility, or Volume of Contamination through Treatment

Alternative 1 would not actively treat, remove, recycle, or destroy impacted Site media. Alternatives 3A and 4 would address NAPL and NAPL-impacted soil by stabilizing soil in the Old Red Spring Area and installing a containment barrier wall under Excelsior Avenue, and would also include the application of amendments to enhance biodegradation of contamination in soil and groundwater. Alternative 4 also includes treatment through surfactant/cosolvent flushing of NAPL-impacted soil under Excelsior Avenue, which would remove COCs from the NAPL and achieve reduction of COC mass flux from the NAPL to groundwater, thus significantly reducing the toxicity, potential mobility, volume and concentration. Alternative 3B would address NAPL and NAPL-impacted soil by excavating soil in the Old Red Spring Area and encapsulation of soil below Excelsior Avenue through the installation of a containment barrier wall and subsurface mat. Alternative 6 would address soil containing COCs at concentrations greater than NYSDEC SCOs for unrestricted use (6 NYCRR Section 375-6.3(b)). Alternatives 3A, 3B and 4 are considered equally effective at reducing the toxicity, mobility, and volume of NAPL through the stabilizing, containment, treatment and/or excavation of NAPL and NAPL-impacted soil. These Alternatives would address the remedial goals for the principal threat waste at the OU 2 Project Area. Alternative 6 would equally achieve these criteria through excavation and off-Site disposal and treatment.

Short-Term Impacts and Effectiveness

There are no short-term impacts for the No Action alternative 1. With the exception of Alternative 1, each of the alternatives includes active, intrusive activities to address impacted soil containing COCs. Alternatives 3A, and 4 require pre-ISS excavation to a depth of 5 feet bgs (prior to ISS treatment of NAPL and NAPL-impacted soils in the Old Red Spring Area). Alternative 3B would include excavation of NAPL and NAPL-impacted soil in the Old Red Spring Area. Alternative 6 would include the excavation of soil containing COCs at concentrations greater than the SCOs for unrestricted land use. Each of these alternatives would pose potential short-term risks to remedial workers and the community from potential exposure to impacted soil, groundwater, and NAPL during ISS, soil excavation, off-Site transportation of excavated material, and backfilling. Additional short-term risks include the operation of construction equipment. Noise from driving sheeting under Alternatives 3B and 6 would impact the surrounding community as would noise from the operation of construction equipment under all active alternatives. All active alternatives would also result in a short-term increase in local truck traffic from off-Site transportation of excavated materials and the importation of clean fill.

Community access to the area undergoing remedial construction would be restricted under each active alternative by temporary security fencing. Each active alternative would require reducing traffic to a single lane on Excelsior Avenue for a minimum of one to two months during construction of a containment barrier wall and subsurface mat under Excelsior Avenue. The Old Red Spring park would have to be closed and a small portion of the parking lot on the adjacent commercial property owned by The Mill, LLC would have to be closed during remedial construction activities.

The estimated duration of remedial construction activities for the alternatives and the estimated number of truck trips associated with each alternative are presented below.

- Alternative 1 no time required and no truck trips
- Alternative 3A 6 months and 630 truck trips
- Alternative 3B 8 months and 850 truck trips
- Alternative 4 6 months and 450 truck trips
- Alternative 6 12 months and 1,250 truck trips

As a result, Alternatives 3B and 6 are expected to have the greatest short term impacts. Alternative 4 would have the fewest number of truck trips for transport of soils on- and off-Site, the least excavation activities, and a duration of construction activities equivalent to that of Alternative 3A.

Implementability

Alternatives 3A, 3B and 4 would include long-term groundwater monitoring, implementation of institutional controls, amendment application to enhance biodegradation of low levels of contamination in the soil and groundwater beyond ISS/excavation and containment limits.

Each alternative (except Alternative 1) would include abandonment of the existing Old Red Spring well and installation of a replacement well with double casing. From a technical implementability standpoint, the well abandonment and installation activities do not require highly specialized equipment or personnel and could be easily implemented. As the properties within OU 2 Project Area are not owned by National Grid, access agreements with the City of Saratoga Springs and The Mill, LLC, would be required to implement any of the remedies and to conduct periodic field activities. Institutional controls in the form of easements and/or restrictive covenants would also have to be obtained from the City of Saratoga Springs and The Mill, LLC. Both access and institutional controls are readily implementable.

Further, Alternatives 3A, 3B, and 4 include installation of a containment barrier wall. Implementing jet grouting (i.e., the presumed construction method) within Excelsior Avenue presents various implementability challenges. Numerous active and abandoned subsurface

utilities are present beneath Excelsior Avenue. Installation of the vertical barrier walls across Excelsior Avenue perpendicular to the orientation of the utilities would require knowledge of the precise location of all utilities. Utilities would be located by trenching at strategic locations supplemented with hand digging and/or air knifing. Equipment and personnel required to perform the work are readily available. In addition, these Alternatives would require some space within the OU 2 Project Area for material staging and to set up and operate jet grouting equipment. Some material and equipment staging could also take place at the NMPC Property or other properties that were the subject of OU 1 to help to reduce community impacts. Alternatives 3A and 3B also include installation of a subsurface mat to encapsulate impacted media. Vertical installation of the subsurface mat would be somewhat difficult, requiring approximately 800 to 1,000 jet grout injection points and temporary closure of one lane of Excelsior Avenue.

Each of the alternatives (except Alternative 1) would include the treatment or excavation of soil. ISS, excavation, and transportation of soils for off-Site disposal are technically feasible remedial construction activities, although conducting these activities in an urban setting and adjacent to two active roadways presents some logistical challenges. The Old Red Spring area has space limitations with respect to the soil treatment or excavation activities required. Space for support activities such as for ISS material and grout material mixing are very limited and will likely impact unpaved surface soil areas. Heavy earth moving equipment movements will also impact these areas. These actions will also cause soil erosion and runoff into adjacent roadways. These potential impacts would be mitigated by the removal of the top two feet of soils in these unpaved areas. Alternative 6 poses additional implementability challenges due to the extent of the proposed excavation, space limitations, and presence of overhead and underground utilities. Alternative 6 would require the management of more than 9,900 cy of excavated soil and more than an estimated 340,000 gallons of groundwater. Alternative 6 would also require the temporary bypass or permanent rerouting of utilities, sewer, etc., located within the excavation area.

Cost

The following table summarizes the estimated costs associated with implementing each of the remedial alternatives:

Alternative	Capital Cost	O&M Cost	Total Present Worth Cost
1	$ 0	$0	$ 0
3A	$4,600,000	$1,900,000	$ 6,500,000
3B	$6,700,000	$1,900,000	$ 8,600,000
4	$4,500,000	$1,900,000	$ 6,400,000
6	$9,000,000	$1,600,000	$10,800,000

Total estimated present worth cost assumes 30 years of O&M. A 4% discount rate was used to determine the total present-worth cost. Cost estimates are expected to be accurate within a range of +50 to -30 percent.

State Acceptance

As stated above, the NYSDEC concurs with the selected remedy. A letter of concurrence is attached as Appendix V.

Community Acceptance

Community acceptance of the selected remedy for the OU 2 Project Area was assessed based on the comments received during the public comment period. EPA received two written comments both of which supported the selected remedy. Approximately two dozen people attended the public meeting, at which four people spoke: one person was generally opposed to the selected remedy, another person asked a variety of questions, and two other people raised concerns regarding specific elements of the selected remedy. EPA's responses to public comments received are contained in the Responsiveness Summary, which is attached as Appendix V.

PRINCIPAL THREAT WASTES

The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a site wherever practicable (NCP §300.430(a)(1)(iii)(A)). Principal threat wastes are source materials that include or contain hazardous substances that act as a reservoir which contains contamination which can then migrate to groundwater, surface water, or air, or act as a source for direct exposure. These materials are considered to be highly toxic, highly concentrated, or highly mobile and, generally, cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur. The "principal threat" concept is applied to the characterization of "source materials" at a Superfund site.

OU 2 addresses remediation of source material in the form of NAPL that has migrated from the NMPC Property, deposited on top of the clay layer and has impacted subsurface soil and groundwater in the Old Red Spring Area. NAPL-impacted subsurface soil acts as a reservoir which contains contamination which can then migrate to groundwater if untreated and, therefore it constitutes a principal threat waste.

SELECTED REMEDY

Based upon an evaluation of the various alternatives, EPA's selected remedy is Alternative 3A - In-situ stabilization or (ISS) (Old Red Spring Area) and Encapsulation of NAPL-Impacted Soil (Excelsior Avenue); and Enhanced Biodegradation of Contamination in Soil and Groundwater. This alternative includes the following components:

1. Treating via ISS NAPL-impacted soil in the Old Red Spring Area. This remedy component includes removing the top five feet of surface soil to account for the increase in volume of the solidified material to allow room for two feet of clean backfill;

2. Removing surface soil (i.e., up to two feet below grade) in areas not targeted for ISS in the Old Red Spring Area and restoring the area with imported clean fill underlain by a demarcation layer;

3. Enhancing biodegradation of contaminated subsurface soil and groundwater in the Old Red Spring Area by the application of amendments, such as organic nutrients, oxygen-releasing compounds, and/or chemical products;

4. Plugging and abandoning the existing Old Red Spring water well and installing a replacement well with double casing;

5. Installing a containment barrier wall and a subsurface mat to encapsulate NAPL-impacted soil under Excelsior Avenue;

6. Conducting long-term groundwater monitoring including periodic sampling of monitoring wells and analysis for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and metals;

7. Implementing institutional controls (ICs) at the properties in the OU 2 Project Area, which would include the development of environmental easements/restrictive covenants to be filed in the property records of Saratoga County.

   The ICs relating to soil exposure would require compliance with an EPA-approved Site Management Plan (SMP) and would:

   a) be imposed for all areas where Contaminants of Concern (COCs) exceed unrestricted use Soil Cleanup Objectives (SCOs) at 6 NYCRR '375-6.3(b);

b) prevent any disturbance of the implemented remedy under Excelsior Avenue and in the areas of ISS in the Old Red Spring Area; and

c) prohibit single family housing and vegetable gardening, but would allow for recreational and/or commercial use of the Old Red Spring Area, which New York State defines as "restricted-residential" use.

The ICs relating to groundwater exposure would restrict the use of the shallow groundwater aquifer throughout the OU 2 Project Area and would require compliance with the SMP. The ICs would restrict construction of new buildings throughout the OU 2 Project Area unless an evaluation of the potential for vapor intrusion is conducted, and mitigation, if necessary, is performed in compliance with an EPA-approved SMP;

8. Developing an SMP to ensure the effectiveness of the engineering and institutional controls, as well as the long-term groundwater monitoring, periodic reviews and certifications; and

9. Restoring disturbed areas (including vegetated surfaces, parking lots, roadways, sidewalks, curbs, etc.) following the completion of remedial construction activities by replacing them to their original pre-construction condition and topographic contours.

The environmental benefits of the selected remedy may be enhanced by consideration, during the design, of technologies and practices that are sustainable in accordance with EPA Region 2's Clean and Green Energy Policy and NYSDEC's Green Remediation Policy.[9] This will include consideration of green remediation technologies and practices.

Because this alternative would result in contaminants remaining on-site above health-based levels, CERCLA requires that the Site be reviewed at least once every five years. Also, provisions will be made for periodic reviews and certifications of the institutional and engineering controls. If justified by these reviews, additional remedial actions may be implemented at the Site.

Summary of the Rationale for the Selected Remedy

The selection of the remedy is accomplished through the evaluation of the nine criteria as specified in the NCP. Based upon the requirements of CERCLA, the results of the Site

9. Additional information can be found at http://epa.gov/region2/superfund/green_remediation and http://www.dec.ny.gov/docs/remediation_hudson_pdf/der31.pdf.

investigations, the detailed analysis of the alternatives, and public comments, EPA has determined that Alternative 3A satisfies the requirements of CERCLA Section 121, 42 U.S.C. §9621, and provides the best balance of tradeoffs among the remedial alternatives with respect to the NCP's nine evaluation criteria, set forth in 40 CFR §300.430(e)(9). The selected remedy is protective of human health and the environment. Risk is reduced through the application of ISS to the contamination, the installation of a containment wall and subsurface mat, the removal of COCs in soil and groundwater in areas not targeted for ISS, and institutional controls

While Alternatives 3B, 4 and 6 would also be protective of human health and the environment, Alternative 3A is able to do so with less disruption to the community due to a shorter period of partial road closures, a shorter construction duration and less truck traffic through the community than Alternatives 3B and 6. Alternative 3A is preferable to Alternative 4 because of its implementability and because the efficiency of subsurface flushing in Alternative 4 would be highly variable, and this treatment would be much less effective in the geological lenses with lower permeability within the OU 2 Project Area.

The selected remedy involves relatively fewer short-term impacts, achieves a permanent reduction in the toxicity, mobility, and volume of impacted soil and groundwater within the Old Red Spring Area, and reduces the potential for exposure. When compared to the other alternatives (excluding Alternative 1), the recommended alternative has a relatively lower potential for short-term impacts to the surrounding community and remedial workers. The short-term impacts under Alternative 3A would be mitigated (to the extent practicable) by using proper personal protective equipment (PPE), community air and work space monitoring, and proper planning and training of field personnel. During construction of the containment barrier wall and subsurface mat, Excelsior Avenue would not be closed and would remain open to traffic; though traffic may be reduced to one lane at certain times. It is also anticipated that Excelsior Avenue would be completely open to all traffic during the actions required in the Old Red Spring Area.

Alternative 1 was not selected, because it is simply a baseline for comparison with other alternatives and is not protective of human health and the environment. Groundwater would continue to be impacted by NAPL-impacted soil for an indefinite period of time. The impacted groundwater would continue to contain one or more COCs at concentrations that exceed the NYSDEC Class GA standards and/or federal MCLs. Alternative 4 was not selected, because the efficiency of subsurface flushing would be highly variable, and thus potentially less effective in some areas, with much lower levels of treatment occurring in the geological lenses having lower permeability within the OU 2 Project Area. Alternatives 6 and 3B were not selected because of the increased impact of the road closures and extensive truck traffic through the community and their higher cost. Therefore, EPA believes that Alternative 3A provides the best balance of tradeoffs with respect to the evaluating criteria.

Summary of the Estimated Costs of the Selected Remedy

The estimated capital, O&M and present worth costs of the selected remedy are discussed in detail in the FS Report. The cost estimates, which are based on available information, are order of-magnitude engineering cost estimates that are expected to be within +50 to -30 percent of the actual cost of the project. The estimated capital, O&M, and total present worth costs, as well as the construction time are provided below. A more detailed cost estimate can be found in Table 2 of Appendix 2:

Capital Cost	$4,600,000
Present Worth of Annual O&M Cost:	$1,900,000
Total Present Worth Cost:	$6,500,000
Construction Time:	6 months

Expected Outcomes of the Selected Remedy

The selected remedy, Alternative 3A, addresses the contamination identified in the soils and the groundwater in the OU 2 Project Area. It addresses remediation of principal threat waste source material in the form of NAPL that has migrated from the NMPC Property, along the top of the clay layer and has impacted subsurface soil and groundwater in the Old Red Spring area. This NAPL-impacted subsurface soil acts as a reservoir which contains contamination which can then migrate to groundwater if untreated. The results of the risk assessment indicate that the excess cancer risk and non-cancer health hazards associated with future human ingestion of groundwater are above acceptable levels under baseline conditions. The response action selected in this ROD will restore the shallow aquifer at this portion of the Site. The selected remedy also would protect the deep aquifer which supplies water for the Old Red Spring well. It will treat and remove the NAPL and replace the old underground well structure with a well with double casing. Without these actions, any future cracks or other compromising of the existing Old Red Spring well could cause contaminants from the shallow aquifer to move into the well, and then move into the deeper aquifer, thus contaminating it.

Current land use in the OU 2 Project Area is commercial and recreational; the project area includes part of a parking lot of a commercial building and a small green space that includes the Old Red Spring well and associated pavilion. Surrounding land use is a mixture of commercial (e.g., office building, car dealership, hotel) and residential (e.g., apartments, condominiums) properties. While there will be some disruption of the OU 2 Project Area during implementation of the remedy, the area will be restored to its current condition upon completion of the remedy, though as noted above, there would be restrictions on the construction of single family homes

and vegetable gardening. Institutional controls will be required to prevent any disturbance of the selected remedy, restrict groundwater use, and prohibit single family housing and vegetable gardening, but would allow for recreational and/or commercial use of the Old Red Spring area. The SMP would preclude activities that could result in potential exposures to subsurface soil and groundwater containing COCs.

STATUTORY DETERMINATIONS

EPA believe that the selected remedy complies with the CERCLA and NCP provisions for remedy selection, meets the threshold criteria, and provides the best balance of tradeoffs among the alternatives with respect to the balancing and modifying criteria. These provisions require the selection of remedies that are protective of human health and the environment, comply with ARARs (or justify a waiver from such requirements), are cost effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In addition, CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduce the volume, toxicity, or mobility of hazardous substances as a principal element (or justify not satisfying the preference). The following sections discuss how the selected remedy meets these statutory requirements.

Protection of Human Health and the Environment:

The selected remedy will be protective of human health and the environment. The selected remedy will protect human health and the environment because it will address potential direct-contact risks to human health and environment associated with contaminated soils and groundwater, and will address the NAPL-impacted subsurface soil that would otherwise act as a reservoir which contains contamination which can then migrate to groundwater if untreated, thereby eliminating or reducing sources of contamination to the groundwater. Institutional controls will also assist in the protectiveness of human health and the environment over both the short and long-term by helping to control and limit exposure to hazardous substances.

Compliance with ARARs

The selected remedy will achieve the federal or more stringent state MCLs for the contaminants of concern in the groundwater. See also Table 3 for a list of Cleanup Levels for Contaminants of Concern in soil. A complete list the ARARs, TBCs and other guidelines that will be achieved by implementation of the selected remedy is presented in Table 5a (chemical- specific), Table 5b (location-specific) and Table 5c (action- specific).

Cost-Effectiveness:

The selected remedy is cost-effective. A cost-effective remedy is one whose costs are proportional to its overall effectiveness (NCP Section 300.430(f)(1)(ii)(D)). Overall effectiveness is based on the evaluations of long-term effectiveness and permanence; reduction in toxicity, mobility, and volume through treatment; and short-term effectiveness. EPA evaluated the "overall effectiveness" of those alternatives that satisfied the threshold criteria (i.e., were both protective of human health and the environment and ARAR-compliant). Overall effectiveness was then compared to costs to determine cost-effectiveness.

Each of the alternatives underwent a detailed cost analysis. In that analysis, capital and annual O&M costs were estimated and used to develop present-worth costs. In the present-worth cost analysis, annual O&M costs were calculated for the estimated life of each alternative. The total estimated present worth cost for implementing the selected remedy for the OU 2 Project Area is $6.5 million.

Based on the comparison of overall effectiveness to cost, the selected remedy, Alternative 3A, meets the requirement that Superfund remedies be cost effective in that it is only slightly more costly than the lowest cost active alternative, Alternative 4, while providing greater ease of implementation and a shorter construction period than Alternative 4.

Utilization of Permanent Solutions and Alternative Treatment Technologies (or Resource Recovery Technologies) to the Maximum Extent Practicable:

The selected remedy provides the best balance of tradeoffs among the alternatives with respect to the balancing criteria set forth in NCP §300.430(f)(1)(i)(B), such that it represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a practicable manner at the OU 2 Project Area. ISS of NAPL-impacted soils and enhanced biodegradation of soils and groundwater in areas not subject to ISS will provide a permanent remedy and reduce the toxicity, mobility and volume of the vast majority of the NAPL-impacted soil in the OU2 Project Area.

Preference for Treatment as a Principal Element:

The statutory preference for remedies that employ treatment as a principal element is satisfied under the selected remedy by treating NAPL-impacted soil in the Old Red Spring Area via ISS, as well as enhancing biodegradation of contaminated subsurface soil and groundwater in the Old Red Spring Area through the application of amendments, such as organic nutrients, oxygen-releasing compounds, and/or chemical products.

Five-Year Review Requirements:

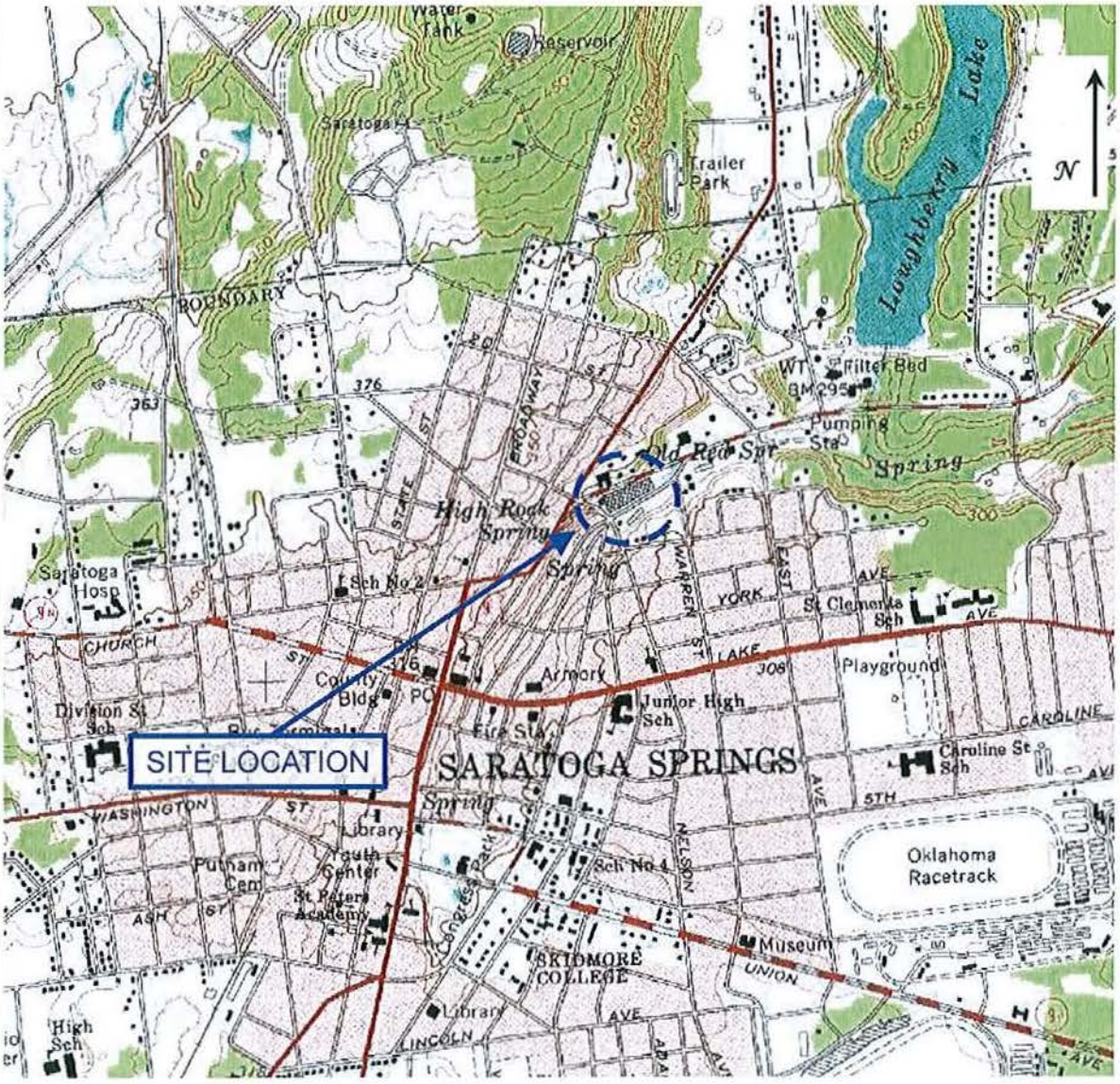
Because this remedy will result in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted at five-year intervals starting after initiation of remedial action to ensure that the remedy is, or will be, protective of human health and the environment.

DOCUMENTATION OF SIGNIFICANT CHANGES

There were no significant changes from the preferred remedy presented in the Proposed Plan.

APPENDIX I

FIGURES



Notes:

Saratoga Springs, NY, United States

USGS Topo. Quads. 1967

0 1000 2000 3000 4000

APPROXIMATE SCALE

QUADRANGLE LOCATION

NATIONAL GRID
FORMER SARATOGA SPRINGS MGP
SARATOGA SPRINGS, NEW YORK

SITE LOCATION MAP

CDM

Figure 1

LEGEND:

AREA BOUNDARY

0 200 400 Feet

GRAPHIC SCALE

NOTE:

1. 2010 IMAGERY PROVIDED BY BING IMAGERY SERVICE LICENSED THROUGH ESRI SOFTWARE.

NIAGRA MOHAWK POWER CORPORATION

NIAGRA MOHAWK POWER CORPORATION SUPERFUND SITE

ARCADIS

FIGURE 2

City:SYR Div/Group: SWG Created By: Jayme Rapp Last Saved By: jrapp
Nat Grid Saratoga Springs (36614.0.256)
Q:\NationalGrid\SaratogaSprings\MGP\basemapping\mxd\SiteMap.mxd 2/20/2013 4:49:45 PM

LEGEND:

- PROPERTY LINE (APPROXIMATE)
- CHAINLINK FENCE
- GROUND SURFACE CONTOUR (ONE–FOOT INTERVAL)
- EXISTING SUBGRADE SHEET PILE BARRIER WALL
- TREE/BRUSH LINE
- TREE/BUSH
- BUILDING/STRUCTURE
- OLD RED SPRING AREA
- EXCELSIOR AVENUE CORRIDOR
- OU–2

NOTES:

1. BASE MAPPING WAS COMPILED FROM A COMBINATION OF STEREOPHOTOGRAMMETRIC METHODS; AERIAL PHOTOGRAPHY FLOWN ON 8/96 AND 11/98 BY LOCKWOOD MAPPING COMPANY; AS–BUILT RECORD DRAWINGS FOR COMPLETED REMEDIATION ACTIVITIES AT THE SPA STEEL PRODUCTS PROPERTY; AND FIELD SURVEY METHODS ON 5/96, PROVIDED BY NIAGARA MOHAWK, SURVEY REFERENCE FILE NO. 3435, FILE INDEX 21.0–S2.18–M49, AND A NEW SURVEY FILE NO. 01135–1.DWG RECEIVED 8/19/02.
2. PROPERTY INFORMATION TAKEN FROM "CITY OF SARATOGA SPRINGS, SARATOGA COUNTY, N.Y. TAX MAPS" NUMBERED 153.00(OD), 166.00(OD), 165.36(ID), 166.00(ID), 166.05(ID), 166.11(ID), 166.21(ID), 166.29(ID), 166.30(ID), 166.31(ID), 166.37(ID), 166.38(ID), AND 166.39(ID).
3. ELEVATIONS ARE BASED ON NAVD 88 USING STATION G396, ELEVATION 306.010 FEET.

0 40' 80'

GRAPHIC SCALE

NIAGARA MOHAWK POWER CORPORATION

OU-2 PROJECT AREA AND SURROUNDING AREAS

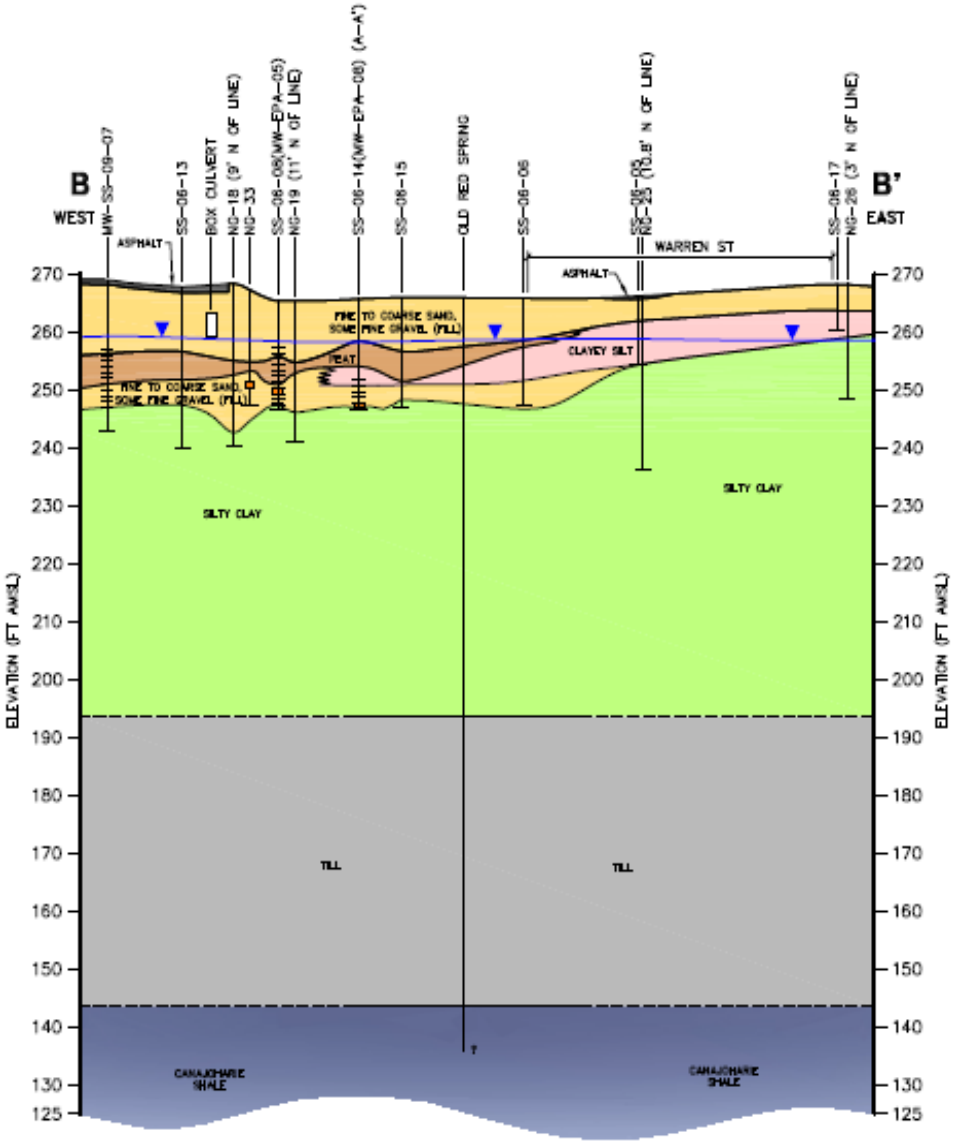
ARCADIS

FIGURE 3

CITY: SYRACUSE NY DIV/GROUP: ENV/CAD DB: R. BASSETT, R. ALLEN, E. KRAHMER LD: (Opt.) PIC: J. NUSS PM: K. CROWLEY TM: K. CROWLEY LYR: ON=*;OFF=*REF*
G:\ENV\CAD\SYRACUSE\ACTIB\0036641\0000\002560\DWG\36641B01.dwg LAYOUT: 2 SAVED: 2/20/2013 4:11 PM ACADVER: 18.1S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 2/20/2013 4:12 PM BY: KRAHMER, ERIC
XREFS: 36641X02 36641XBL IMAGES: PROJECTNAME: ---

Figure 4

Niagara Mohawk Power Corporation Superfund Site - Saratoga Springs, New York
Aerial Photo of OU 2 Project Area



LEGEND:

- WELL OR BORING ID (SS-06-17)
- GROUND SURFACE
- APPROXIMATE WATER TABLE
- LITHOLOGIC CONTACT (DASHED WHERE INFERRED)
- SCREEN
- BOTTOM OF BORING
- TAR-LIKE MATERIAL AND/OR NAPL
- ASPHALT
- FINE TO COARSE SAND, SOME FINE GRAVEL (FILL)
- PEAT
- CLAYEY SILT
- SILTY CLAY
- TILL
- CANAJOHARIE SHALE

NOTES:

1. FT AMSL – FEET ABOVE MEAN SEA LEVEL.
2. THE THICKNESS OF THE SILTY CLAY AND TILL, 54-FT AND 50-FT, RESPECTIVELY, AND THE DEPTH TO THE CANAJOHARIE SHALE, ARE FROM MONITORING WELL/BORING SB-18D, WHICH IS APPROXIMATELY 120-FT NORTH OF CROSS-SECTION B-B' AND ON NATIONAL GRID'S FORMER MGP SITE.

VERTICAL EXAGGERATION = 2X

0 20' 40'

VERTICAL SCALE

0 40' 80'

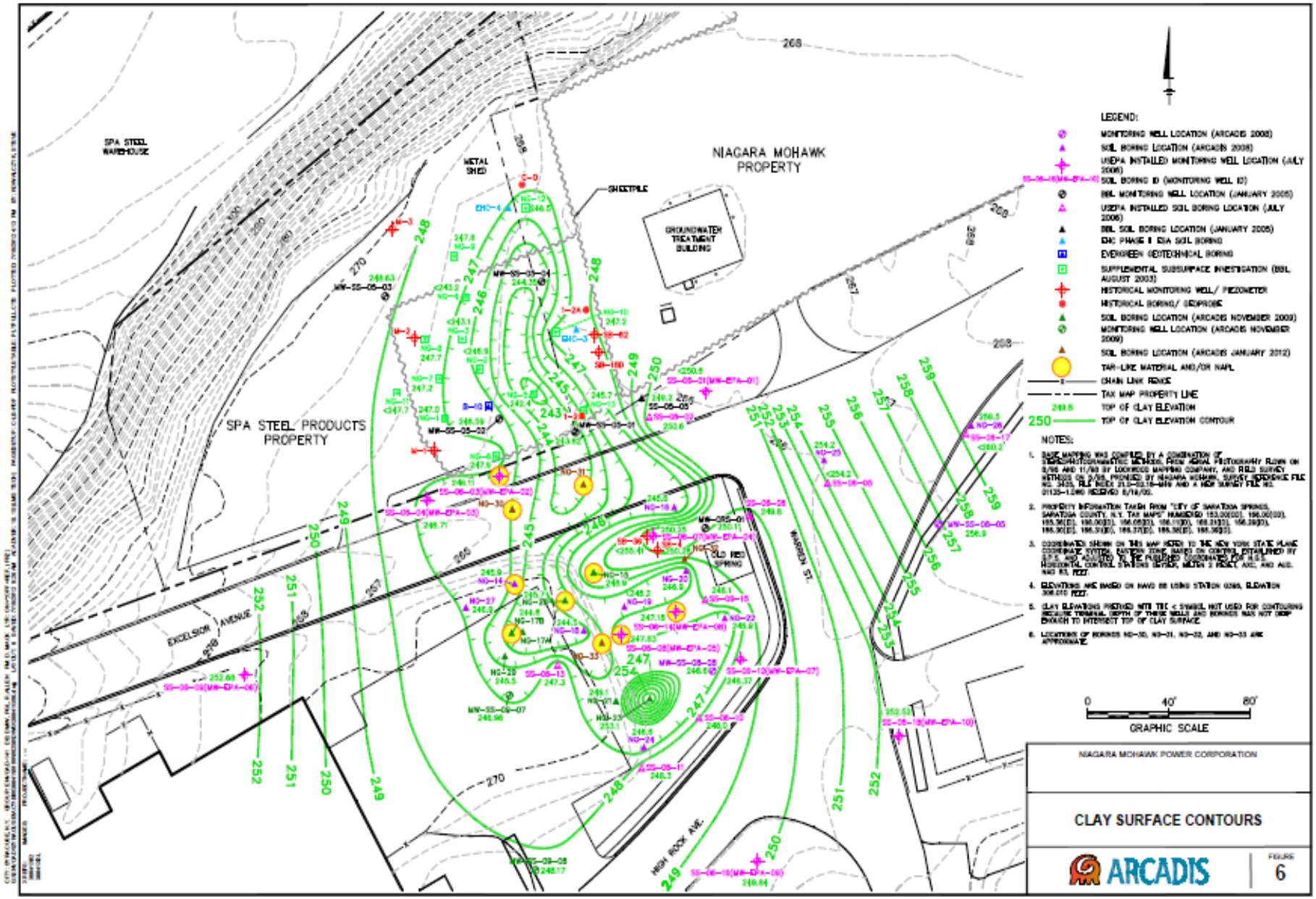
HORIZONTAL SCALE

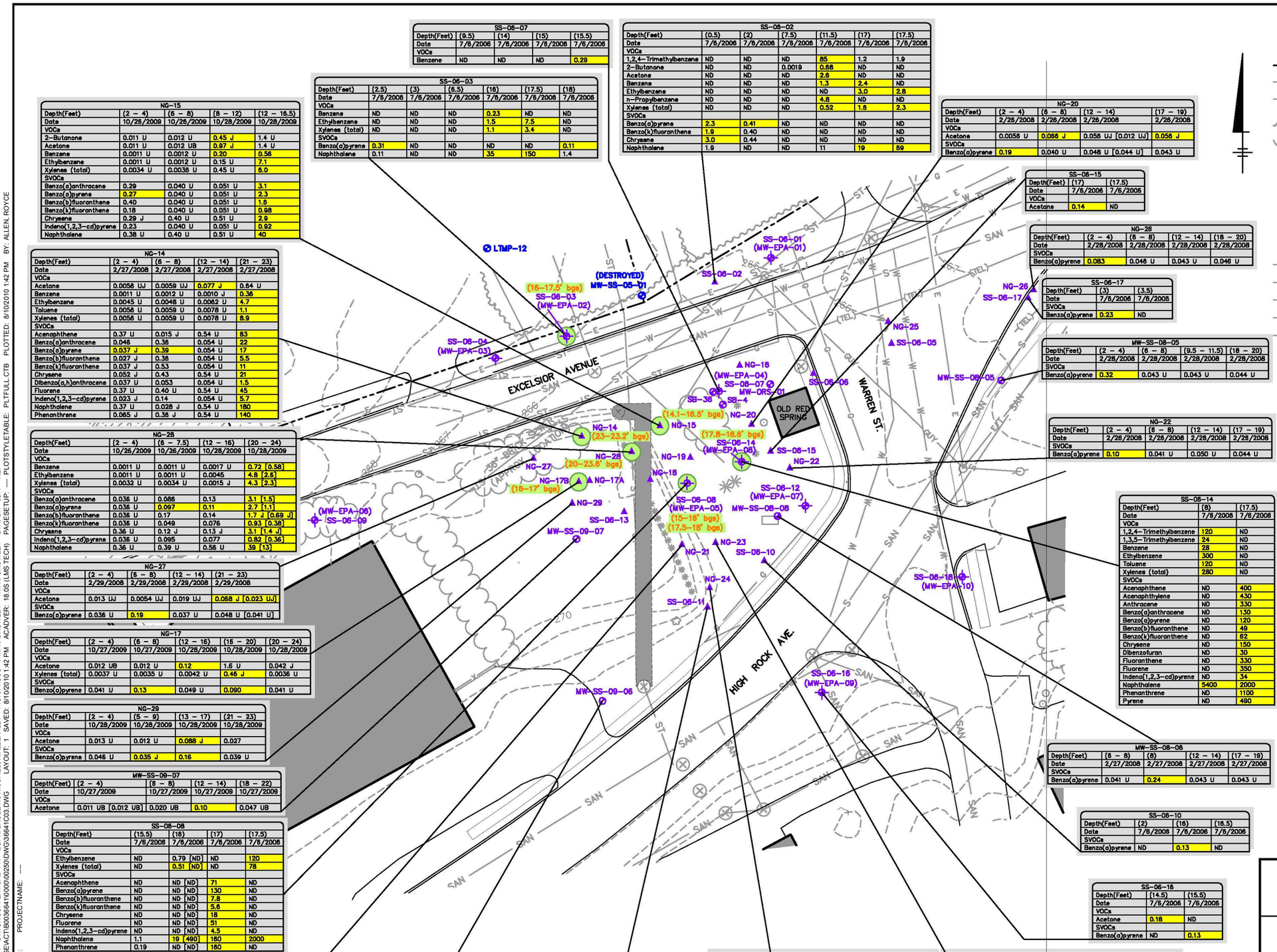
NIAGARA MOHAWK POWER CORPORATION

CROSS SECTION B-B'

ARCADIS

FIGURE 5


SPA STEEL WAREHOUSE
METAL SHED
SHEETPILE
NIAGARA MOHAWK PROPERTY
GROUNDWATER TREATMENT BUILDING
SPA STEEL PRODUCTS PROPERTY
OLD RED SPRING
WARREN ST.
EXCELSIOR AVENUE
HIGH ROCK AVE.
LEGEND:
MONITORING WELL LOCATION (ARCADIS 2008)
SOIL BORING LOCATION (ARCADIS 2008)
USEPA INSTALLED MONITORING WELL LOCATION (JULY 2006)
SOIL BORING ID (MONITORING WELL ID)
BBL MONITORING WELL LOCATION (JANUARY 2005)
USEPA INSTALLED SOIL BORING LOCATION (JULY 2006)
BBL SOIL BORING LOCATION (JANUARY 2005)
EHC PHASE II RIA SOIL BORING
EVERGREEN GEOTECHNICAL BORING
SUPPLEMENTAL SUBSURFACE INVESTIGATION (BBL AUGUST 2003)
HISTORICAL MONITORING WELL/ PIEZOMETER
HISTORICAL BORING/ GEOPROBE
SOIL BORING LOCATION (ARCADIS NOVEMBER 2009)
MONITORING WELL LOCATION (ARCADIS NOVEMBER 2009)
SOIL BORING LOCATION (ARCADIS JANUARY 2012)
TAR-LIKE MATERIAL AND/OR NAPL
CHAIN LINK FENCE
TAX MAP PROPERTY LINE
TOP OF CLAY ELEVATION
TOP OF CLAY ELEVATION CONTOUR
NOTES:
1. BASE MAPPING WAS COMPILED BY A COMBINATION OF STEREOPHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHY FLOWN ON 5/95 AND 11/93 BY LOCKWOOD MAPPING COMPANY, AND FIELD SURVEY METHODS ON 5/95, PROVIDED BY NIAGARA MOHAWK, SURVEY REFERENCE FILE NO. 3435, FLS INDEX 213-03.15-M19 AND A NEW SURVEY FILE NO. 01135-1.DWG RECEIVED 5/19/03.
2. PROPERTY INFORMATION TAKEN FROM "CITY OF SARATOGA SPRINGS, SARATOGA COUNTY, N.Y. TAX MAPS" NUMBERED 153.00(D2), 166.00(D2), 165.36(E), 166.00(D2), 166.05(D2), 166.13(D), 166.21(D), 166.29(D), 166.30(D), 166.31(D), 166.37(D), 166.38(D), 166.39(D).
3. COORDINATES SHOWN ON THIS MAP REFER TO THE NEW YORK STATE PLANE COORDINATE SYSTEM, EASTERN ZONE, BASED ON CONTROL ESTABLISHED BY U.S. AND ADJUSTED TO THE PUBLISHED COORDINATES FOR U.S. HORIZONTAL CONTROL STATIONS DAYTON, MILTON 2 RESET, AXE, AND AXD, NAD 83, FEET.
4. ELEVATIONS ARE BASED ON NAVD 88 USING STATION 0265, ELEVATION 308.070 FEET.
5. CLAY ELEVATIONS PREFIXED WITH THE < SYMBOL NOT USED FOR CONTOURING BECAUSE TERMINAL DEPTH OF THESE WELLS AND BORINGS WAS NOT DEEP ENOUGH TO INTERSECT TOP OF CLAY SURFACE.
6. LOCATIONS OF BORINGS NG-30, NG-31, NG-32, AND NG-33 ARE APPROXIMATE.
0
40'
80'
GRAPHIC SCALE
NIAGARA MOHAWK POWER CORPORATION
CLAY SURFACE CONTOURS
ARCADIS
FIGURE 6



SS-06-07					
Depth(Feet)	(9.5)	(14)	(15)	(15.5)	
Date	7/6/2006	7/6/2006	7/6/2006	7/6/2006	
VOCs					
Benzene	ND	ND	ND	0.29	

SS-06-02						
Depth(Feet)	(0.5)	(2)	(7.5)	(11.5)	(17)	(17.5)
Date	7/6/2006	7/6/2006	7/6/2006	7/6/2006	7/6/2006	7/6/2006
VOCs						
1,2,4–Trimethylbenzene	ND	ND	ND	85	1.2	1.9
2–Butanone	ND	ND	0.0019	0.68	ND	ND
Acetone	ND	ND	2.6	ND	ND	ND
Benzene	ND	ND	ND	1.3	2.4	ND
Ethylbenzene	ND	ND	ND	ND	3.0	2.8
n–Propylbenzene	ND	ND	ND	4.8	ND	ND
Xylenes (total)	ND	ND	ND	0.52	1.8	2.3
SVOCs						
Benzo(a)pyrene	2.3	0.41	ND	ND	ND	ND
Benzo(k)fluoranthene	1.9	0.40	ND	ND	ND	ND
Chrysene	3.0	0.44	ND	ND	ND	ND
Naphthalene	1.9	ND	ND	11	19	89

SS-06-03							
Depth(Feet)	(2.5)	(3)	(6.5)	(18)	(17.5)	(18)	
Date	7/6/2006	7/6/2006	7/6/2006	7/6/2006	7/6/2006	7/6/2006	
VOCs							
Benzene	ND	ND	ND	0.23	ND	ND	
Ethylbenzene	ND	ND	ND	1.5	7.5	ND	
Xylenes (total)	ND	ND	ND	1.1	3.4	ND	
SVOCs							
Benzo(a)pyrene	0.31	ND	ND	ND	ND	0.11	
Naphthalene	0.11	ND	ND	35	150	1.4	

NG-15				
Depth(Feet)	(2 – 4)	(6 – 8)	(8 – 12)	(12 – 16.5)
Date	10/28/2009	10/28/2009	10/28/2009	10/28/2009
VOCs				
2–Butanone	0.011 U	0.012 U	0.45 J	1.4 U
Acetone	0.011 U	0.012 UB	0.97 J	1.4 U
Benzene	0.0011 U	0.0012 U	0.20	0.56
Ethylbenzene	0.0011 U	0.0012 U	0.15 U	7.1
Xylenes (total)	0.0034 U	0.0038 U	0.45 U	6.0
SVOCs				
Benzo(a)anthracene	0.29	0.040 U	0.051 U	3.1
Benzo(a)pyrene	0.27	0.040 U	0.051 U	2.3
Benzo(b)fluoranthene	0.40	0.040 U	0.051 U	1.8
Benzo(k)fluoranthene	0.18	0.040 U	0.051 U	0.98
Chrysene	0.29 J	0.40 U	0.51 U	2.9
Indeno(1,2,3–cd)pyrene	0.23	0.040 U	0.051 U	0.92
Naphthalene	0.38 U	0.40 U	0.51 U	40

NG-20				
Depth(Feet)	(2 – 4)	(6 – 8)	(12 – 14)	(17 – 19)
Date	2/26/2008	2/26/2008	2/26/2008	2/26/2008
VOCs				
Acetone	0.0056 U	0.056 J	0.056 UJ [0.012 UJ]	0.056 J
SVOCs				
Benzo(a)pyrene	0.19	0.040 U	0.048 U [0.044 U]	0.043 U

SS-06-15		
Depth(Feet)	(17)	(17.5)
Date	7/6/2006	7/6/2006
VOCs		
Acetone	0.14	ND

NG-26				
Depth(Feet)	(2 – 4)	(6 – 8)	(12 – 14)	(18 – 20)
Date	2/28/2008	2/28/2008	2/28/2008	2/28/2008
SVOCs				
Benzo(a)pyrene	0.083	0.046 U	0.043 U	0.046 U

SS-06-17		
Depth(Feet)	(3)	(3.5)
Date	7/6/2006	7/6/2006
SVOCs		
Benzo(a)pyrene	0.23	ND

MW-SS-08-05				
Depth(Feet)	(2 – 4)	(6 – 8)	(9.5 – 11.5)	(18 – 20)
Date	2/26/2008	2/28/2008	2/28/2008	2/26/2008
SVOCs				
Benzo(a)pyrene	0.32	0.043 U	0.043 U	0.044 U

NG-22				
Depth(Feet)	(2 – 4)	(6 – 8)	(12 – 14)	(17 – 19)
Date	2/26/2008	2/28/2008	2/26/2008	2/26/2008
SVOCs				
Benzo(a)pyrene	0.10	0.041 U	0.050 U	0.044 U

NG-14				
Depth(Feet)	(2 – 4)	(6 – 8)	(12 – 14)	(21 – 23)
Date	2/27/2008	2/27/2008	2/27/2008	2/27/2008
VOCs				
Acetone	0.0058 UJ	0.0059 UJ	0.077 J	0.84 U
Benzene	0.0011 U	0.0012 U	0.0010 J	0.36
Ethylbenzene	0.0045 U	0.0048 U	0.0062 U	4.7
Toluene	0.0058 U	0.0059 U	0.0078 U	1.1
Xylenes (total)	0.0058 U	0.0059 U	0.0078 U	8.9
SVOCs				
Acenaphthene	0.37 U	0.015 J	0.54 U	83
Benzo(a)anthracene	0.048	0.38	0.054 U	22
Benzo(a)pyrene	0.037 J	0.39	0.054 U	17
Benzo(b)fluoranthene	0.027 J	0.36	0.054 U	5.5
Benzo(k)fluoranthene	0.037 J	0.53	0.054 U	11
Chrysene	0.052 J	0.43	0.54 U	21
Dibenzo(a,h)anthracene	0.037 U	0.053	0.054 U	1.5
Fluorene	0.37 U	0.40 U	0.54 U	45
Indeno(1,2,3–cd)pyrene	0.023 J	0.14	0.054 U	5.7
Naphthalene	0.37 U	0.028 J	0.54 U	180
Phenanthrene	0.065 J	0.36 J	0.54 U	140

NG-28				
Depth(Feet)	(2 – 4)	(6 – 7.5)	(12 – 16)	(20 – 24)
Date	10/26/2009	10/26/2009	10/26/2009	10/28/2009
VOCs				
Benzene	0.0011 U	0.0011 U	0.0017 U	0.72 [0.58]
Ethylbenzene	0.0011 U	0.0011 U	0.0045	4.8 [2.6]
Xylenes (total)	0.0032 U	0.0034 U	0.0015 J	4.3 [2.3]
SVOCs				
Benzo(a)anthracene	0.036 U	0.086	0.13	3.1 [1.5]
Benzo(a)pyrene	0.036 U	0.097	0.11	2.7 [1.1]
Benzo(b)fluoranthene	0.036 U	0.17	0.14	1.7 J [0.69 J]
Benzo(k)fluoranthene	0.036 U	0.049	0.076	0.93 [0.38]
Chrysene	0.36 U	0.12 J	0.13 J	3.1 [1.4 J]
Indeno(1,2,3–cd)pyrene	0.036 U	0.095	0.077	0.82 [0.36]
Naphthalene	0.36 U	0.39 U	0.56 U	39 [13]

NG-27				
Depth(Feet)	(2 – 4)	(6 – 8)	(12 – 14)	(21 – 23)
Date	2/29/2008	2/29/2008	2/29/2008	2/29/2008
VOCs				
Acetone	0.013 UJ	0.0054 UJ	0.019 UJ	0.058 J [0.023 UJ]
SVOCs				
Benzo(a)pyrene	0.036 U	0.19	0.037 U	0.048 U [0.041 U]

NG-17					
Depth(Feet)	(2 – 4)	(6 – 8)	(12 – 16)	(16 – 20)	(20 – 24)
Date	10/27/2009	10/27/2009	10/28/2009	10/28/2009	10/28/2009
VOCs					
Acetone	0.012 UB	0.012 U	0.12	1.6 U	0.042 J
Xylenes (total)	0.0037 U	0.0035 U	0.0042 U	0.46 J	0.0036 U
SVOCs					
Benzo(a)pyrene	0.041 U	0.13	0.049 U	0.090	0.041 U

NG-29				
Depth(Feet)	(2 – 4)	(5 – 9)	(13 – 17)	(21 – 23)
Date	10/28/2009	10/28/2009	10/28/2009	10/28/2009
VOCs				
Acetone	0.013 U	0.012 U	0.088 J	0.027
SVOCs				
Benzo(a)pyrene	0.048 U	0.035 J	0.16	0.039 U

MW-SS-09-D7				
Depth(Feet)	(2 – 4)	(8 – 8)	(12 – 14)	(18 – 22)
Date	10/27/2009	10/27/2009	10/27/2009	10/27/2009
VOCs				
Acetone	0.011 UB [0.012 UB]	0.020 UB	0.10	0.047 UB

SS-06-08					
Depth(Feet)	(15.5)	(18)	(17)	(17.5)	
Date	7/6/2006	7/6/2006	7/6/2006	7/6/2006	
VOCs					
Ethylbenzene	ND	0.79 [ND]	ND	120	
Xylenes (total)	ND	0.51 [ND]	ND	78	
SVOCs					
Acenaphthene	ND	ND [ND]	71	ND	
Benzo(a)pyrene	ND	ND [ND]	130	ND	
Benzo(b)fluoranthene	ND	ND [ND]	7.8	ND	
Benzo(k)fluoranthene	ND	ND [ND]	5.6	ND	
Chrysene	ND	ND [ND]	18	ND	
Fluorene	ND	ND [ND]	51	ND	
Indeno(1,2,3–cd)pyrene	ND	ND [ND]	4.5	ND	
Naphthalene	1.1	19 [490]	160	2000	
Phenanthrene	0.19	ND [ND]	160	ND	

NG-21					
Depth(Feet)	(2 – 4)	(6 – 8)	(13 – 17)	(17 – 21)	
Date	10/27/2009	10/27/2009	10/28/2009	10/28/2009	
VOCs					
Acetone	0.011 U	0.011 UB	0.11	1.2 U	
Benzene	0.0011 U	0.0011 U	0.0028	0.15	
Xylenes (total)	0.0032 U	0.0032 U	0.0049	0.36 J	

MW-SS-09-08					
Depth(Feet)	(2 – 4)	(6 – 8)	(12 – 16)	(16 – 20)	
Date	10/27/2009	10/27/2009	10/27/2009	10/27/2009	
VOCs					
Acetone	0.017 UB	0.011 UB	0.79 J	0.089 UB	
SVOCs					
Benzo(a)pyrene	0.055	0.039 U	0.042 U	0.041 U	

SS-06-11		
Depth(Feet)	(17)	(17.5)
Date	7/6/2006	7/6/2006
VOCs		
Acetone	ND	0.058
Benzene	ND	0.26

NG-24					
Depth(Feet)	(2 – 4)	(6 – 8)	(14 – 16)	(18 – 20)	
Date	2/27/2008	2/27/2008	2/27/2008	2/27/2008	
VOCs					
Acetone	0.0075 UJ	0.0095 UJ	0.085 J	0.095 J	
Benzene	0.0011 U	0.0011 U	0.0052	0.067	
SVOCs					
Benzo(a)pyrene	0.030 J	0.038 U	0.047 U	0.043 U	

NG-23					
Depth(Feet)	(2 – 4)	(6 – 6.5)	(6.5 – 8)	(8 – 12)	
Date	10/28/2009	10/28/2009	10/28/2009	10/28/2009	
VOCs					
Acetone	0.013 U	0.013 U	0.13	0.17	
Benzene	0.0013 U	0.0013 U	0.0029	0.069	
SVOCs					
Benzo(a)pyrene	0.16	0.045 U	0.082 U	0.083 U	

SS-06-14		
Depth(Feet)	(8)	(17.5)
Date	7/6/2006	7/6/2006
VOCs		
1,2,4–Trimethylbenzene	120	ND
1,3,5–Trimethylbenzene	24	ND
Benzene	28	ND
Ethylbenzene	300	ND
Toluene	120	ND
Xylenes (total)	280	ND
SVOCs		
Acenaphthene	ND	400
Acenaphthylene	ND	430
Anthracene	ND	330
Benzo(a)anthracene	ND	130
Benzo(a)pyrene	ND	120
Benzo(b)fluoranthene	ND	48
Benzo(k)fluoranthene	ND	62
Chrysene	ND	150
Dibenzofuran	ND	30
Fluoranthene	ND	330
Fluorene	ND	350
Indeno(1,2,3–cd)pyrene	ND	34
Naphthalene	5400	2000
Phenanthrene	ND	1100
Pyrene	ND	490

MW-SS-08-08				
Depth(Feet)	(6 – 8)	(8)	(12 – 14)	(17 – 19)
Date	2/27/2008	2/27/2008	2/27/2008	2/27/2008
SVOCs				
Benzo(a)pyrene	0.041 U	0.24	0.043 U	0.043 U

SS-06-10			
Depth(Feet)	(2)	(16)	(16.5)
Date	7/6/2006	7/6/2006	7/6/2006
SVOCs			
Benzo(a)pyrene	ND	0.13	ND

SS-06-16		
Depth(Feet)	(14.5)	(15.5)
Date	7/6/2006	7/6/2006
VOCs		
Acetone	0.18	ND
SVOCs		
Benzo(a)pyrene	ND	0.13

LEGEND:

- PROPERTY LINE (APPROXIMATE)
- CHAINLINK FENCE
- GROUND SURFACE CONTOUR (ONE–FOOT INTERVAL)
- EXISTING SUBGRADE SHEET PILE BARRIER WALL
- TREE/BRUSH LINE
- TREE/BUSH
- BUILDING/STRUCTURE
- ASSUMED MANHOLE AND BOX CULVERT
- CATCH BASIN
- MANHOLE
- UTILITY POLE
- W — WATER LINE (APPROXIMATE)
- G — GAS LINE (APPROXIMATE)
- S — SANITARY SEWER (APPROXIMATE)
- ST — STORM SEWER (APPROXIMATE)
- OH — OVERHEAD UTILITY LINE (APPROXIMATE)
- SOIL BORING LOCATION
- MONITORING WELL LOCATION
- SOIL BORING/MONITORING WELL LOCATION
- TAR–LIKE MATERIAL AND/OR NAPL OBSERVED AT GIVEN INTERVAL (FEET BGS)

NOTES:

1. BASE MAPPING WAS COMPILED FROM A COMBINATION OF STEREOPHOTOGRAMMETRIC METHODS; AERIAL PHOTOGRAPHY FLOWN ON 8/96 AND 11/98 BY LOCKWOOD MAPPING COMPANY; AS–BUILT RECORD DRAWINGS FOR COMPLETED REMEDIATION ACTIVITIES AT THE SPA STEEL PRODUCTS PROPERTY; AND FIELD SURVEY METHODS ON 5/96, PROVIDED BY NIAGARA MOHAWK, SURVEY REFERENCE FILE NO. 3435, FILE INDEX 21.0–S2.18–M49, AND A NEW SURVEY FILE NO. 01135–1.DWG RECEIVED 8/19/02.
2. PROPERTY INFORMATION TAKEN FROM "CITY OF SARATOGA SPRINGS, SARATOGA COUNTY, N.Y. TAX MAPS" NUMBERED 153.00(0D), 166.00(0D), 165.36(1D), 166.00(1D), 166.05(1D), 166.11(1D), 166.21(1D), 166.29(1D), 166.30(1D), 166.31(1D), 166.37(1D), 166.38(1D), AND 166.39(1D).
3. EXISTING UTILITY INFORMATION PROVIDED BY NIAGARA MOHAWK POWER CORPORATION, TAKEN FROM MAPPING DEVELOPED BY S.Y. KIM LAND SURVEYOR, P.C. PROJECT NO. 730135, JOB NO. 43–219–97, DATED JANUARY 12, 1998.
4. CONCENTRATIONS GIVEN IN MILLIGRAMS PER KILOGRAM (mg/kg) OR PARTS PER MILLION (ppm).
5. SHADED VALUES EXCEED NYSDEC PART 375, UNRESTRICTED SOIL CLEANUP OBJECTIVES.
   ND = NOT DETECTED.
   U = NOT DETECTED ABOVE GIVEN VALUE.
   J = ESTIMATED CONCENTRATION.
   [ ] = DUPLICATE SAMPLE.
   B = ANALYTE WAS ALSO DETECTED IN THE METHOD BLANK.

0 50' 100'

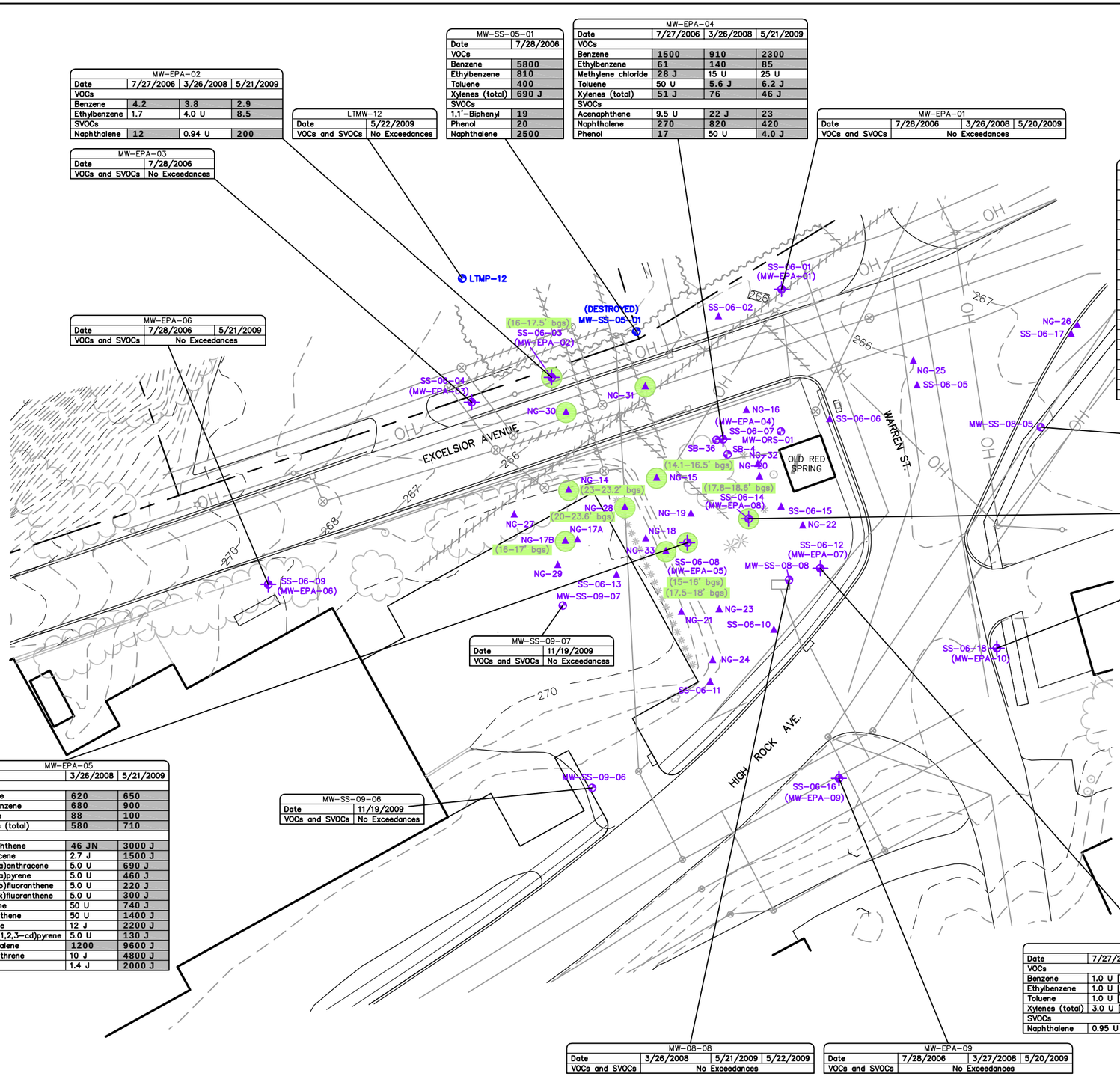
GRAPHIC SCALE

PART 375-UNRESTRICTED SOIL EXCEEDANCES

ARCADIS

FIGURE 7

CITY: SYRACUSE, N.Y. DIV/GROUP: ENVCAD-141 DB: R. BASSETT, W. JONES, R. ALLEN LD: PIC: J. NUSS PM: K. CROWLEY TM: K. CROWLEY LYR: ON=*;OFF=*REF*
G:\ENVCAD\SYRACUSE\ACT\B0036641\0000\00250\DWG\36641C03.DWG LAYOUT: 1 SAVED: 8/10/2010 1:42 PM ACADVER: 18.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 8/10/2010 1:42 PM BY: ALLEN, ROYCE
XREFS: 36641X02 36641X01 36641XBL IMAGES: ---- PROJECTNAME: ----



MW-EPA-02			
Date	7/27/2006	3/26/2008	5/21/2009
VOCs			
Benzene	4.2	3.8	2.9
Ethylbenzene	1.7	4.0 U	8.5
SVOCs			
Naphthalene	12	0.94 U	200

LTMW-12	
Date	5/22/2009
VOCs and SVOCs	No Exceedances

MW-SS-05-01	
Date	7/28/2006
VOCs	
Benzene	5800
Ethylbenzene	810
Toluene	400
Xylenes (total)	690 J
SVOCs	
1,1'-Biphenyl	19
Phenol	20
Naphthalene	2500

MW-EPA-04			
Date	7/27/2006	3/26/2008	5/21/2009
VOCs			
Benzene	1500	910	2300
Ethylbenzene	61	140	85
Methylene chloride	28 J	15 U	25 U
Toluene	50 U	5.6 J	6.2 J
Xylenes (total)	51 J	76	46 J
SVOCs			
Acenaphthene	9.5 U	22 J	23
Naphthalene	270	820	420
Phenol	17	50 U	4.0 J

MW-EPA-01			
Date	7/28/2006	3/26/2008	5/20/2009
VOCs and SVOCs	No Exceedances		

MW-EPA-03	
Date	7/28/2006
VOCs and SVOCs	No Exceedances

MW-EPA-06		
Date	7/28/2006	5/21/2009
VOCs and SVOCs	No Exceedances	

Groundwater Quality Standards and Guidance Values		
Consituent	NYSDEC TOGs 1.1.1	USEPA MCLs
VOCs		
Benzene	1	5
Ethylbenzene	5	700
Methylene chloride	5	5
Toluene	5	1000
Xylenes (total)	5	10000
SVOCs		
1,1'-Biphenyl	5	---
Acenaphthene	20	---
Anthracene	50	---
Benzo(a)anthracene	0.002	---
Benzo(a)pyrene	ND	0.2
Benzo(b)fluoranthene	0.002	---
Benzo(k)fluoranthene	0.002	---
Chrysene	0.002	---
Fluoranthene	50	---
Fluorene	50	---
Indeno(1,2,3-cd)pyrene	0.002	---
Naphthalene	10	---
Phenanthrene	50	---
Phenol	1	---
Pyrene	50	---

MW-08-05	
Date	5/22/2009
VOCs and SVOCs	No Exceedances

MW-EPA-08	
Date	5/22/2009
VOCs	
Benzene	630
Ethylbenzene	920
Toluene	460
Xylenes (total)	1100
SVOCs	
Acenaphthene	160 J
Fluorene	66 J
Naphthalene	3500 J

MW-EPA-10			
Date	7/26/2006	3/27/2008	5/20/2009
PAHs			
Chrysene	0.030 J	0.19 U	NA

MW-EPA-05		
Date	3/26/2008	5/21/2009
VOCs		
Benzene	620	650
Ethylbenzene	680	900
Toluene	88	100
Xylenes (total)	580	710
SVOCs		
Acenaphthene	46 JN	3000 J
Anthracene	2.7 J	1500 J
Benzo(a)anthracene	5.0 U	690 J
Benzo(a)pyrene	5.0 U	460 J
Benzo(b)fluoranthene	5.0 U	220 J
Benzo(k)fluoranthene	5.0 U	300 J
Chrysene	50 U	740 J
Fluoranthene	50 U	1400 J
Fluorene	12 J	2200 J
Indeno(1,2,3-cd)pyrene	5.0 U	130 J
Naphthalene	1200	9600 J
Phenanthrene	10 J	4800 J
Pyrene	1.4 J	2000 J

MW-SS-09-07	
Date	11/19/2009
VOCs and SVOCs	No Exceedances

MW-SS-09-06	
Date	11/19/2009
VOCs and SVOCs	No Exceedances

MW-EPA-07			
Date	7/27/2006	3/26/2008	5/22/2009
VOCs			
Benzene	1.0 U [1.0 U]	140	130 J [47 J]
Ethylbenzene	1.0 U [1.0 U]	200	150 J [48 J]
Toluene	1.0 U [1.0 U]	230	75 J [25 J]
Xylenes (total)	3.0 U [3.0 U]	190	150 J [47 J]
SVOCs			
Naphthalene	0.95 U [0.95 U]	130	750 [950 J]

MW-08-08			
Date	3/26/2008	5/21/2009	5/22/2009
VOCs and SVOCs	No Exceedances		

MW-EPA-09			
Date	7/28/2006	3/27/2008	5/20/2009
VOCs and SVOCs	No Exceedances		

LEGEND:

- SOIL BORING LOCATION
- MONITORING WELL LOCATION
- SOIL BORING/MONITORING WELL LOCATION
- TAR-LIKE MATERIAL AND/OR NAPL OBSERVED AT GIVEN INTERVAL (FEET BGS)
- SHADED VALUES EXCEED THE CORRESPONDING NYSDEC CLASS GA GROUNDWATER STANDARD (TOGS 1.1.1, JUNE 1998) AND/OR FEDERAL MAXIMUM CONTAMINANTS LEVEL.
- PROPERTY LINE (APPROXIMATE)
- CHAINLINK FENCE
- GROUND SURFACE CONTOUR (ONE-FOOT INTERVAL)
- EXISTING SUBGRADE SHEET PILE BARRIER WALL
- TREE/BRUSH LINE
- TREE/BUSH
- BUILDING/STRUCTURE
- CATCH BASIN
- MANHOLE
- UTILITY POLE
- W — WATER LINE (APPROXIMATE)
- G — GAS LINE (APPROXIMATE)
- S — SANITARY SEWER (APPROXIMATE)
- ST — STORM SEWER (APPROXIMATE)
- OH — OVERHEAD UTILITY LINE (APPROXIMATE)
- UE — UNDERGROUND ELECTRIC LINE (APPROXIMATE)
- T — UNDERGROUND TELEPHONE LINE (APPROXIMATE)
- ABANDONED UTILITY

NOTES:

1. BASE MAPPING WAS COMPILED FROM A COMBINATION OF STEREOPHOTOGRAMMETRIC METHODS; AERIAL PHOTOGRAPHY FLOWN ON 8/96 AND 11/98 BY LOCKWOOD MAPPING COMPANY; AS-BUILT RECORD DRAWINGS FOR COMPLETED REMEDIATION ACTIVITIES AT THE SPA STEEL PRODUCTS PROPERTY; AND FIELD SURVEY METHODS ON 5/96, PROVIDED BY NIAGARA MOHAWK, SURVEY REFERENCE FILE NO. 3435, FILE INDEX 21.0-S2.18-M49, AND A NEW SURVEY FILE NO. 01135-1.DWG RECEIVED 8/19/02.
2. PROPERTY INFORMATION TAKEN FROM "CITY OF SARATOGA SPRINGS, SARATOGA COUNTY, N.Y. TAX MAPS" NUMBERED 153.00(OD), 166.00(OD), 165.36(ID), 166.00(ID), 166.05(ID), 166.11(ID), 166.21(ID), 166.29(ID), 166.30(ID), 166.31(ID), 166.37(ID), 166.38(ID), AND 166.39(ID).
3. EXISTING UTILITY INFORMATION PROVIDED BY NIAGARA MOHAWK POWER CORPORATION, TAKEN FROM MAPPING DEVELOPED BY S.Y. KIM LAND SURVEYOR, P.C. PROJECT NO. 730135, JOB NO. 43-219-97, DATED JANUARY 12, 1998.
4. CONCENTRATIONS GIVEN IN MICROGRAMS PER LITER (ug/L) OR PARTS PER MILLION (ppm).
5. DATA MODIFIERS ARE DEFINED AS FOLLOWS:
   J = INDICATES AN ESTIMATED VALUE.
   U = THE COMPOUND WAS ANALYZED FOR BUT NOT DETECTED. THE ASSOCIATED VALUE IS THE COMPOUND QUANTITATION LIMIT.
   [ ] = DUPLICATE SAMPLE
   ND = NOT DETECTED
6. FOR CONSTITUENTS ANALYZED USING BOTH USEPA METHOD 8270C AND METHOD 8310, THE GREATEST CONCENTRATION REPORTED FROM EITHER METHOD IS DISPLAYED IN THIS FIGURE, UNLESS BOTH METHODS REPORTED A NON-DETECT VALUE, IN WHICH CASE, THE NON-DETECT FROM THE SAMPLE THAT OBTAINED THE LOWEST DETECTION LIMIT IS DISPLAYED IN THIS FIGURE.

0 50' 100'

GRAPHIC SCALE

NIAGARA MOHAWK POWER CORPORATION

OLD RED SPRING SUBAREA

GROUNDWATER VOC AND SVOC EXCEEDANCES

ARCADIS

FIGURE 8

CITY: SYRACUSE, NY DIV/GROUP: ENV/CADD DB: R. ALLEN, P. LISTER, E. KRAHMER PM/TM: K. CROWLEY TR: L. HEALY LYR: ON=*;OFF=*REF*,(FRZ)
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XREFS: 36641X02 36672X07 36641XBL IMAGES: PROJECTNAME: ---

SPA STEEL WAREHOUSE

METAL SHED

NATIONAL GRID PROPERTY

SHEETPILE

GROUNDWATER TREATMENT BUILDING

SPA STEEL PRODUCTS PROPERTY

EXCELSIOR AVENUE

OLD RED SPRING

WARREN ST.

HIGH ROCK AVE.

C-O

M-3

EHC-4

NG-12

NG-9

MW-SS-05-04 (SS-01)

MW-SS-05-03 (SS-04)

NG-4

1-2A

EHC-3

M-2

NG-8

NG-3

NG-10

SB-62

SB-18D

NG-7

NG-2

SS-05-05

NG-11

NG-5

NG-13

1-2

B-10

NG-1

MW-SS-05-02 (SS-03)

M-1

NG-6

MW-SS-05-01 (SS-02)

5800

SS-06-01(MW-EPA-01)

ND

SS-06-02

SS-06-03(MW-EPA-02)

3.8

SS-06-04(MW-EPA-03)

SS-06-07(MW-EPA-04)

910

NG-16

MW-ORS-01

NS

SS-06-06

SB-36

SB-4

NG-20

SS-06-15

NG-19

NG-22

NG-14

NG-27

NG-18

SS-06-13

SS-06-08(MW-EPA-05)

620

SS-06-14(MW-EPA-08)

NS

MW-SS-08-08

ND

SS-06-12(MW-EPA-07)

140

SS-06-10

NG-24

SS-06-11

SS-06-09(MW-EPA-06)

ND

NG-26

SS-06-17

NG-25

SS-06-05

MW-SS-08-05

NS

SS-06-18(MW-EPA-10)

ND

SS-06-16(MW-EPA-09)

ND

ND

10

100

1,000

268

267

266

270

290

280

300

0 40' 80'

GRAPHIC SCALE

LEGEND:

- MONITORING WELL LOCATION (ARCADIS 2008)
- SOIL BORING LOCATION (ARCADIS 2008)
- USEPA INSTALLED MONITORING WELL LOCATION (JULY 2006)
- SS-06-18(MW-EPA-10) SOIL BORING ID (MONITORING WELL ID)
- BBL MONITORING WELL LOCATION (JANUARY 2005)
- USEPA INSTALLED SOIL BORING LOCATION (JULY 2006)
- BBL SOIL BORING LOCATION (JANUARY 2005)
- EHC PHASE II ESA SOIL BORING
- EVERGREEN GEOTECHNICAL BORING
- SUPPLEMENTAL SUBSURFACE INVESTIGATION (BBL, AUGUST 2003)
- HISTORICAL MONITORING WELL/ PIEZOMETER
- HISTORICAL BORING/ GEOPROBE
- DECOMMISSIONED MONITORING WELL
- CHAIN LINK FENCE
- TAX MAP PROPERTY LINE
- 10 BENZENE CONCENTRATION CONTOUR (ug/L)
- 910 BENZENE CONCENTRATION IN GROUNDWATER – DURING MOST RECENT EVENT (ug/L)
- ND NOT DETECTED
- NS NOT SAMPLED
- NAPL OBSERVED IN SOIL BORING

NOTES:

1. BASE MAPPING WAS COMPILED BY A COMBINATION OF STEREOPHOTOGRAMMETRIC METHODS, FROM AERIAL PHOTOGRAPHY FLOWN ON 8/96 AND 11/98 BY LOCKWOOD MAPPING COMPANY, AND FIELD SURVEY METHODS ON 5/96, PROVIDED BY NIAGARA MOHAWK, SURVEY REFERENCE FILE NO. 3435, FILE INDEX 21.0-S2.18-M49 AND A NEW SURVEY FILE NO. 01135-1.DWG RECEIVED 8/19/02.
2. PROPERTY INFORMATION TAKEN FROM "CITY OF SARATOGA SPRINGS, SARATOGA COUNTY, N.Y. TAX MAPS" NUMBERED 153.00(OD), 166.00(OD), 165.36(ID), 166.00(ID), 166.05(ID), 166.11(ID), 166.21(ID), 166.29(ID), 166.30(ID), 166.31(ID), 166.37(ID), 166.38(ID), 166.39(ID).
3. ELEVATIONS ARE BASED ON NAVD 88 USING STATION G396, ELEVATION 306.010 FEET.
4. EXISTING UTILITY INFORMATION PROVIDED BY NIAGARA MOHAWK POWER CORPORATION, TAKEN FROM MAPPING DEVELOPED BY S.Y. KIM LAND SURVEYOR, P.C. PROJECT NO. 730135, JOB NO. 43-219-97, DATED JANUARY 12, 1998.
5. GROUNDWATER SAMPLES COLLECTED WITHIN THE LIMITS OF THE SHEET PILE ON SPA STEEL PRODUCTS AND NATIONAL GRID PROPERTY ARE NOT INCLUDED IN ISOCONCENTRATION CONTOURS.

BENZENE ISOCONCENTRATION CONTOUR MAP - GROUNDWATER

ARCADIS

FIGURE 9

CITY: SYRACUSE,NY GROUP: ENV-141 DB: KMD RCB RCA PM: K. MURRAY TM: S.POWLIN LYR: ON=*;OFF=*REF; (FRZ)
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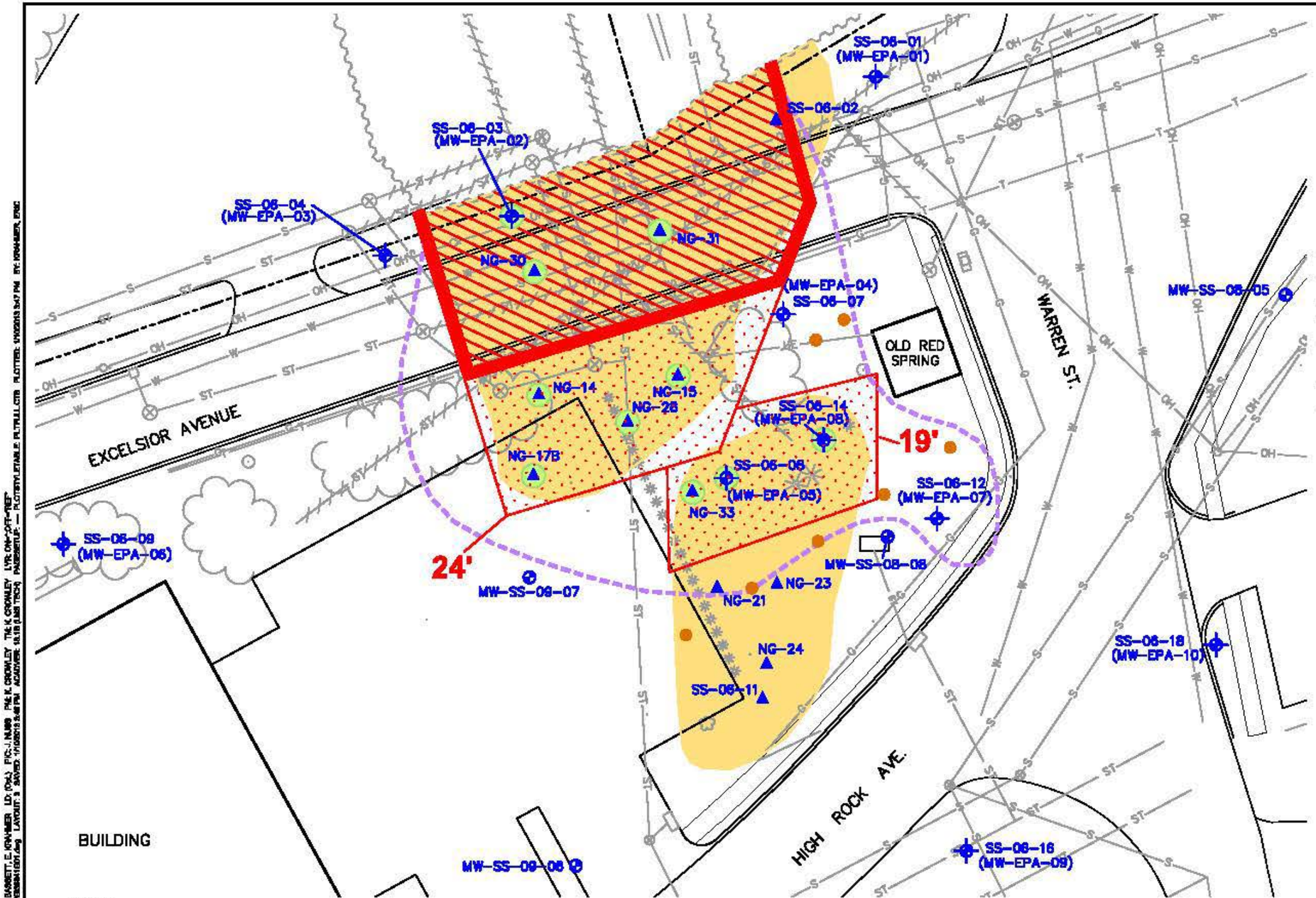
XREFS: 36641X02 36641X01 36641X00 IMAGES: PROJECTNAME: ---



NOTES:

1. BASE MAPPING WAS COMPILED FROM A COMBINATION OF STEREOPHOTOGRAMMETRIC METHODS; AERIAL PHOTOGRAPHY FLOWN ON 8/96 AND 11/98 BY LOCKWOOD MAPPING COMPANY; AS-BUILT RECORD DRAWINGS FOR COMPLETED REMEDIATION ACTIVITIES AT THE SPA STEEL PRODUCTS PROPERTY; AND FIELD SURVEY METHODS ON 5/96, PROVIDED BY NIAGARA MOHAWK, SURVEY REFERENCE FILE NO. 3435, FILE INDEX 21.0-52.18-M48, AND A NEW SURVEY FILE NO. 01135-1.DWG RECEIVED 8/19/02.
2. PROPERTY INFORMATION TAKEN FROM "CITY OF SARATOGA SPRINGS, SARATOGA COUNTY, N.Y. TAX MAPS" NUMBERED 165.00(OD), 166.00(OD), 166.36(ID), 166.00(ID), 166.03(ID), 166.11(ID), 166.21(ID), 166.29(ID), 166.30(ID), 166.31(ID), 166.37(ID), 166.38(ID), AND 166.39(ID).
3. EXISTING UTILITY INFORMATION TAKEN FROM MAPPING DEVELOPED BY S.Y. KIM LAND SURVEYOR, P.C. PROJECT NO. 730135, JOB NO. 43-218-97, DATED JANUARY 12, 1998 (PROVIDED BY NATIONAL GRID) AND FROM CITY OF SARATOGA SPRINGS DRAWINGS 6C-16, DATED SEPTEMBER 1, 2002 AND "AS-BUILT UTILITY INSTALLATION PLAN", DATED DECEMBER 6, 2007.
4. LOCATIONS OF BORINGS NG-30, NG-31, AND NG-33 ARE APPROXIMATE.

NIAGARA MOHAWK POWER CORPORATION

OLD RED SPRING SUBAREA

ALTERNATIVE 3A

ARCADIS

FIGURE 10

APPENDIX II

TABLES

Table 1
Niagara Mohawk Power Corporation Superfund Site - Saratoga Springs, New York
Contaminants Detected in the Shallow Overburden Groundwater in the OU 2 Project Area

CAS	Contaminant Detected	Units	Minimum Detect	Maximum Detect	Detection Frequency	Max Detect Location
	VOCs by USEPA Method 8260B					
71432	Benzene	ug/L	0.32	5800	13/31	MW-SS-05-01
56235	Carbon tetrachloride	ug/L	2.9	2.9	1/31	MW-EPA-07
67663	Chloroform	ug/L	0.2	0.2	1/31	MW-EPA-06
10041	Ethylbenzene	ug/L	1.7	920	11/31	MW-EPA-08
75092	Methylene chloride	ug/L	28	28	1/31	MW-EPA-04
10888	Toluene	ug/L	0.16	460	9/31	MW-EPA-08
133020	Xylenes (total)	ug/L	1.4	1100	11/31	MW-EPA-08
	SVOCs by USEPA Method 8270C					
92524	1,1'-Biphenyl	ug/L	19	19	1/9	MW-SS-05-01
91576	2-Methylnaphthalene	ug/L	1	6700	8/22	MW-EPA-05
83329	Acenaphthene	ug/L	0.3	3000	7/23	MW-EPA-05
120127	Anthracene	ug/L	2.7	1500	2/22	MW-EPA-05
56553	Benzo(a)anthracene	ug/L	690	690	1/22	MW-EPA-05
50328	Benzo(a)pyrene	ug/L	460	460	1/22	MW-EPA-05
205992	Benzo(b)fluoranthene	ug/L	220	220	1/22	MW-EPA-05
207089	Benzo(k)fluoranthene	ug/L	300	300	1/22	MW-EPA-05
218019	Chrysene	ug/L	740	740	1/22	MW-EPA-05
132649	Dibenzofuran	ug/L	1.6	230	2/31	MW-EPA-05
206440	Fluoranthene	ug/L	1400	1400	1/22	MW-EPA-05
86737	Fluorene	ug/L	12	2200	3/22	MW-EPA-05
193395	Indeno(1,2,3-cd)pyrene	ug/L	130	130	1/22	MW-EPA-05
91203	Naphthalene	ug/L	130	9600	8/23	MW-EPA-05
85018	Phenanthrene	ug/L	10	4800	2/22	MW-EPA-05
108952	Phenol	ug/L	4	20	3/31	MW-SS-05-01
129000	Pyrene	ug/L	1.4	2000	2/23	MW-EPA-05
	PAHs by USEPA Method 8310					
91576	2-Methylnaphthalene	ug/L	16	310	2/9	MW-SS-05-01
83329	Acenaphthene	ug/L	1	46	3/19	MW-EPA-05
218019	Chrysene	ug/L	0.03	0.03	1/19	MW-EPA-10
91203	Naphthalene	ug/L	0.12	2500	9/19	MW-SS-05-01
	Miscellaneous					
14808798	Sulfate	ug/L	8400	310000	7/12	MW-EPA-01
	Inorganics – Total					
7439896	Iron	ug/L	99.6	27700	12/12	MW-EPA-02
7439965	Manganese	ug/L	77.1	2490	12/12	LTMW-12
	Inorganics-Filtered					
7439896	Iron (filtered)	ug/L	89	5240	7/12	LTMW-12
7439965	Manganese (filtered)	ug/L	66.8	2520	12/12	LTMW-12

Note:
1. Units = micrograms per liter (ug/L)

Table 2
Niagara Mohawk Power Corporation Superfund Site - Saratoga Springs, New York.
Cost Estimate for Selected Remedy (Alternative 3A)

Item #	Description	Estimated Quantity	Unit	Unit Price	Estimated Cost
Capital Costs					
1	ISS/Jet Grout Treatability Study	1	LS	$75,000	$75,000
2	Mobilization/Demobilization	1	LS	$300,000	$300,000
3	Temporary Site Fencing	600	LF	$100	$60,000
4	Erosion and Sedimentation Control	600	LF	$3	$1,800
5	Construct and Maintain Material Staging Area	1	LS	$15,000	$15,000
6	Construct and Maintain Decontamination Pad	1	LS	$6,000	$6,000
7	Utility Markout and Clearance	1	LS	$50,000	$50,000
8	Pre-ISS Soil Excavation and Handling	1,900	CY	$35	$66,500
9	Vapor/Odor Control	23	WEEK	$3,000	$69,000
10	ISS Treatment	2,900	CY	$125	$362,500
11	Jet Grouting - Old Red Spring Area	320	CY	$325	$104,000
12	Jet Grouting - Excelsior Avenue Containment Wall	4,200	VLF	$100	$420,000
13	Jet Grouting - Excelsior Avenue Encapsulation Mat	1,000	CY	$325	$325,000
14	ISS and Jet Grout Spoils Handling	2,700	CY	$15	$40,500
15	QA/QC Sampling	11	EACH	$1,500	$16,500
16	Imported Backfill	2,500	CY	$30	$75,000
17	Surface Restoration	35,900	SF	$6	$215,400
18	Solid Waste Characterization	20	EACH	$1,000	$20,000
19	Solid Waste Transportation and Disposal - C&D Debris	5,800	TON	$100	$580,000
20	Solid Waste Transportation and Disposal - Non-Haz Landfill	4,100	TON	$55	$225,500
21	Install Groundwater Amendment Application Wells	7	EACH	$4,000	$28,000
22	Install New Old Red Spring Well	1	LS	$100,000	$100,000
23	Site Management Plan	1	LS	$50,000	$50,000
24	Establish Institutional Controls	1	LS	$50,000	$50,000
				Subtotal Capital Cost	$3,255,700
25				Administration & Engineering (15%)	$356,280
				Construction Management (15%)	$356,280
				Contingency (20%)	$651,140
				Total Capital Cost	$4,619,400
Operation and Maintenance Costs					
26	Annual Verification of Institutional Controls	1	LS	$5,000	$5,000
27	Amendment Application	1	LS	$12,000	$12,000
28	Quarterly Groundwater Sampling	4	EVENT	$6,600	$26,400
29	Laboratory Analysis of Groundwater Samples	64	EACH	$250	$16,000
30	Waste Disposal	4	DRUM	$750	$3,000
31	Annual Summary Report	1	LS	$30,000	$30,000
				Subtotal O&M Cost	$92,400
				Contingency (20%)	$18,480
				Total Annual O&M Cost	$110,880
32				30-Year Total Present Worth Cost of O&M	$1,917,341
				Total Estimated Cost:	**$6,536,741**
				Rounded To:	**$6,500,000**

Notes: LS = lump sum; LF = linear foot; VLF= per vertical linear foot.

Table 3

Niagara Mohawk Power Corporation Superfund Site - Saratoga Springs, New York
Old Red Spring Area COCs Detected in Subsurface Soil and Cleanup Levels (for Non-ISS Areas)

CONTAMINANT	Unrestricted Use SCOs
VOCs	
1,2,4-Trimethylbenzene	3.6
1,3,5-Trimethylbenzene	8.4
2-Butanone	0.12
Benzene	0.06
Ethylbenzene	1
n-Propylbenzene	3.9
Metals	
Iron	--
Manganese	1600

CONTAMINANT	Unrestricted Use SCOs
SVOCs	
Acenaphthene	20
Acenaphthylene	100
Anthracene	100
Benzo(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1
Benzo(k)fluoranthene	0.8
1,1'-Biphenyl	5
Chrysene	1
Dibenzo(a,h)anthracene	0.33
Dibenzofuran	7
Fluoranthene	100
Fluorene	30
Indeno(1,2,3-cd)pyrene	0.5
Naphthalene	12
2-Methylnaphthalene	--
Phenanthrene	100
Pyrene	100

Notes:

1. All concentrations are reported in milligrams per kilogram (mg/kg).

2. SCOs = Soil Cleanup Levels. SCOs for unrestricted use are found at 6 New York Code of Rules and Regulations (NYCRR) Sections 375-6.3(b) and 375-6.8(a) .

Table 4

Niagara Mohawk Power Corporation Superfund Site - Saratoga Springs, New York
Old Red Spring Area Cleanup Levels for COCs Detected in Overburden (Shallow) Groundwater

CONTAMINANT	NYSDEC Water Quality Standard[1]	Federal MCL[2]
VOCs		
Benzene	1	5
Ethylbenzene	5	700
SVOCs		
1,1'-Biphenyl	5	- -
SVOCs and PAHs		
Fluorene	50	- -
Naphthalene	10	- -
Pyrene	50	- -

Metals		
Iron	300	
Manganese	300	- -
Applies to the sum of Iron and Manganese	500	

Notes:
1. The cleanup level is the more stringent of the federal or state value listed above. The list does not include all ARARs, TBCs and other guidelines that apply to the remedy selected in this ROD.
2. All concentrations in the table above are reported in micrograms per liter (ug/L).
3. These substances are both SVOCs and PAHs.

1. 6 New York Code of Rules and Regulations (NYCRR) Part 700-706, and New York State Technical and Operational Guidance Series (TOGS) 1.1.1.
2. 40 CFR Part 141, Subpart F.

Table 5a: Chemical-Specific ARARs, TBCs, and Other Guidelines

REGULATION/AUTHORITY	CITATION	REQUIREMENT SYNOPSIS
Clean Water Act [Federal Water Pollution Control Act, as amended]	33 U.S.C. §§1251-1387; 40 CFR. Part 131	Authority for States to specify appropriate uses for bodies of water to achieve and protect. States may adopt sub-categories of use and to set appropriate criteria to reflect varying needs, including protecting aquatic life and/or human health depending on designated water use.
Clean Water Act (CWA) [Federal Water Pollution Control Act, as amended]	33 U.S.C. §§1251-1387; see CWA Sections 301, 304, 307, and 501(a); 40 CFR 136	Guidelines for establishing test procedures for the analysis of pollutants.
National Primary Drinking Water Standards	42 U.S.C. §§300f, 300g-1 through 330g-6, 300j-4 and j-9; 40 CFR Part 141, Subpart F	Establishes maximum contaminant levels (MCLs) which are health-based standards for public water supply systems.
RCRA-Regulated Levels for Toxic Characteristics Leaching Procedure (TCLP) Constituents	42 U.S.C. §§ 6905, 6912, 6921-6922; 40 CFR Part 261	These regulations specify the TCLP constituent levels for identification of hazardous wastes that exhibit the characteristic of toxicity.
Universal Treatment Standards/Land Disposal Restrictions (UTS/LDRs), Solid Waste Disposal Act, as amended	42 U.S.C.§§6905, 6912(a), 6921, 6924; 40 CFR Part 268	Identifies hazardous wastes for which land disposal is restricted and provides a set of numerical constituent concentration criteria at which hazardous waste is restricted from land disposal (without treatment).
NYSDEC Soil Cleanup Objectives	New York State Environmental Conservation Law (ECL), Article 27; 6 NYCRR Sections 375-6.3(b) and 375-6.8(a)	NYSDEC Remedial Program Soil Cleanup Objectives are calculated values which were considered in developing the unrestricted use of soil cleanup objectives. Unrestricted use, as set forth in 375-1.8(g)(1)(i) and 375-6.3(b), is achieved when a remedial program for soil meets the unrestricted use soil cleanup objectives in Table 375-6.8(a).

REGULATION/AUTHORITY	CITATION	REQUIREMENT SYNOPSIS
NYSDEC Ambient Water Quality Standards and Guidance Values	ECL, Article 17; 6 NYCRR Parts 700-706; Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 (6/98);	Provides a compilation of ambient water quality standards and guidance values for toxic and non-conventional pollutants (except for coliforms and dissolved oxygen) for use when there are no standards or regulatory effluent limitations in 6 NYCRR §703.5.
Identification and Listing of Hazardous Wastes	ECL Article 27; 6 NYCRR Part 371	Outlines criteria for determining if a solid waste is a hazardous waste and is subject to regulation under 6 NYCRR Parts 371-376.
New York State Surface Water and Groundwater Quality Standards	ECL §§3-0301[2][m], 15-0313, 17-0301, 17-0809; 6 NYCRR Part 703	Establishes water quality standards for surface water and groundwater.

Table 5b: Location-Specific ARARs, TBCs, and Other Guidelines

REGULATION/ AUTHORITY	CITATION	REQUIREMENT SYNOPSIS
National Historic Preservation Act	16 U.S.C. §§470-470x-6; 36 C.F.R. Part 800	Establishes that response actions must take into account effect on properties currently listed or eligible for inclusion on the National Registry of Historic Places. Requires federal agencies to take into account the effects of their undertakings on historic properties and afford the council a reasonable opportunity to comment on such undertakings. This will include consultation with state and local governments, and private organizations as necessary.
New York Preservation of Historic Structures or Artifacts. NY Parks, Recreation and Historic Preservation Law (PRHPL)	NY PRHPL Sections §§3.09 (8), 14.09 (1), (2), 9 NYADMIN §428.1; 9 NYCRR §428.1	Requirements for preservation of historical/archeological structures and/or artifacts.

Table 5c: Action-Specific ARARs, TBCs, and Other Guidelines

REGULATION/ AUTHORITY	CITATION	REQUIREMENT SYNOPSIS
Occupational Safety and Health Act (OSHA) - General Industry Standards	29 USC §553 and 42 USC§126; 29 CFR §1910.120	These regulations specify the 8-hour time-weighted average concentration for worker exposure to various compounds. Training requirements for workers at hazardous waste operations are specified in 29 CFR §1910.120.
OSHA – Safety and Health Standards	40 U.S.C. §333; 29 U.S.C. §§653, 655, 657; 29 CFR Part 1926	These regulations specify the type of safety equipment and procedures to be followed during site remediation.
OSHA – Recordkeeping, Reporting and Related Regulations	29 U.S.C. §§657, 658, 660, 669, 673; 29 CFR Part 1904	These regulations outline recordkeeping and reporting requirements for an employer under OSHA.
RCRA – Preparedness and Prevention	42 U.S.C. §§6905, 6912(a), 6924, and 6925; 40 CFR §§264.30 - 264.31	Outlines requirements for safety equipment and spill control when treating, handling and/or storing hazardous wastes.
RCRA – Contingency Plan and Emergency Procedures	42 U.S.C. §§6905, 6912(a), 6924, and 6925; 40 CFR §§ 264.50 - 264.56	Provides emergency procedures to be used following explosions, fires, etc. when storing hazardous wastes.
Superfund Green Remediation Strategy	www.epa.gov/superfund/greenremediation/sf-gr-strategy.pdf	Provides USEPA's strategy to clean up hazardous waste sites in ways that use natural resources and energy efficiently and reduces negative impacts on human health and the environment.

REGULATION/ AUTHORITY	CITATION	REQUIREMENT SYNOPSIS
RCRA 90-Day Accumulation Rule for Hazardous Waste	42 U.S.C.§§ 6906, 6912, 6922-6925, 6937, and 6938; 40 CFR Part 262	Allows generators of hazardous waste to store and treat hazardous waste at the generation site for up to 90 days in tanks, containers and containment buildings without having to obtain a RCRA hazardous waste permit.
Standards Applicable to Transporters of Applicable Hazardous Waste – RCRA	42 U.S.C.§§ 6906, 6912, 6922-6925, 6937, and 6938; 40 CFR Part 263	Establishes the responsibility of off-site transporters of hazardous waste in the handling, transportation and management of the waste. Requires manifesting, recordkeeping and immediate action in the event of a discharge.
RCRA – General Standards	42 U.S.C. §§6905, 6912(a), 6924, and 6925; 40 CFR Part 264	General performance standards requiring minimization of need for further maintenance and control; minimization or elimination of post- closure escape of hazardous waste, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products. Also requires decontamination or disposal of contaminated equipment, structures and soils.
U.S. Department of Transportation (USDOT) Rules for Transportation of Hazardous Materials	49 CFR Parts 107 and 171.1-172.558	Outlines procedures for the packaging, labeling, manifesting and transporting of hazardous materials.
Clean Air Act-National Ambient Air Quality Standards	42 U.S.C. §§7401-7671q; 40 CFR Parts 50-52 60 and 40	Establishes ambient air quality standards for protection of public health.

REGULATION/ AUTHORITY	CITATION	REQUIREMENT SYNOPSIS
RCRA Hazardous Waste Permit Program	42 U.S.C. §6925; 40 CFR Part 270	Covers the basic permitting, application, monitoring and reporting requirements for off-site hazardous waste management facilities
Green Remediation	DER-31	Provides concepts and techniques of green remediation and guidance on how to apply them to remedial programs under DER.
New York Hazardous Waste Management System - General	ECL, Article 27; 6 NYCRR Part 370	Provides definitions of terms and general instructions for the Part 370 series of hazardous waste management.
Identification and Listing of Hazardous Wastes	ECL, Article 27; 6 NYCRR Part 371	Outlines criteria for determining if a solid waste is a hazardous waste and is subject to regulation under 6 NYCRR Parts 371-376.
Hazardous Waste Manifest System and Related Standards for Generators, Transporters, and Facilities	ECL, Article 27; 6 NYCRR Part 372	Provides guidelines relating to the use of the manifest system and its recordkeeping requirements. It applies to generators, transporters and facilities in New York State.
New York Regulations for Transportation of Hazardous Waste	ECL, Article 27; 6 NYCRR Part 372.3 a-d	Outlines procedures for the packaging, labeling, manifesting and transporting of hazardous waste.
Waste Transporter Permits	ECL, Article 27, Titles 3, 9, and 15; 6 NYCRR Part 364	Governs the collection, transport and delivery of regulated waste within New York State.

REGULATION/ AUTHORITY	CITATION	REQUIREMENT SYNOPSIS
New York Regulations for Hazardous Waste Management Facilities	ECL, Article 27; 6 NYCRR Part 373.1.1 - 373.1.8	Provides requirements and procedures for obtaining a permit to operate a hazardous waste treatment, storage and disposal facility. Also lists contents and conditions of permits.
Management of Soil and Sediment Contaminated With Coal Tar From Former Manufactured Gas Plants	NYSDEC Program Policy – TAGM 4061	Purpose of the guidance is to facilitate the permanent treatment of soil contaminated with coal tar from the sites of former MGPs.
Land Disposal of a Hazardous Waste	6 NYCRR Part 376	Restricts land disposal of hazardous wastes that exceed specific criteria.
NYSDEC Guidance on the Management of Coal Tar Waste and Coal Tar Contaminated Soils and Sediment from Former Manufactured Gas Plants	DER-4; TAGM 4061(2002)	Outlines the criteria for conditionally excluding coal tar waste and impacted soils from former MGPs which exhibit the hazardous characteristic of toxicity for benzene (D018) from the hazardous waste requirements of 6 NYCRR §§370-374 and 376 when destined for thermal treatment.

APPENDIX III

RISK ASSESSMENT TABLES

Table 1
Conceptual Site Model
Niagara Mohawk Power Corporation Superfund Site- Saratoga Springs, New York

Scenario Timeframe	Medium	Exposure Medium	Receptor Population	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Old Red Spring (bedrock groundwater zone)	Tap Water	Resident	Resident	Adult Child	Ingestion Dermal	Quantitative	Bedrock groundwater (i.e., beneath the confining clay layer) is currently available as a potable source at the Old Red Spring.
Current	Excelsior Avenue (overburden groundwater zone)	Tap Water	Resident	Resident	Adult	Ingestion Dermal	Qualitative	Site groundwater is not currently used as a potable source. There are currently no residences on the Site. Exposure pathway is incomplete,
					Child	Ingestion Dermal Inhalation while showering	Qualitative	
Future	Old Red Spring (bedrock groundwater zone)	Tap Water	Resident	Resident	Adult	Ingestion Dermal Inhalation while showering	Quantitative	Bedrock groundwater (i.e., beneath the confining clay layer) is currently available as a potable source at the Old Red Spring.
					Child	Ingestion Dermal Inhalation while showering	Quantitative	
Future	Excelsior Avenue (overburden groundwater zone)	Tap Water	Resident	Resident	Adult	Ingestion Dermal Inhalation while showering	Quantitative	Exposure pathway may be potentially complete if residential development were to occur onsite in the future and such esidences installed a private drinking water well.
					Child	Ingestion Dermal Inhalation while Showering	Quantitative	
		Soil Vapor indoor Air	Industrial/ Commercial Worker	Industrial/ Commercial Worker	Adult	Inhalation of Varpors	Quantitative	Commercial workers at the fitness gym may be exposed to vapors in indoor air emanating from overburden groundwater. Monitoring wells within 100 feet of the building represent potential exposure points.

Table 2.
Exposure Point Concentrations for Chemicals of Concern
Niagara Mohawk Power Corporation Superfund Site- Saratoga Springs, New York

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Tap Water

Exposure Point	Chemicals of Potential Concern	Concentrations Detected		Units (2)	Frequency of Detection	Exposure Point Concentration - RME and CTE			
		Minimum (1)	Maximum			Value	Units	Statistic (3)	Rationale
Tap Water	Benzene	0.32	5800	ug/L	13/31	759.9	ug/L	95% KM (t) UCL	ProUCL
	Ethyl benzene	1.7	920	ug/L	11/31	215.2	ug/L	95% KM (t) UCL	ProUCL
	1,1'-biphenyl	19	19	ug/L	1/9	19	ug/L	Less than 8 detects	ProUCL
	Napthalene	130	9600	ug/L	14/31	1194	ug/L	95% KM (t) UCL	ProUCL
	2-methyl naphthalene	1	6,700	ug/L	'10/31	646.8	ug/L	95% KM (t) UCL	ProUCL
	Dibenzofuran	1.6	2,300	ug/L	2/31	230	ug/L	Less than 8 detects	ProUCL
	Fluorene	12	2,200	ug/L	3/22	2,200	ug/L	Less than 8 detects	ProUCL
	Pyrene	1.4	2,000	ug/L	2/23	2000	ug/L	Less than 8 detects	ProUCL
	Manganese	77.1	1,680	ug/L	12/12	1680	ug/L	Maximum	ProUCL
	Iron	99.6	17,601	ug/L	12/12	17061	ug/L	95% Chebyshev (Mean, Sd) UCL	ProUCL

(1) The Qualifier code (J) indicates that the analyte was detected and is considered an estimated value. Data was obtained from RAGS Part D - Table 3 in the Baseline
(2) Units of detection were micrograms/liter (or ug/l) which are equivalent to parts per billion (ppb).
(3) The statistical methods provided were based on recommendations from ProUCL version 4.1 available at: http://www.epa.gov/esd/tsc/software.htm. The

Table 3A.
Non-Cancer Toxicity Data -- Oral/Dermal
Niagara Mohawk Power Corporation Superfund Site- Saratoga Springs, New York

Chemicals of Concern	Chronic/ Subchronic	Oral RfD		Efficiency for Dermal		Absorbed RfD for Dermal		Primary Target Organ	Combined Uncertainty/ Modifying	RfD Target (organs)	
		Value	Units	Value	Reference	Value (2)	Units			Sources (3)	(MM/DD/YY YY)
Benzene	Chronic	0.004	mg/kg-day	1	EPA (2004)	0.004	mg/kg-day	blood	300/1	IRIS	4/172003
Ethyl benzene	Chronic	0.1	mg/kg-day	1	EPA (2004)	0.1	mg/kg-day	Liver/Kidney	1000/1	IRIS	6/1/1991
1,1'-biphenyl	Chronic	0.05	mg/kg-day	1	EPA (2004)	0.05	mg/kg-day	kidney	100/1	IRIS	8/1/1989
Napthalene	Chronic	0.02	mg/kg-day	1	EPA (2004)	0.02	mg/kg-day	bodyweight	3000/1	IRIS	9/17/1998
2-methyl naphthalene	Chronic	0.004	mg/kg-day	1	EPA (2004)	0.004	mg/kg-day	heart	1,000/1	IRIS	12/21/2003
Dibenzofuran	Chronic	0.001	mg/kg-day	1	EPA (2004)	0.001	mg/kg-day	whole body	1,000	PPRTV	6/11/2000
Fluorene	Chronic	0.04	mg/kg-day	1	EPA (2004)	0.04	mg/kg-day	blood	3,000	IRIS	11/1/1990
Pyrene	Chronic	0.03	mg/kg-day	1	EPA (2004)	0.03	mg/kg-day	Kidney	3000/1	IRIS	7/1/1993
Manganese (non-diet)	Chronic	0.02	mg/kg-day	1	EPA (2004)	0.02	mg/kg-day	Neurological effects	3	IRIS	5/1/1996
Iron	Chronic	0.7	mg/kg-day	1	EPA (2004)	0.7	mg/kg-day	Gastrointestinal	1.5	PPRTV	Nov-10

(1) The oral absorption efficiency data was obtained from the Risk Assessment Guidance for Superufnd, Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance
(2) Dermal Reference Dose (RfD) values were calculated by multiplying the oral RfD by the Oral Absorption Efficiency for Dermal.
(3) IRIS is the Integrated Risk Information System available at www.epa.gov/iris.
mg/kg-day is milligrams/kilogram bodyweight - day
EPA (2004). Risk Assessment Guidance for Superufnd (RAGS). Volume I. Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assesment). Final. EPA/54

Table 3B
Non-Cancer Toxicity Data - Inhalation
Niagara Mohawk Power Corporation Superfund Site- Saratoga Springs, New York

Chemicals of Concern	Chronic/ Subchronic	Inhalation RfC		Primary Target Organ	Combined Uncertainty/ Modifying Factors	RfC Target Organs	
		Value	Units			Sources (1)	Date (MM/DD/ YYYY)
Benzene	Chronic	3.00E-02	mg/m3	Blood	300	IRIS	4/17/2003
Ethyl benzene	Chronic	1	mg/m3	developmental	300/1	IRIS	1/1/1991
1,1'-biphenyl	Chronic	4.00E-04	mg/m3	Liver/Kidney	3000	PPRTV	4/1/2011
Napthalene	Chronic	3.0E-03	mg/m3	Respiratory	2000	IRIS	9/17/1998
2-methyl naphthalene	Chronic	NA	NA	NA	NA	NA	NA
Dibenzofuran	Chronic	NA	NA	NA	NA	NA	NA
Fluorene	Chronic	NA	NA	NA	NA	NA	NA
Pyrene	Chronic	NA	NA	NA	NA	NA	NA
Manganese (non-diet)	Chronic	5.0E-05	mg/m3	Neurological	1000/1	IRIS	12/1/1993
Iron	Chronic	NA	NA	NA	NA	NA	NA

NA-- Indicates that a toxicity value is not available based on the Toxicity Hierarchy available in the OSWER Toxicity Hierarchy memo dated 12/5/2003 (OSWER Directive 9285.7-53).

Table 4A
Cancer Toxicity Data -- Oral/Dermal
Niagara Mohawk Power Corporation Superfund Site- Saratoga Springs, New York

Chemicals of Concern	Oral Cancer Slope Factor		Dermal Cancer Slope		Weight of Evidence Cancer Guidelines Description	Sources (1, 2, 3)	Date (MM/DD/YYYY)
	Value	Units	Value	Units			
Benzene	5.50E-02	(mg/kg-day)-1	5.50E-02	(mg/kg-day)-1	A - known human carcinogen	IRIS	1/9/2000
Ethyl benzene	1.10E-02	(mg/kg-day)-1	1.10E-02	(mg/kg-day)-1	D - not classifiable	CalEPA	7/21/2009
1,1'-biphenyl	8.00E-03	(mg/kg-day)-1	8.00E-03	(mg/kg-day)-1	C - possible human carcinogen	PPRTV	4/4/2011
Napthalene	NA	(mg/kg-day)-1	NA	mg/kg-day	C - possible human carcinogen	IRIS	9/17/1998
2-methyl naphthalene	NA	(mg/kg-day)-1	NA	mg/kg-day	NA	NA	NA
Dibenzofuran	NA	(mg/kg-day)-1	NA	mg/kg-day	D - not classifiable	IRIS	10/1/1990
Fluorene	NA	(mg/kg-day)-1	NA	mg/kg-day	D - not classifiable	IRIS	12/1/1990
Pyrene	NA	(mg/kg-day)-1	NA	mg/kg-day	D - not classifiable	IRIS	3/1/1991
Manganese (non-diet)	NA	(mg/kg-day)-1	NA	mg/kg-day	D - not classifiable	IRIS	12/1/1996
Iron	NA	(mg/kg-day)-1	NA	mg/kg-day	NA	NA	NA

-- Indicates that a toxicity value is not available based on the Toxicity Hierarchy available in the OSWER Toxicity Hierarchy memo dated 12/5/2003 (OSWER Directive 9285.7-53).

mg/kg-day is milligrams/kilogram bodyweight/day.

(1) IRIS is the Integrated Risk Information System available at www.epa.gov/iris.

(2) PPRTV = Provisional Peer Reviewed Toxicity Values

(3) CalEPA = California Environmental Proteciton Agency

Table 4B
Cancer Toxicity Data -- Inhalation
Niagara Mohawk Power Corporation Superfund Site- Saratoga Springs, New York

Chemicals of Concern	Unit Risk		Inhalation Cancer Slope Factor		Weight of Evidence Cancer Guidelines Description	Inhalation Unit Risk	
	Value	Units	Value	Units		Sources (1, 2, 3)	Date (MM/DD/YYYY)
Benzene	7.80E-03	$(mg/m^3)^{-1}$			A - known human carcinogen	IRIS	1/9/2000
Ethyl benzene	2.50E-03	$(mg/m^3)^{-1}$			D - not classifiable	CalEPA	7/21/2009
1,1'-biphenyl	NA	$(mg/m^3)^{-1}$			C - possible human carcinogen	PPRTV	4/4/2011
Napthalene	3.4E-02	$(mg/m^3)^{-1}$	--	--	C - possible human carcinogen	IRIS	9/17/1998
2-methyl naphthalene	NA	$(mg/m^3)^{-1}$	--	--	NA	NA	NA
Dibenzofuran	NA	$(mg/m^3)^{-1}$			D - not classifiable	NA	10/1/1990
Fluorene	NA	$(mg/m^3)^{-1}$			D - not classifiable	IRIS	12/1/1990
Pyrene	NA	$(mg/m^3)^{-1}$			D - not classifiable	IRIS	3/1/1991
Manganese (non-diet)	NA	$(mg/m^3)^{-1}$	--	--	D - not classifiable	IRIS	12/1/1996
Iron	NA	$(mg/m^3)^{-1}$	--	--	NA	NA	NA

- indicates inhalation cancer slope factor was not used.
ug/m3 is micrograms/cubic meter
IRIS is the Integrated Risk Information System available at www.epa.gov/iris
(1) IRIS is the Integrated Risk Information System available at www.epa.gov/iris.
(2) PPRTV = Provisional Peer Reviewed Toxicity Values
(3) CalEPA = California Environmental Proteciton Agency

Table 5A
Risk Characterization Summary
Niagara Mohawk Power Corporation Superfund Site- Saratoga Springs, New York

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Reasonable Maximum Exposure

				Carcinogenic Risk				Non-Cancer Hazard Quotient				
Medium	Exposure Medium	Exposure Point	Chemicals of Concern	Ingestion	Inhalation	Dermal	Exposue Routes Total	Primary Target Organs (Oral and Dermal/ Inhalation)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Overburden Groundwater/ Excelsior Avenue	Tap Water	Tap Water	Benzene	4.00E-04	2.00E-04	4.00E-05	6.4E-04	blood / blood	5.20E+00	2.50E+00	5.20E-01	8.2
			Ethyl benzene	2.00E-05	2.00E-05	9.00E-06	4.9E-05	Liver and Kidney / developmental	5.90E-02	2.10E-02	2.30E-02	0.1
			1,1'-biphenyl	1.00E-06		2.00E-06	3.0E-06	kidney / liver and kideny	1.00E-02	4.60E+00	1.10E-02	4.7
			Napthalene		1.0E-03		1.0E-03	bodyweight	1.6	4E+01	0.7	41.3
			2-methyl naphthalene					heart		NA	4.1	8.6
			Dibenzofuran					whole body	6.3	NA	7.4	14.0
			Fluorene					blood	1.5	NA	2.0	3.5
			Pyrene					Kidney	1.8	NA	5.5	7.3
			Manganese (non-diet)					Neurological / neurological	1.9	NA	0.1	2.0
			Iron					Gastrointestinal	6.70E-01		0.002	0.7
			Chemical Total	4E-04	1E-03	5E-05	2E-03		19.0	46.1	20.4	91
		Groundwater Risk Total					2E-03					91
Total Risk							2E-03					91

Total Blood HI Across All Media	12
Total Liver HI Across All Media	5
Total Kidney HI Across all Media	12
Total Development HI Across All Media	0.1
Total Neurological HI across All Media	2.1
Total Whole Body HI Across All Media	14
Total Heart HI Across all Media	8.6
Total Bodyweight HI Across all Media	41
Total Gastrointestinal HI Across All Media	0.67
Total CNS HI Across All Media	2.3
Total Respiratory HI Across All Media	41

Central Tendency Exposure

				Carcinogenic Risk				Non-Cancer Hazard Quotient				
Medium	Exposure Medium	Exposure Point	Chemicals of Concern	Ingestion	Inhalation	Dermal	Exposue Routes Total	Primary Target Organs (Oral and Dermal/ Inhalation)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Overburden Groundwater/ Excelsior Avenue	Tap Water	Tap Water	Benzene	7.00E-05	1.00E-05	1.00E-05	9.00E-05	blood / blood	2.6	0.4	0.43	3.5
			Ethyl benzene	4.00E-06	1.00E-06	3.00E-06	8.00E-06	Liver and Kidney / developmental	0.03	0.004	0.02	0.1
			1,1'-biphenyl	3.00E-07	9.00E-05	5.00E-07	9.08E-05	kidney / liver and kidney	0.005	0.8	0.009	0.8
			Napthalene		9.00E-05			bodyweight	0.8	7	0.6	8.4
			2-methyl naphthalene					heart	2.2		3.4	5.6
			Dibenzofuran					whole body	3.2		6.1	9.3
			Fluorene					blood	0.8		1.6	2.4
			Pyrene					Kidney	0.9		4.5	5.4
			Manganese (non-diet)					Neurological / neurological	1.0		0.1	1.0
			Iron					Gastrointestinal	0.3		0.001	0.3
			Chemical Total	7E-05	2E-04	1E-05	2E-04		12	8.3	17	37
		Groundwater Risk Total					2E-04					37
Total Risk							2E-04					37

-- indicates chemical not evaluated for carcinogenicity based on a lack of toxicity values.

HI - Liver and Kidney	0.9
HI- Kidney	6.2
HI = heart	5.6
HI = blood	5.9
HI = whole body	9.3
HI - Neurological Effects	1
HI - bodyweight	8.4

Table 5B
Risk Characterization Summary
Niagara Mohawk Power Corporation Superfund Site- Saratoga Springs, New York

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Reasonable Maximum Exposure

Medium	Exposure Medium	Exposure Point	Chemicals of Concern	Carcinogenic Risk				Non-Cancer Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposue Routes Total	Primary Target Organs (Oral and Dermal/ Inhalation)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Overburden Groundwater/ Excelsior Avenue	Tap Water	Tap Water	Benzene	2.00E-04	4.00E-05	2.00E-05	3E-04	blood / blood	12.0	0.15	8.90E-01	13.0
			Ethyl benzene	1.00E-05	3.00E-06	4.00E-06	2E-05	Liver and Kidney / developmental	0.14	0.00	4.00E-02	0.2
			1,1'-biphenyl	8.00E-07		7.00E-07	2E-06	kidney / liver and kideny	0.02	0.29	1.90E-02	0.3
			Napthalene		2.0E-04		2E-04	bodyweight	3.8	2.40	1.2	7.4
			2-methyl naphthalene					heart	10.0		7.1	17.1
			Dibenzofuran					whole body	15.0		13.0	28.0
			Fluorene					blood	3.5		3.4	6.9
			Pyrene					Kidney	4.30		9.4	13.7
			Manganese (non-diet)					Neurological / neurological	4.5		0.2	4.7
			Iron					Gastrointestinal	1.6		0.003	1.6
			Chemical Total	2E-04	2E-04	2E-05	6E-04		54.9	2.8	35.2	94
		Groundwater Risk Total					6E-04					94
Total Risk							6E-04					94

HI - Liver and Kidney	0.2
HI- Kidney	13.6
HI = heart	17.1
HI = blood	19.9
HI = whole body	28
HI = Gastrointestinal	1.6
HI - Neurological Effects	4.7
HI - bodyweight	7.4

Central Tendency Exposure

Medium	Exposure Medium	Exposure Point	Chemicals of Concern	Carcinogenic Risk				Non-Cancer Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposue Routes Total	Primary Target Organs (Oral and Dermal/ Inhalation)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Overburden Groundwater/ Excelsior Avenue	Tap Water	Tap Water	Benzene	1.00E-04	9.00E-06	1.00E-05	1.19E-04	blood / blood	6.1	0.4	0.74	7.3
			Ethyl benzene	6.00E-06	8.00E-07	3.00E-06	9.80E-06	Liver and Kidney / developmental	0.07	0.004	0.03	0.1
			1,1'-biphenyl	4.00E-07		5.00E-07	9.00E-07	kidney / liver and kidney	0.012	0.8	0.016	0.9
			Napthalene		6.00E-05		6.00E-05	bodyweight	1.9	7	1.0	9.9
			2-methyl naphthalene					heart	5.2		5.8	11.0
			Dibenzofuran					whole body	7.4		10.0	17.4
			Fluorene					blood	1.8		2.8	4.6
			Pyrene					Kidney	2.1		7.8	9.9
			Manganese (non-diet)					Neurological / neurological	2.2		0.1	2.3
			Iron					Gastrointestinal	0.8		0.002	0.8
			Chemical Total	1E-04	7E-05	1E-05	2E-04		27.6	8.3	28.3	65
		Groundwater Risk Total					2E-04					65
Total Risk							2E-04					65

-- indicates chemical not evaluated for carcinogenicity based on a lack of toxicity values.

HI - Liver and Kidney	0.1
HI- Kidney	10.8
HI = heart	11
HI = blood	11.9
HI = whole body	17.4
HI - Neurological Effects	2.3
HI - bodyweight	9.9

APPENDIX IV

ADMINISTRATIVE RECORD INDEX

ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

FINAL

02/26/2013 **Region ID: 02**

Site Name: NIAGARA MOHAWK POWER CORP. (SARATOGA SPRINGS PLANT)
CERCLIS: NYD980664361
OUID: 02
SSID: 023F
Action:

172135

Region ID: 02
Doc ID: 172135
Bates: **To:**
Date: 02/26/2013
Pages: 9
Title: ADMINISTRATIVE RECORD INDEX FOR OU2 FOR THE NIAGARA MOHAWK POWER CORPORATION SITE
Doc Type: INDEX

	Name	Organization
Author:	,	US ENVIRONMENTAL PROTECTION AGENCY

	Name	Organization

Region ID: 02
Doc ID: 152804
Bates: R2-0000001 **To:** R2-0000108
Date: 12/20/2006
Pages: 108
Title: TECHNICAL MEMORANDUM: EXTENT OF CONTAMINATION SURVEY FOR THE NIAGARA MOHAWK POWER CORPORATION
Doc Type: MEMORANDUM

	Name	Organization
Author:	ALOYSIUS, DAVE	LOCKHEED MARTIN TECHNOLOGY SERVICES

	Name	Organization
Addressee:	HUMPHREY, ALAN	EPA

Region ID: 02
Doc ID: 152807
Bates: R2-0000109 **To:** R2-0000122
Date: 12/17/2009
Pages: 14
Title: SITE MAP AND TABLES FOR SOIL SAMPLE AND GROUNDWATER ANALYTICAL RESULTS FOR THE NIAGARA MOHAWK POWER CORPORATION
Doc Type: FIGURE

	Name	Organization
Author:	,	ARCADIS

	Name	Organization
Addressee:	,	NATIONAL GRID

ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

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02/26/2013 **Region ID: 02**

Site Name: NIAGARA MOHAWK POWER CORP. (SARATOGA SPRINGS PLANT)
CERCLIS: NYD980664361
OUID: 02
SSID: 023F
Action:

Region ID: 02
Doc ID: 160681
Bates: R2-0000123 **To:** R2-0000123
Date: 01/18/2012
Pages: 1
Title: SOIL BORING VIDEO OF SPASTEEL SARATOGA SPRINGS, NEW YORK - NG-30 - 6-8 FEET FOR THE NIAGARA MOHAWK POWER CORPORATION
Doc Type: OTHER

Name	Organization
Name	Organization

Region ID: 02
Doc ID: 152809
Bates: R2-0000124 **To:** R2-0000124
Date: 01/18/2012
Pages: 1
Title: SOIL BORING VIDEO OF SPASTEEL SARATOGA SPRINGS, NEW YORK 002-NG30_10-15 FOR THE NIAGARA MOHAWK POWER CORPORATION
Doc Type: OTHER

Name	Organization
Name	Organization

Region ID: 02
Doc ID: 152810
Bates: R2-0000125 **To:** R2-0000125
Date: 01/18/2012
Pages: 1
Title: SOIL BORING VIDEO OF SPASTEEL SARATOGA SPRINGS, NEW YORK 003-NG30_15-20 FOR THE NIAGARA MOHAWK POWER CORPORATION
Doc Type: OTHER

Name	Organization
Name	Organization

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02/26/2013 Region ID: 02

Site Name: NIAGARA MOHAWK POWER CORP. (SARATOGA SPRINGS PLANT)
CERCLIS: NYD980664361
OUID: 02
SSID: 023F
Action:

Region ID: 02
Doc ID: 152811
Bates: R2-0000126 **To:** R2-0000126
Date: 01/18/2012
Pages: 1
Title: SOIL BORING VIDEO OF SPASTEEL SARATOGA SPRINGS, NEW YORK 004-NG30_20-25 FOR THE NIAGARA MOHAWK POWER CORPORATION
Doc Type: OTHER

Name	Organization
Name	**Organization**

Region ID: 02
Doc ID: 152812
Bates: R2-0000127 **To:** R2-0000127
Date: 01/18/2012
Pages: 1
Title: SOIL BORING VIDEO OF SPASTEEL SARATOGA SPRINGS, NEW YORK 005-NG31_8-10 FOR THE NIAGARA MOHAWK POWER CORPORATION
Doc Type: OTHER

Name	Organization
Name	**Organization**

Region ID: 02
Doc ID: 152813
Bates: R2-0000128 **To:** R2-0000128
Date: 01/18/2012
Pages: 1
Title: SOIL BORING VIDEO OF SPASTEEL SARATOGA SPRINGS, NEW YORK 006-NG31_10-15 FOR THE NIAGARA MOHAWK POWER CORPORATION
Doc Type: OTHER

Name	Organization
Name	**Organization**

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02/26/2013 **Region ID: 02**

Site Name: NIAGARA MOHAWK POWER CORP. (SARATOGA SPRINGS PLANT)
CERCLIS: NYD980664361
OUID: 02
SSID: 023F
Action:

Region ID: 02
Doc ID: 152814
Bates: R2-0000129 **To:** R2-0000129
Date: 01/18/2012
Pages: 1
Title: SOIL BORING VIDEO OF SPASTEEL SARATOGA SPRINGS, NEW YORK 007-NG31_15-20 FOR THE NIAGARA MOHAWK POWER CORPORATION
Doc Type: OTHER

Name	Organization
Name	**Organization**

Region ID: 02
Doc ID: 152815
Bates: R2-0000130 **To:** R2-0000130
Date: 01/18/2012
Pages: 1
Title: SOIL BORING VIDEO OF SPASTEEL SARATOGA SPRINGS, NEW YORK 008-NG31_20-25 FOR THE NIAGARA MOHAWK POWER CORPORATION
Doc Type: OTHER

Name	Organization
Name	**Organization**

Region ID: 02
Doc ID: 152816
Bates: R2-0000131 **To:** R2-0000131
Date: 01/18/2012
Pages: 1
Title: SOIL BORING VIDEO OF SPASTEEL SARATOGA SPRINGS, NEW YORK 009-NG32_5-10 FOR THE NIAGARA MOHAWK POWER CORPORATION
Doc Type: OTHER

Name	Organization
Name	**Organization**

ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

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02/26/2013 **Region ID: 02**

Site Name: NIAGARA MOHAWK POWER CORP. (SARATOGA SPRINGS PLANT)
CERCLIS: NYD980664361
OUID: 02
SSID: 023F
Action:

Region ID: 02
Doc ID: 152817
Bates: R2-0000132 **To:** R2-0000132
Date: 01/18/2012
Pages: 1
Title: SOIL BORING VIDEO OF SPASTEEL SARATOGA SPRINGS, NEW YORK 010-NG32_10-15 FOR THE NIAGARA MOHAWK POWER CORPORATION
Doc Type: OTHER

Name	Organization
Name	**Organization**

Region ID: 02
Doc ID: 152818
Bates: R2-0000133 **To:** R2-0000133
Date: 01/18/2012
Pages: 1
Title: SOIL BORING VIDEO OF SPASTEEL SARATOGA SPRINGS, NEW YORK 011-NG32_15-20 FOR THE NIAGARA MOHAWK POWER CORPORATION
Doc Type: OTHER

Name	Organization
Name	**Organization**

Region ID: 02
Doc ID: 152819
Bates: R2-0000134 **To:** R2-0000134
Date: 01/18/2012
Pages: 1
Title: SOIL BORING VIDEO OF SPASTEEL SARATOGA SPRINGS, NEW YORK 012-NG32_20-25 FOR THE NIAGARA MOHAWK POWER CORPORATION
Doc Type: OTHER

Name	Organization
Name	**Organization**

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02/26/2013 Region ID: 02

Site Name: NIAGARA MOHAWK POWER CORP. (SARATOGA SPRINGS PLANT)
CERCLIS: NYD980664361
OUID: 02
SSID: 023F
Action:

Region ID: 02
Doc ID: 152820
Bates: R2-0000135 **To:** R2-0000135
Date: 01/18/2012
Pages: 1
Title: SOIL BORING VIDEO OF SPASTEEL SARATOGA SPRINGS, NEW YORK 013-NG33_5-10 FOR THE NIAGARA MOHAWK POWER CORPORATION
Doc Type: OTHER

Name	Organization
Name	Organization

Region ID: 02
Doc ID: 152821
Bates: R2-0000136 **To:** R2-0000136
Date: 01/18/2012
Pages: 1
Title: SOIL BORING VIDEO OF SPASTEEL SARATOGA SPRINGS, NEW YORK 014-NG33_10-15 FOR THE NIAGARA MOHAWK POWER CORPORATION
Doc Type: OTHER

Name	Organization
Name	Organization

Region ID: 02
Doc ID: 152822
Bates: R2-0000137 **To:** R2-0000137
Date: 01/18/2012
Pages: 1
Title: SOIL BORING VIDEO OF SPASTEEL SARATOGA SPRINGS, NEW YORK 015-NG33_15-20 FOR THE NIAGARA MOHAWK POWER CORPORATION
Doc Type: OTHER

Name	Organization
Name	Organization

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02/26/2013 Region ID: 02

Site Name: NIAGARA MOHAWK POWER CORP. (SARATOGA SPRINGS PLANT)
CERCLIS: NYD980664361
OUID: 02
SSID: 023F
Action:

Region ID: 02
Doc ID: 152801
Bates: R2-0000138 **To:** R2-0000636
Date: 07/26/2012
Pages: 499
Title: REVISED JULY 2012 FEASIBILITY STUDY REPORT FOR THE NIAGARA MOHAWK POWER CORPORATION
Doc Type: REPORT

	Name	Organization
Author:	,	ARCADIS of New York, Inc.
	Name	**Organization**
Addressee:	,	NATIONAL GRID

Region ID: 02
Doc ID: 152800
Bates: R2-0000637 **To:** R2-0000640
Date: 07/26/2012
Pages: 4
Title: TRANSMITTAL OF THE JULY 2012 REVISED FEASIBILITY STUDY REPORT FOR THE NIAGARA MOHAWK POWER CORPORATION
Doc Type: LETTER

	Name	Organization
Author:	JONES, WILLIAM R	NATIONAL GRID
	Name	**Organization**
Addressee:	JON, MARIA	EPA

Region ID: 02
Doc ID: 152802
Bates: R2-0000641 **To:** R2-0000645
Date: 01/31/2013
Pages: 5
Title: NATIONAL GRID RESPONSES TO US EPA COMMENTS RECEIVED ON THE DRAFT HUMAN HEALTH RISK ASSESSMENT FOR THE NIAGARA MOHAWK POWER CORPORATION
Doc Type: REPORT

	Name	Organization
Author:	YOUNG, TERRY	ARCADIS of New York, Inc.
	Name	**Organization**
Addressee:	JON, MARIA	EPA

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02/26/2013 Region ID: 02

Site Name: NIAGARA MOHAWK POWER CORP. (SARATOGA SPRINGS PLANT)
CERCLIS: NYD980664361
OUID: 02
SSID: 023F
Action:

Region ID: 02
Doc ID: 152803
Bates: R2-0000646 **To:** R2-0000725
Date: 01/31/2013
Pages: 80
Title: HUMAN HEALTH RISK ASSESSMENT FOR THE NIAGARA MOHAWK POWER CORPORATION
Doc Type: REPORT

	Name	Organization
Author:	,	ARCADIS of New York, Inc.
	Name	**Organization**
Addressee:	,	NATIONAL GRID

Region ID: 02
Doc ID: 160882
Bates: R2-0000726 **To:** R2-0000727
Date: 02/25/2013
Pages: 2
Title: NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION'S CONCURRENCE ON THE PROPOSED PLAN FOR OU2 FOR THE NIAGARA MOHAWK POWER CORPORATION SITE
Doc Type: LETTER

	Name	Organization
Author:	SCHICK, ROBERT	NY STATE DEPT OF ENVIRONMENTAL CONSERVATION (NYSDEC)
	Name	**Organization**
Addressee:	MUGDAN, WALTER E	EPA, REGION 2

Region ID: 02
Doc ID: 160880
Bates: R2-0000728 **To:** R2-0000751
Date: 02/26/2013
Pages: 24
Title: PROPOSED PLAN FOR OU2 FOR THE NIAGARA MOHAWK POWER CORPORATION SITE
Doc Type: PLAN

	Name	Organization
Author:	,	US ENVIRONMENTAL PROTECTION AGENCY
	Name	**Organization**

ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

FINAL

02/26/2013 **Region ID: 02**

Site Name: NIAGARA MOHAWK POWER CORP. (SARATOGA SPRINGS PLANT)
CERCLIS: NYD980664361
OUID: 02
SSID: 023F
Action:

APPENDIX V

STATE LETTER OF CONCURRENCE

New York State Department of Environmental Conservation
Division of Environmental Remediation
Office of the Director, 12th Floor
625 Broadway, Albany, New York 12233-7011
Phone: (518) 402-9706 • **Fax:** (518) 402-9020
Website: www.dec.ny.gov

Joe Martens
Commissioner

Sent Via Email Only

March 29, 2013

Mr. Walter Mugdan, Director
Emergency & Remedial Response Division
U.S. Emergency Protection Agency
Region II
290 Broadway
New York, NY 10007-1866

Re: Record of Decision
Site Name: NM - Saratoga Springs Excelsior St. MGP, OU2
Site No. 546015
City of Saratoga, Saratoga County

Dear Mr. Mugdan:

The New York State Department of Environmental Conservation (DEC), in consultation with the New York State Department of Health, has reviewed the Record of Decision (ROD) for the DEC Operable Unit 2 (OU2) of the Niagara Mohawk Power Corporation Superfund Site, prepared by the United States Environmental Protection Agency (EPA).

The remedy as described in the March 2013 ROD prepared by the EPA calls for:

1. Treating via in-situ soil stabilization (ISS) non-aqueous phase liquid (NAPL)-impacted soil in the Old Red Spring Area. This remedy component includes removing the top five feet of surface soil to account for the increase in volume of the ISS-solidified material, and to allow for the addition of two feet of clean backfill;

2. Removing surface soil (i.e., up to two feet below grade) in areas not targeted for ISS treatment in the Old Red Spring Area, and restoring with imported clean fill underlain by a demarcation layer;

3. Enhancing biodegradation of contaminated subsurface soil and groundwater in the Old Red Spring Area by the application of amendments, such as organic nutrients, oxygen-releasing compounds, and/or chemical products;

4. Plugging and abandoning the existing Old Red Spring well and installing a replacement well with double casing;

5. Installing a containment barrier wall and a subsurface mat to encapsulate NAPL-impacted soil under Excelsior Avenue;

6. Conducting long-term groundwater monitoring including periodic sampling of monitoring wells and analysis for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and metals;

7. Implementing institutional controls (ICs) at the properties in the OU2 Project Area, which would include the development of (e.g., restrictive covenants) to be filed in the property records of Saratoga County. The ICs relating to soil exposure would require compliance with an EPA-approved Site Management Plan (SMP) and would:

    a) be imposed for all areas where Contaminants of Concern (COCs) exceed the unrestricted use Soil Cleanup Objectives (SCOs) listed in 6 NYCRR Section 375-6.3(b);
    b) prevent any unauthorized disturbance of the implemented remedy under Excelsior Avenue and in the areas of ISS in the Old Red Spring Area; and
    c) prohibit single family housing and vegetable gardening, but allow for recreational and/or commercial use of the Old Red Spring Area, which New York State defines as "restricted residential" use.

The IC relating to groundwater exposure would restrict the use of the shallow groundwater aquifer throughout the OU2 Project Area and would require compliance with the SMP. The IC would also restrict new construction throughout the OU2 Project Area unless an evaluation of the potential for vapor intrusion is conducted, and mitigation, if necessary, is performed in compliance with an EPA-approved SMP.

8. Developing a site management plan (SMP) to ensure the effectiveness of the engineering and institutional controls, as well as the long-term groundwater monitoring, periodic reviews and certifications.

9. Restoring disturbed areas (including vegetative surfaces, parking lots, roadways, sidewalks, curbs, etc.) following the completion of the remedial construction activities by replacing them to their original pre-construction and topographic contours.

The environmental benefits of the selected remedy may be enhanced by consideration, during the design, of technologies and practices that are sustainable in accordance with the EPA's Region 2 Clean and Green Energy Policy and DEC's Green Remediation Policy. This will include consideration of green remediation technologies and practices.

DEC concurs with the ROD alternative selected by EPA, as described above. If you have any questions, please contact Mr. George Heitzman, at (518) 402-9662.

Sincerely,

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

ec: M. Jon, EPA
S. Badalamenti, EPA
S. McLaughlin/D. Ripstein, DOH
M. Ryan, DEC
G. Heitzman, DEC
D. Crosby, DEC
R. Huyck, DEC

APPENDIX VI

RESPONSIVENESS SUMMARY

RESPONSIVENESS SUMMARY

INTRODUCTION

A responsiveness summary is required by the regulations promulgated under the Superfund statute. It provides a summary of comments and concerns received during the public comment period, as well as the responses of EPA to those comments and concerns. All comments received were considered by EPA in its final decision regarding the selection of the remedy for the OU 2 Project Area.

SUMMARY OF COMMUNITY RELATIONS ACTIVITIES

The Proposed Plan for the OU 2 Project Area was released to the public on February 26, 2013, along with the Feasibility Study (FS) Report (which contains the results of the Remedial Investigation (RI)), and the Human Health Risk Assessment report. EPA and NYSDEC's preferred remedy and the basis for that preference were identified in the Proposed Plan. These documents, including the Proposed Plan, were made available to the public in information repositories maintained at the EPA Docket Room in the Region 2 offices at 290 Broadway, 18th Floor, New York, New York and the Saratoga Springs Public Library, Reference Section, 49 Henry Street Saratoga Springs, New York 12866.

A notice of the commencement of the public comment period, the public meeting date, a description of the preferred remedy, EPA contact information, and the availability of the above-referenced documents was published in *The Saratogian*, a local newspaper, on February 26, 2013. The 30-day public comment period ran from February 26 through March 28, 2013. EPA held a public meeting on March 7, 2013 at 7:00 P.M. at the Saratoga Spa State Park Administration Building to present the findings of the RI/FS and to answer questions from the public about the remedial alternatives and the proposed remedy.

Responses to the comments and questions received at the public meeting, along with other written comments received during the public comment period, are included in this Responsiveness Summary.

Attached to this Responsiveness Summary are the following Attachments:

Attachment 1	Proposed Plan
Attachment 2	Public Notice
Attachment 3	March 7, 2013 Public Meeting Sign-In Sheets
Attachment 4	March 7, 2013 Public Meeting Transcript
Attachment 5	Written Comments Submitted During the Public Comment Period

SUMMARY OF COMMENTS AND EPA RESPONSES

The comments received during the public comment period and EPA's responses to them are summarized below.

1. **Comment #1:** The proposed plan indicates that the DNAPL is not moving off-site, that Spring Run Creek is not impacted by OU 2, and that public health risks are minimal if one were to also consider the Saratoga County ban on private well usage. Why not then consider the No Action Alternative (Alternative 1)?

   EPA's Response #1: The No Action Alternative would not satisfy the requirements of the Superfund law. Under its legal authorities, EPA's primary responsibility at Superfund sites is to undertake remedial actions that achieve protection of human health and the environment. In addition, Section 121 of CERCLA establishes several other statutory requirements and preferences that the selected remedy must meet. One requirement is that the selected remedy must comply with applicable or relevant and appropriate requirements (ARARs) established under federal and state environmental laws unless a statutory waiver is justified. The selected remedy also must be cost-effective and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Finally, the law includes a preference for remedies that employ treatment that permanently and significantly reduce the volume, toxicity, or mobility of hazardous wastes as their principal element.

   NAPL and NAPL-impacted soil and groundwater would not be addressed with Alternative 1. Groundwater would continue to be impacted by NAPL source material for an indefinite period of time. The impacted groundwater would continue to contain one or more contaminants of concern (COCs) at concentrations that exceed the NYSDEC Class GA standards and/or federal Maximum Contaminant Levels (MCLs). While current groundwater data indicate that the contamination is currently limited to the OU 2 Project Area and is not migrating beyond the OU 2 Project Area, it is anticipated that a groundwater plume extending beyond the OU 2 Project Area and potentially discharging into Spring Run Creek could potentially occur in the future if the No Action Alternative were to be selected. It should be noted that contamination from the NMPC Property reached Spring Run Creek prior to implementation of the OU 1 remedy.

   The No Action Alternative would not address the identified human health risk in the OU 2 Project Area. The Baseline Human Health Risk Assessment considered exposure to COCs in the overburden (shallow) groundwater at the OU 2 Project Area assuming no active remediation or institutional controls. The carcinogenic risks to future adult residents were 2 x 10^{-3} (two in 1,000) which exceeds the acceptable risk range. The sum of all estimated RME cancer risks for the child resident is 6 x10^{-4} (6 in 10,000). The total estimated child cancer risk under RME conditions exceeds the risk range. The non-cancer Hazard Index (HI) for adult resident receptors is 91 under RME conditions and 37 under CTE conditions, which both exceed the goal of protection of an HI of 1.

2. **Comment #2:** One commenter asked why the Old Red Spring well could not be left alone since it is not currently affected by the Site, and suggested that if it needed to be moved to implement the cleanup, perhaps sheet piling could be used instead.

   EPA Response #2: Replacement of the Old Red Spring well refers to only the underground, non visible components of the well. The existing and visible pavilion and fountain above ground would not be replaced, moved or impacted. The underground well structure is old and not likely to have been double cased when it was constructed. A new well with double casing would protect the integrity of the clay layer protecting the deeper aquifer supplying the Old Red Spring. The remedial action will result in significant earth moving activity in very close proximity to the underground and possibly fragile well. Such activity could result in the contaminants from the shallow aquifer moving into the deeper aquifer through the well. By prudently plugging and replacing the existing underground well with a new double cased well, drawing water from the same deep aquifer several yards away from the original location, it can be assured that the integrity of the seal at the clay layer will continue to protect the deep aquifer long into the future. It is anticipated that the vibration from installation of sheet piling, as suggested by the commenter, in close proximity to the well could be similarly detrimental to the integrity of the well. The well replacement would take place after the soil moving activities are completed.

3. **Comment #3:** Will air monitoring be conducted during the remedial actions?

   EPA Response #3: Yes, a community air monitoring program will be prepared, made available to the public, and implemented during the remedial action activities. Air emissions control and fugitive dust suppression measures will be implemented to limit the potential for organic vapor, dust, and dust emissions from the OU 2 Project Area. Such control measures are anticipated to include the following spraying water, covering excavation faces, material stockpiles, etc., with polyethylene sheeting, minimizing exposed excavation surface areas, and applying vapor suppressant foam. Control measures will be implemented based on visual or olfactory observations, and the results of community air monitoring for volatile organic compounds (VOCs) and particulate matter less than 10 microns in diameter (PM_{10}). Real-time community air monitoring for VOCs and PM_{10} will be performed at representative locations upwind and downwind of the area subject to remediation during construction activities.

   Comment #4: Can the remedial action be implemented outside of the summer months during the heavy tourist season so as to reduce the community impacts and not interfere with the annual Fourth of July 4K race?

   EPA Response #4: Yes, EPA will ensure that the work does not interfere with Fourth of July festivities through close coordination between the City of Saratoga Springs and National Grid. Each component of the remedial action is anticipated to be relatively short in duration. Excelsior Avenue will continue to be open for through traffic, though it will need to be

temporarily restricted to one lane for a short duration. EPA will endeavor to minimize any disruption during the summer months.

5. **Comment #5:** Aesthetically, will the community be left with an eyesore after the remedial actions have been completed?

   EPA Response #5: EPA understands that the community has significant concerns regarding how the OU2 Project Area will be left after remediation. EPA will ensure that all soil, asphalt and concrete surfaces and landscaping impacted by the selected remedy action will be restored to existing grades and in-kind to original conditions.

4. **Comment #6:** An old brick culvert runs through the area where ISS is proposed, will damage to the culvert be avoided?

   EPA Response #6: During the design stage, the precise location of the culvert will be determined as will other underground utilities. Project plans will highlight the need to avoid impacting the brick sewer during remediation and restoration activities. With today's excavation technologies, which include GPS-guided excavation buckets on excavation equipment, very precise excavation is possible which will avoid any damage to the old brick culvert.

7. **Comment #7**: On which properties would institutional controls be imposed?

   EPA Response #7: Institutional controls will be imposed on the following properties: a section of Excelsior Avenue and a portion of the Old Red Spring Area, which includes both the municipally-owned park property and part of a parking lot on privately-owned property where contaminants of concern were detected.

ATTACHMENT 1

TO RESPONSIVENESS SUMMARY

PROPOSED PLAN

Superfund Proposed Plan

U.S. Environmental Protection Agency, Region II

Niagara Mohawk Power Corporation Superfund Site

Saratoga Springs, New York

February 2013

EPA ANNOUNCES PROPOSED PLAN

This Proposed Plan designates Operable Unit 2 (OU 2) for the Niagara Mohawk Power Corporation (NMPC) Superfund Site (Site). This Plan describes the remedial alternatives and identifies the rationale for the preferred remedy for contaminated subsurface soils and groundwater in an area of the Site referred to in this plan as the OU 2 Project Area, which is generally described on page 2 and depicted in Figure 2 attached to this Proposed Plan. This Proposed Plan was developed by the U.S. Environmental Protection Agency (EPA), in consultation with the New York State Department of Environmental Conservation (NYSDEC). EPA is issuing this Proposed Plan as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, and Sections 300.430(f) and 300.435(c) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The nature and extent of the contamination in the OU 2 Project Area and the associated human health and ecological risks are summarized in this Proposed Plan and described in greater detail in the July 2012, Feasibility Study (FS) Report (which contains the results of the Remedial Investigation (RI) and the January 2013, Human Health Risk Assessment. The remedial alternatives summarized in this Proposed Plan are also described in the FS report. EPA and NYSDEC encourage the public to review these documents to gain a more comprehensive understanding of the Site and the Superfund activities that have been conducted.

This Proposed Plan is being provided as a supplement to the above-noted documents to inform the public of EPA and NYSDEC's preferred remedy and to solicit public comments pertaining to all of the remedial alternatives evaluated, including the preferred alternative. EPA and NYSDEC's preferred alternative consists of the following:

MARK YOUR CALENDAR

February 26, *2013 – March 28, 2013:* Public comment period related to this Proposed Plan.

March 7, 2013 at 7:00 P.M.: Public meeting at the Saratoga Spa State Park Administration Building
19 Roosevelt Drive, Saratoga Springs, NY 12866

1. Treating via in-situ soil stabilization (ISS) non-aqueous phase liquid (NAPL)[1]-impacted soil in the Old Red Spring Area.[2] This component includes removing the top 5 feet of surface soil to account for the increase in volume of the ISS-solidified material, and to allow for the addition of 2 feet of clean backfill;
2. Removing surface soil (i.e., up to two feet below grade) in areas not targeted for ISS treatment in the Old Red Spring Area and restoring with imported clean fill underlain by a demarcation layer;
3. Enhancing biodegradation of low levels of contaminated subsurface soil and groundwater in the Old Red Spring Area by the application of amendments, such as organic nutrients, oxygen-releasing compounds, and/or chemical products;
4. Plugging and abandoning the existing Old Red Spring well and installing a replacement well;
5. Installing a containment barrier wall and a subsurface mat to encapsulate NAPL-impacted soil under Excelsior Avenue;

[1] NAPL is concentrated contamination, typically oil-like, that forms a separate phase and does not dissolve in water.

[2] The Old Red Spring Area consists of a municipally-owned property containing the Old Red Spring well and part of a paved parking lot for a commercial business located west of the Old Red Spring well.

6. Conducting long-term groundwater monitoring;
7. Implementing institutional controls (ICs) at the properties in the OU 2 Project Area, which would include the development of environmental easements/restrictive covenants to be filed in the property records of Saratoga County. The ICs relating to soil exposure would require compliance with an EPA-approved Site Management Plan (SMP) and would: a) be imposed for all areas where COCs exceed unrestricted use soil cleanup objectives (SCOs) (6 NYCRR Section 375-6.3(b)); b) prevent any disturbance of the implemented remedy under Excelsior Avenue and in the areas of ISS; and c) prohibit single family housing and vegetable gardening, but would allow for recreational and/or commercial use of the Old Red Spring Area, which New York State defines as "restricted-residential" use. The ICs relating to groundwater exposure would restrict the use of the shallow groundwater aquifer throughout the OU 2 Project Area and would require compliance with the SMP. The ICs would also restrict new construction throughout the OU 2 Project Area unless an evaluation of the potential for vapor intrusion is conducted, and mitigation, if necessary, is performed in compliance with an EPA-approved SMP.
8. Developing an SMP to ensure the effectiveness of the engineering and institutional controls, as well as the long-term groundwater monitoring, periodic reviews and certifications.

The remedy described in this Proposed Plan is the preferred remedy for the OU 2 Project Area at this Site. Changes to the preferred alternative or a change from the preferred alternative to another alternative may be made if public comments or additional data indicate that such a change will result in a more appropriate remedial action. The final decision regarding the selected remedy will be made after EPA has taken all public comments into consideration.

COMMUNITY ROLE IN SELECTION PROCESS

EPA is soliciting public comment on all of the alternatives considered in the Proposed Plan and in the detailed analysis section of the FS Report. EPA relies on public input to ensure that the concerns of the community are considered when selecting an effective remedy for this operable unit of the Site, and may select a remedy other than the preferred alternative based on public comment. To this end, the RI data and FS report, the Human Health Risk Assessment, and this Proposed Plan have been made available to the public at the Saratoga Springs Public Library for a public comment period which begins on February 26, 2013.

INFORMATION REPOSITORIES

Copies of the Proposed Plan and supporting documentation are available at the following Information repositories:

Saratoga Springs Public Library
Reference Section
49 Henry Street
Saratoga Springs, New York 12866
518-584-7860

Hours: Monday –Friday: 9:00 AM to 9 PM
Saturday: 9:00 AM to 5:00 PM
Sunday: Noon to 5:00 PM

USEPA-Region II
Superfund Records Center
290 Broadway, 18th Floor
New York, New York 10007-1866
(212) 637-4308

Hours: Monday – Friday: 9:00 AM to 5:00 PM
The Proposed Plan can also be found under "Additional Documents" on EPA's Niagara Mohawk Power Corporation Superfund website: http://www.epa.gov/region02/superfund/npl/niagaramohawk/

A public meeting will be held during the public comment period at the Saratoga Spa State Park Center located at 19 Roosevelt Drive, Saratoga Springs, NY 12866 on March 7, 2013 at 7:00 P.M. to present the conclusions of the RI/FS, to elaborate further on the reasons for recommending the preferred remedy, and to receive public comments.

Comments received at the public meeting, as well as written comments, will be documented in the Responsiveness Summary section of the Record of Decision (ROD), the document which formalizes the selection of the remedy.

Written comments on the Proposed Plan should be addressed to:

Maria Jon
Remedial Project Manager
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New York, New York 10007-1866
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NiagaraMohawkComments.Region2@epa.gov

SCOPE AND ROLE OF ACTION

Site remediation activities are sometimes segregated into different phases or operable units, so that remediation of different environmental media or areas of a site can proceed separately. Such a phased approach results in an expeditious remediation of the entire site. EPA has designated two operable units for the Niagara Mohawk Power Corporation Site as described below.

The first operable unit (OU 1) includes five areas: 1) the former manufactured gas plant (MGP), which is a 7-acre parcel (formerly owned by the Niagara Mohawk Power Corporation (NMPC) and currently owned by National Grid, (referred to as National Grid Property or NMPC Property), 2) an approximately 2.3-acre property referred to as the former Skating Rink property, 3) an abandoned underground brick storm sewer, 4) sections of Spring Run Creek, and 5) a section of property owned by the former Spa Steel Products Company, Inc. (Spa Steel Property). In September 1995, EPA issued a Record of Decision describing the final remedy for these areas of the Site. In September 2001, an Explanation of Significant Differences (ESD) was signed, which described changes to the September 1995 ROD. The ESD modified the cleanup approach for the former Skating Rink property and a section of the abandoned brick storm sewer, and also documented that the historic brick Round House located on the NMPC property would be preserved.

OU 2, which is the subject of this Proposed Plan, includes contaminated subsurface soil and groundwater in an approximately 0.5 acre area that consists of a section of Excelsior Avenue, a section of a paved parking lot for a commercial business owned by The Mill, LLC, and a small green space that includes the Old Red Spring well and an associated pavilion.

The primary objective of this proposed action for OU 2 is to remediate contaminants present in subsurface soils, to minimize impacts to the groundwater from those contaminants, and to minimize the potential future health and environmental impacts.

OU 2 also addresses remediation of source material in the form of NAPL that has migrated from the former manufactured gas plant, deposited on the top of clay and has impacted subsurface soil in the Old Red Spring area. This NAPL-impacted subsurface soil acts as a potential reservoir for migration of contamination to groundwater if untreated and, therefore it constitutes principal threat waste.

Principal threat wastes are source materials that include or contain hazardous substances that act as a reservoir for the migration of contamination to groundwater, surface water, or air, or act as a source for direct exposure. These materials are considered to be highly toxic, highly concentrated, or highly mobile and, generally, cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur.

SITE BACKGROUND

Site Description

The OU 2 Project Area is located in Saratoga Springs, New York (Figure 2), and is located at the intersection of Excelsior Avenue, Warren Street, and High Rock Avenue (Figure 2). This area is comprised of a parcel owned by the City of Saratoga Springs that is used as a park and contains the Old Red Spring well; and an adjacent parcel owned by The Mill, LLC (a remediated and delisted NYSDEC inactive hazardous waste site, number 546036, known as the Van Raalte Knitting Mill Site that contains a paved parking lot for a commercial business located west of Old Red Spring; and part of the Excelsior Avenue corridor. The Project Area is bounded to the north by the former Spa-Steel Property, to the south by High Rock Avenue, and to the east by Warren Street. The Spa Steel Property and the National Grid Property are located to the north of Excelsior Avenue (Figure 2). An active bedrock groundwater well, referred to as the Old Red Spring, and an associated pavilion are located in the eastern portion of the OU 2 Project Area.

Site History

The NMPC Property has been used for industrial purposes since 1868, and was used to manufacture gas from coal for lighting purposes. Currently the

property is owned and operated by National Grid which acquired NMPC including its property holdings.

Gas manufacturing ceased in 1929 and the facility was converted to gas storage and distribution, until the introduction of natural gas service into the region in the 1950s. The gas manufacturing operations produced coal tars and other materials as by-products. These wastes contain hazardous substances which were disposed of at various locations on the National Grid Property. Investigations at the Site revealed the presence of polynuclear aromatic hydrocarbons (PAHs) and some volatile organic compounds (VOCs) in groundwater and soil.

Site Geology/Hydrogeology

The geology beneath the OU 2 Project Area property consists of urban fill material (fine to medium-grained sand with clay, rock fragment, brick fragment, and some construction debris) approximately 8-12 feet thick; peat/clayey silt approximately 6-8 feet thick; fine to coarse sand approximately 3-8 feet thick; silty clay approximately 50 feet thick and approximately 50 feet of till (poorly sorted mix of boulders, cobbles, gravel, sand, silt, and clay) underlain by bedrock identified as the Canajoharie Shale.

The silty clay unit is encountered between 15-25 feet below ground surface (bgs) throughout the Site and rises to the east where it is encountered approximately 8-10 feet bgs. The silty clay unit serves as a confining layer.

The groundwater table occurs within the fine to coarse sand and fill material, peat material and clayey silt material, ranging in depth of 5-10 feet bgs across the Site. The groundwater flow direction is generally southeast across the Site.

Residents of the City of Saratoga Springs are served by a public water supply which is drawn from Loughberry Lake, located 2,000 feet upgradient of the Site.

RESULTS OF THE OU 2 REMEDIAL INVESTIGATION (RI)

Investigations were conducted from 2008 to 2011. Coal tar or non-aqueous phase liquid (NAPL) was found in the subsurface soil and groundwater in the OU 2 Project Area. NAPL from the former manufactured gas plant, in the form of coal tar, has migrated downward to the silty clay surface which serves as a confining unit. Upon reaching the silty clay confining unit, the NAPL spread laterally following the contours of the clay surface and the hydraulic gradient. The ultimate path that the NAPL has taken depended on the degree of slope of the clay surface and the magnitude of the hydraulic gradient. The hydraulic gradient on the Spa Steel Property and the OU 2 Project Area is in the southeast direction, but NAPL has migrated in the southwest direction from the former National Grid Property (i.e., across the hydraulic gradient). As such, it appears the surface of the confining clay unit is the primary controlling mechanism for the NAPL migration to the west and southwest of the National Grid Property. This is further supported by the boring logs of monitoring wells where the clay layer is slightly depressed in the area of monitoring wells MW-EPA-05 and MW-EPA-08. NAPL has been observed in both of these areas and the distribution of NAPL is generally consistent with the undulations in the clay surface.

Additional information regarding the nature and extent of NAPL and contaminants of concern (COCs) (i.e., benzene, toluene, ethylbenzene, xylene (BTEX) and PAHs) in the OU 2 Project Area soils and groundwater is provided below.

Soil

The surface soil for the OU 2 Project Area is either fill (fine to medium-grained sand with clay, rock fragment, brick fragment, and some construction debris) or it is covered by asphalt pavement. Results of analysis of shallow soil samples collected in the OU 2 Project Area revealed that contaminants are present in a surface sample (SS-06-02) at low concentrations. This surface soil was collected on the north side of Excelsior Avenue, and the only contaminants detected were benzo(k)fluoranthene at 1.9 milligrams per kilogram (mg/kg) and chrysene at 3 mg/kg. The unrestricted soil cleanup objectives for these contaminants are 0.8 mg/kg and 1 mg/kg, respectively.

NAPL was observed in subsurface soils at depths from 11 feet bgs to 25 ft bgs at seven locations within the OU 2 Project Area (i.e., NG-14, NG-15, NG-17B, NG-28, SS-06-03, SS-06-08, and SS-06-14). At these locations, the depth of observed NAPL generally corresponds to the depth of the confining clay unit surface. The confining clay unit has been observed to be a good capillary barrier to further downward migration of NAPL. No NAPL has been observed below the surface of this clay unit in any soil boring installed within or adjacent to the OU 2 Project Area.

NAPL has been observed in the OU 2 Project Area in small quantities (i.e., droplets, stains, sheens), over

relatively thin (i.e., 0.1 to 2-foot) intervals, and in discontinuous areas throughout the OU 2 Project Area. NAPL is encountered at depths greater than 11 feet below grade beneath Excelsior Avenue and greater than 15 feet below grade in the Old Red Spring Area.

During the RI, approximately 43 soil borings were drilled within the OU 2 Project Area. Analytical results of subsurface samples indicate that soil samples collected from 11 soil borings contained COCs. NAPL-impacted soil was observed in boring SS-06-04 at 17.5 feet bgs. Analytical results of a sample collected at this location detected benzo(a)pyrene at 120 mg/kg, benzo(k)fluoranthene at 62 mg/kg, chrysene at 150 mg/kg, naphthalene at 2000 mg/kg. At location NG-14 impacted soil was observed at 21 feet bgs and benzo(a)pyrene was detected a 17 mg/kg, benzo(k)fluoranthene at 11 mg/kg, chrysene at 21 mg/kg and naphthalene at 180 mg/kg.

Groundwater

The results of Site investigations conducted in the OU 2 Project Area indicate the presence of contaminants of concern (COCs) dissolved in shallow overburden groundwater. During the May 2009 sampling event, groundwater samples collected from monitoring wells MW-EPA-02, MW-EPA-04, MW-EPA-05, MW-EPA-07, and MW-EPA-08 contained one or more COCs at concentrations that exceeded the NYSDEC Class GA standards and/or federal Maximum Contaminant Levels (MCLs). Ethylbenzene was detected in this area at 920 micrograms per liter (ug/L), benzene at 650 ug/L, benzo(a)anthracene at 690 ug/L, and naphthalene at 9,600 ug/L. Groundwater samples collected from monitoring wells MW-EPA-09, MW-EPA-10, MW-SS-09-06, MN-SS-08-05, all located just beyond and downgradient of the OU-2 Project Area, were all at non-detection levels for the COCs.

The Old Red Spring well water is obtained from a deep aquifer located more than 120 feet bgs. The shallow overburden and deep aquifer are isolated from each other by over 50 feet of a confining silty clay and an additional 50 feet of till. Historical groundwater samples collected from the Old Red Spring well indicate that the deep aquifer does not contain any COCs.

Based on the results of soil and groundwater sampling conducted in the OU 2 Project Area, the groundwater contamination is limited to the groundwater underlying the OU 2 Project Area. The levels of contamination in the groundwater do not appear to be mobile, are not migrating away from the OU 2 Project Area and do not show a significant area-wide impact on groundwater.

Based on the OU 2 Project Area investigation data, soil vapor intrusion south of Excelsior Avenue is not a current exposure concern. If the areas near Old Red Spring are developed in the future, additional soil vapor intrusion evaluation should be conducted.

RISK SUMMARY

The purpose of the risk assessment is to identify potential cancer risks and non-cancer health hazards at the Site assuming that no further remedial action is taken. A baseline human health risk assessment was performed to evaluate current and future cancer risks and noncancer health hazards based on the results of sampling conducted during the remedial investigation.

As described in the "What Is Risk and How Is It Calculated?" box on the next page, the cancer risk is compared to EPA's acceptable cancer risk range of 10^{-6} (one in a million) to 10^{-4} (one in ten thousand). The lower end of EPA's acceptable risk range is 10^{-6} (one in a million). Cancer risks that exceed 10^{-4} (one in ten thousand) indicate that a remedial action should be taken. Generally, no action is taken when the cancer risk is lower than 10^{-6}. For non-carcinogenic effects, a health Hazard Index (HI) greater than 1 indicates a potential for non-carcinogenic health effects.

Baseline Human Health Risk Assessment

As part of the RI/FS, a baseline human health risk assessment was conducted to estimate the risks and hazards associated with the current and future effects of contaminants on human health. A baseline human health risk assessment is an analysis of the potential adverse human health effects caused by hazardous-substance exposure in the absence of any actions to control or mitigate these under current and future land uses.[3] The baseline human health risk assessment considered exposure to COCs in the overburden groundwater at the OU 2 Project Area assuming no active remediation or institutional controls.

A four-step human health risk assessment process was used for assessing Site-related cancer risks and non-cancer health hazards. The four-step process is comprised of: Hazard Identification of Chemicals of

3 The OU 2 Project Area is currently zoned as Transect Zone 5 (T-5) Neighborhood Center. The intent of this district is a mixed-use neighborhood center meant to accommodate a variety of non-residential and residential uses, building types and lot sizes, and the district is meant to provide linkages to adjacent neighborhoods conducive to pedestrian activity (City of Saratoga, 2007).

Concern, Exposure Assessment, Toxicity Assessment, and Risk Characterization (see box on the next page "What is Risk and How is it Calculated").

The baseline human health risk assessment evaluated potential risks to human receptors under current/future land use scenarios. The baseline human health risk assessment does not consider Institutional Controls in the definition of potential exposure scenarios.

Consistent with USEPA policy and guidance, cancer risks and non-cancer health hazards were evaluated for the reasonably maximally exposed (RME) individual and the central tendency exposed (CTE) individual. The RME is considered the maximum exposure that is reasonably estimated to occur at the Site, is not a worst-case scenario, and the RME is the basis for the decision that the Site poses risks that the actions in this Proposed Plan will address. The CTE is considered the average exposure an individual would have to the COCs.

Currently, nearby residents receive drinking water from an upgradient municipal source. If this source was not available in the future, adult and child residents would be potential receptors that may be exposed to COCs in the groundwater if the groundwater was used for household uses. Under this scenario, routes of exposure would include: ingestion of groundwater, dermal exposure to groundwater while showering, and inhalation of water vapors from household use (i.e., showering).

Exposure point concentrations in groundwater were estimated using either the maximum detected concentration of a contaminant or the 95%, 97.5% or 99% upper-confidence limit (UCL) of the average concentration. Chronic daily intakes were calculated based on the exposures to the RME individual. The RME is intended to represent a conservative exposure scenario that is still within the range of possible exposures. In addition, a CTE or average exposure is also provided. A complete evaluation of all exposure scenarios can be found in the Human Health Risk Assessment.

Summary of Risks to Future Residents

The carcinogenic risks to future adult residents were 2×10^{-3} (two in 1,000) which exceeds the acceptable risk range. The primary COCs used to determine the risk posed were benzene and naphthalene. The total estimated adult cancer risk under CTE conditions is 2×10^{-4} (2 in 10,000) which is within the upper bounds of the risk range. The main COCs for the CTE individual are benzene and naphthalene.

WHAT IS RISK AND HOW IS IT CALCULATED?

Human Health Risk Assessment: A Superfund baseline human health risk assessment is an analysis of the potential adverse health effects caused by hazardous substance releases from a site in the absence of any actions to control or mitigate these under current- and future-land uses. A four-step process is utilized for assessing site-related human health risks for reasonable maximum exposure scenarios.

Hazard Identification: In this step, the chemicals of potential concern (COPCs)at the site in various media (i.e., soil, groundwater, surface water, and air) are identified based on such factors as toxicity, frequency of occurrence, and fate and transport of the contaminants in the environment, concentrations of the contaminants in specific media, mobility, persistence, and bioaccumulation.

Exposure Assessment: In this step, the different exposure pathways through which people might be exposed to the contaminants in air, water, soil, etc. identified in the previous step are evaluated. Examples of exposure pathways include incidental ingestion of and dermal contact with contaminated soil and ingestion of and dermal contact with contaminated groundwater. Factors relating to the exposure assessment include, but are not limited to, the concentrations in specific media that people might be exposed to and the frequency and duration of that exposure. Using these factors, a "reasonable maximum exposure" scenario, which portrays the highest level of human exposure that could reasonably be expected to occur, is calculated.

Toxicity Assessment: In this step, the types of adverse health effects associated with chemical exposures and the relationship between magnitude of exposure and severity of adverse effects are determined. Potential health effects are chemical-specific and may include the risk of developing cancer over a lifetime or other non-cancer health hazards, such as changes in the normal functions of organs within the body (e.g., changes in the effectiveness of the immune system). Some chemicals are capable of causing both cancer and non-cancer health hazards.

Risk Characterization: This step summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site risks for all COCs. Exposures are evaluated based on the potential risk of developing cancer and the potential for non-cancer health hazards. The likelihood of an individual developing cancer is expressed as a probability. For example, a 10^{-4} cancer risk means a "one in ten thousand excess cancer risk"; or one additional cancer may be seen in a population of 10,000 people as a result of exposure to site contaminants under the conditions identified in the Exposure Assessment. Current Superfund regulations for exposures identify the range for determining whether remedial action is necessary as an individual excess lifetime cancer risk of 10^{-4} to 10^{-6}, corresponding to a one in ten thousand to a one in a million excess cancer risk, with 10^{-6} being the point of departure. For non-cancer health effects, a "hazard index" (HI) is calculated. The key concept for a non-cancer HI is that a "threshold" (measured as an HI of less than or equal to 1) exists below which non-cancer health hazards are not expected to occur. The goal of protection is 10^{-6} for cancer risk and an HI of 1 for a non-cancer health hazard. Chemicals that exceed a 10^{-4} cancer risk or an HI of 1 are typically those that will require remedial action at the site and are referred to as Chemicals of Concern or COCs.

The sum of all estimated RME cancer risks for the child resident is 6×10^{-4} (6 in 10,000). The total estimated child cancer risk under RME conditions exceeds the risk range. The main COCs used to determine the risk posed were benzene and naphthalene. The total estimated child cancer risks

under CTE conditions is 2 x 10^{-4} (2 in 10,000). The total estimated cancer risk under the CTE conditions is within the upper bounds of the risk range. The main COCs are the same as the RME assessment.

The non-cancer Hazard Index (HI) for adult resident receptors is 91 under RME conditions and 37 under CTE conditions, which both exceed the goal of protection of an HI of 1. The primary COCs in groundwater contributing to the total HI are benzene, 1,1-biphenyl, 2-methylnaphthalene, dibenzofuran, fluorine, naphthalene, pyrene and manganese.

For child resident receptors, the total estimated HI is 94 under RME conditions and 65 under CTE conditions. The primary COCs are benzene, dibenzofuran, fluorene, naphthalene, pyrene, 2-methylnaphthalene, and manganese. The HI for the RME and CTE individuals exceeds the goal of protection of an HI of 1.

Ecological Risk Assessment

As part of the OU 2 Remedial Investigation soil and groundwater sampling was conducted to delineate the extent of the NAPL plume that has migrated from the National Grid property. Contaminant migration from the National Grid property to the OU 2 Project Area has occurred underground via the top of the subsurface clay layer at 15 - 24 feet below ground surface. NAPL concentrations have been observed in subsurface soil samples at depths greater than 15 feet. Groundwater samples were collected from monitoring wells screened across the entire thickness of the overburden aquifer or upper aquifer. Groundwater data indicate that contamination is limited to the OU 2 Project Area and is not migrating beyond OU 2 Project Area. Further, the groundwater plume is not discharging to any surface water (i.e., Spring Run Creek). Since COCs are not discharging to surface water, a complete exposure pathway to ecological receptors does not exist. Thus, there is no unacceptable risk to ecological receptors associated with this operable unit.

Summary

Based upon the results of the investigations reported in the FS Report and the risk assessment, EPA has determined that the preferred alternative identified in this Proposed Plan or one of the other active measures considered and identified in this Proposed Plan is necessary to protect public health, welfare, or the environment from actual or threatened releases of hazardous substances into the environment.

REMEDIAL ACTION OBJECTIVES

Remedial Action Objectives (RAOs) have been developed for OU 2 for the protection of public health and the environment based on findings in the RI. The RAOs are organized by media of concern, specify contaminant type and exposure pathways, and are based on chemical specific Applicable or Relevant and Appropriate Requirements (ARARs) and To Be Considered (TBC) criteria and other guidance documents that will be utilized to establish soil and groundwater cleanup objectives that eliminate or mitigate the significant threat to the public health and environment. The Site-specific RAOs are indicated below:

• Eliminate the migration of contaminants within the subsurface soils and further into groundwater;

• Remove, treat or contain principal threat waste;

• Protect human health by preventing exposure to contaminated soil, groundwater, and soil vapor; and

• Restore groundwater to levels that meet state and federal standards within a reasonable time.

SUMMARY OF REMEDIAL ALTERNATIVES

CERCLA §121(b)(1), 42 U.S.C. §9621(b)(1), mandates that remedial actions must be protective of human health and the environment, cost-effective, comply with ARARs and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions which employ, as a principal element, treatment to permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants and contaminants at a site. CERCLA §121(d), 42 U.S.C. §9621(d), further specifies that a remedial action must attain a level or standard of control of the hazardous substances, pollutants, and contaminants, which at least attains ARARs under Federal and state laws, unless a waiver can be justified pursuant to CERCLA §121(d)(4), 42 U.S.C. §9621(d)(4).

Detailed descriptions of the remedial alternatives for addressing the Site contamination can be found in the July 2012 FS report.

There are several differences between the way the alternatives are presented in the FS report and in this Proposed Plan. These differences are as follows:

1. The FS uses the designation site-wide or "SW" for each alternative, such as "SW1." This Proposed Plan refers to each alternative in the FS by number alone, without the "SW", because this Proposed Plan addresses only the OU 2 Project Area and not the entire Site.

2. The FS report at Table 2-1 through Table 2-3 lists standards, criteria and guidance (SCGs) that would potentially apply to the alternatives. This Proposed Plan refers to these SCGs as ARARs, TBCs and other guidance.

3. The FS report contains a "No Action" alternative that included remedial actions and associated cost. This Proposed Plan provides for a "No Action" alternative as required by 40 CFR § 300.430(e)(6), which contains no remedial actions or costs.

4. The titles of Alternatives 3A, 3B, 5, 5A and 6A in the FS report refers to actions that would achieve unrestricted use in parts of the OU 2 Project Area. Only Alternative 6 would achieve unrestricted use for the entire OU 2 Project Area. Therefore, the titles of Alternatives 3A, 3B, 5, 5A and 6A have been modified in this Proposed Plan to delete the reference to unrestricted use and the descriptions indicate where unrestricted use would be achieved.

The construction time for each alternative reflects only the time required to construct or implement the remedy and does not include the time required to design the remedy, negotiate the remedy performance with any potentially responsible parties or procure contracts for design and construction. The alternatives are described below.

Each alternative (except Alternative 1) would include the plugging and abandonment of the existing Old Red Spring well and installation of a replacement with a double cased well. The gazebo structure would be protected during the remedial construction activities.

REMEDIAL ALTERNATIVES

Based on the screening analyses and evaluations performed in the FS, EPA has screened out active remedial alternatives 2, 3, 5, 5A, and 6A and proposes five alternatives for consideration which are discussed below.

Alternative 1: No Action

Capital Cost	0
Operation/Maintenance (O&M) Cost	0
Present-Worth Cost:	0
Construction Time:	0

The Superfund program requires that the "no action" alternative be considered as a baseline for comparison with other alternatives. For the OU 2 Project Area, the no-action remedial alternative would not include any physical remedial measures to address the contamination present in subsurface soil and groundwater. If no remedial action is taken, contaminants already present in the soils will remain in place and will continue to impact the underlying groundwater. Contaminants will remain in the OU 2 Project Area soils for long periods of time with little or no decrease in concentration.

Alternative 3A – In-situ stabilization or (ISS) (Old Red Spring Area) and Encapsulation (Excelsior Avenue) of NAPL-Impacted Soil; and Enhanced Biodegradation of Contamination in Soil and Groundwater

Capital Cost	$4,600,000
Operation and Maintenance (O&M) Cost:	$1,900,000
Present-Worth Cost:	$6,500,000
Construction Time:	6 months

The major components of Alternative 3A include the following:

1. Treating via in-situ soil stabilization (ISS) non-aqueous phase liquid (NAPL)-impacted soil in the Old Red Spring Area. This component includes removing the top 5 feet of surface soil to account for the increase in volume of the solidified material and to allow for 2 feet of clean backfill;
2. Removing surface soil (i.e., up to two feet below grade) in areas not targeted for ISS in the Old Red Spring Area and restoring with imported clean fill underlain by a demarcation layer;
3. Enhancing biodegradation of contaminated

subsurface soil and groundwater in the Old Red Spring Area by the application of amendments, such as organic nutrients, oxygen-releasing compounds, and/or chemical products;
4. Plugging and abandoning the existing Old Red Spring water well and installing a replacement well;
5. Installing a containment barrier wall and a subsurface mat to encapsulate NAPL-impacted soil under Excelsior Avenue;
6. Conducting long-term groundwater monitoring;
7. Implementing institutional controls (ICs) at the properties in the OU 2 Project Area, which would include the development of environmental easements/restrictive covenants to be filed in the property records of Saratoga County. The ICs relating to soil exposure would require compliance with an EPA-approved Site Management Plan (SMP) and would: a) be imposed for all areas where COCs exceed unrestricted use SCOs (6 NYCRR Section 375-6.3(b)); b) prevent any disturbance of the implemented remedy under Excelsior Avenue and in the areas of ISS; and c) prohibit single family housing and vegetable gardening, but would allow for recreational and/or commercial use of the Old Red Spring Area, which New York State defines as "restricted-residential" use. The ICs relating to groundwater exposure would restrict the use of the shallow groundwater aquifer throughout the OU 2 Project Area and would require compliance with the SMP. The ICs would also restrict new construction throughout the OU 2 Project Area unless an evaluation of the potential for vapor intrusion is conducted, and mitigation, if necessary, is performed in compliance with an EPA-approved SMP.
8. Developing an SMP to ensure the effectiveness of the engineering and institutional controls, as well as the long-term groundwater monitoring, periodic reviews and certifications.

Alternative 3A would include the removal of the top surface soil (5 feet of soil below grade in the area targeted for ISS treatment and 2 feet of soil on the area not targeted for ISS) in the Old Red Spring Area. This surface soil removal would allow for the increase in volume of the solidified material and allow for 2 feet of backfill.

The ISS process would stabilize Site media (i.e., soil and groundwater) containing COCs into a solid mass (micro-encapsulation), as well as some additional surrounding soil, thereby preventing any further migration of COCs and NAPL beyond the stabilized mass. ISS bench-scale testing to ensure the right combination of ISS materials would be required prior to implementing this alternative.

The vertical containment barrier wall would be constructed to horizontally contain NAPL-impacted soil beneath Excelsior Avenue. The barrier wall would extend from a subsurface elevation (e.g., below existing utilities) and would be keyed into the underlying clay unit. Additionally, alternative 3A would include construction of a subsurface mat over the top of the barrier wall system and beneath subsurface utilities to encapsulate the NAPL-impacted soil. The containment barrier wall and mat would tie into the existing sheet pile barrier wall north of Excelsior Avenue, on the former Spa Steel Property. On the south side of Excelsior Avenue, the containment barrier wall and mat would tie into the northern portion of the ISS monolith. Following the completion of remedial construction activities**,** Old Red Spring including vegetated surfaces, parking lots, roadways, sidewalks, curbs, etc.,) would be replaced to original contours. Disturbed surfaces in the Excelsior Avenue area would be restored with imported clean fill material and asphalt to match the previously existing lines and grades. Surface restoration details would be developed as part of the remedial design for this alternative.

The source of groundwater impacts (i.e., NAPL and contaminated soil) would be stabilized and/or contained, Alternative 3A would also include the addition of amendments (such amendments may include oxygen-releasing materials, organic nutrients) to enhance the biodegradation of residual COCs that would be present in soil and groundwater beyond the area of ISS treatment. Injection wells would be installed along the downgradient edge of the ISS treatment area to apply the amendments. Additional details regarding enhancing biodegradation of contamination in the subsurface soil and groundwater using amendments, such as nutrients, oxygen, or chemical products, and the specific amendment and application measures would be confirmed as part of the remedial design.

Alternative 3A would also include a groundwater monitoring component similar to the other alternatives to confirm that groundwater standards and guidance values are achieved.

Alternative 3B – Excavation (Old Red Spring Area) And Encapsulation (Excelsior Avenue) of NAPL-Impacted Soil; Enhanced Biodegradation of* Contamination in *Soil & Groundwater.

Capital Cost:	$6,700,000
Operation and Maintenance (O&M) Cost:	$1,900,000
Present-Worth Cost:	$8,600,000
Construction Time:	8 months

The major components of Alternative 3B consist of the following:

1. Excavating and removing NAPL-impacted soil in the Old Red Spring Area;
2. Removing 2 feet of surface soil below grade in areas not impacted by NAPL-impacted subsurface soil in the Old Red Spring Area and restoring with imported clean fill underlain by a demarcation layer;
3. Enhancing biodegradation of contaminated subsurface soil and groundwater in the Old Red Spring Area by the application of amendments, such as organic nutrients, oxygen-releasing compounds, or chemical products;
4. Plugging and abandoning the existing Old Red Spring well and installing a replacement well;
5. Installing a containment barrier wall and a subsurface mat to encapsulate NAPL and contaminated soil under Excelsior Avenue;
6. Conducting long-term groundwater monitoring;
7. Implementing institutional controls (ICs) at the properties in the OU 2 Project Area, which would include the development of environmental easements/restrictive covenants to be filed in the property records of Saratoga County. The ICs relating to soil exposure would require compliance with an EPA-approved Site Management Plan (SMP) and would: a) be imposed for all areas where COCs exceed unrestricted use SCOs (6 NYCRR Section 375-6.3(b)); b) prevent any disturbance of the implemented remedy under Excelsior Avenue; and c) prohibit single family housing and vegetable gardening, but would allow for recreational and/or commercial use of the Old Red Spring Area, which New York State defines as “restricted-residential” use. The ICs relating to groundwater exposure would restrict the use of the shallow groundwater aquifer throughout the OU 2 Project Area and would require compliance with the SMP. The ICs would also restrict new construction throughout the OU 2 Project Area unless an evaluation of the potential for vapor intrusion is conducted, and mitigation, if necessary, is performed in compliance with an EPA-approved SMP.
8. Developing an SMP to ensure the effectiveness of the engineering and institutional controls, as well as the long-term groundwater monitoring, periodic reviews and certifications.

Alternative 3B includes all of the aspects of the Alternative 3A (as discussed above) except that, in Alternative 3B, the NAPL and NAPL-impacted soil under the Old Red Spring Area would be excavated and properly disposed of off-Site.

Alternative 3B would include the excavation of approximately 4,200 cubic yards (cy) of soil, from the surface to depths of approximately 15 to 24 feet below grade, to address NAPL-impacted soil in the Old Red Springs Area. In addition, excavation activities would be conducted using conventional construction equipment (such as backhoes, excavators, front-end loaders, dump trucks, etc.). Excavation areas would be dewatered to facilitate soil removal. Based on the proposed extent/depth of excavation activities, excavation support systems (such as steel sheet pile walls) would be required. A temporary excavation enclosure equipped with a vapor collection and treatment system would also be constructed over the proposed excavation area to reduce the potential for migration of vapors and nuisance odors during excavation activities.

All subsurface and overhead utilities within the excavation limits would be temporarily (or permanently) relocated as part of this remedial alternative. For the purpose of developing this alternative, it is estimated that the bottom 3 feet adjacent to the clay layer contains the highest quantities of NAPL and would be transported off-Site for treatment/disposal via low-temperature thermal desorption. The remaining non-hazardous excavated soil would be transported for off-site disposal at a solid waste landfill or reused on-Site if the soil met the applicable backfill requirements and the SCOs for unrestricted use 6 NYCRR Section 375-6.3(b).

The groundwater removed from the excavation areas would be treated via a temporary on-Site system to applicable standards and discharged to the local

Publicly Owned Treatment Works (POTW) via the sanitary sewer. Treatment of water at the existing system on the National Grid Property would be evaluated as part of the remedial design for this alternative. Excavation areas would be restored with imported clean fill (or excavated soil suitable for re-use) material underlain by a demarcation layer to match the previously existing lines and grades.

Alternative 4 – ISS (Old Red Spring Area) and Containment and Surfactant/Cosolvent Flushing (Excelsior Avenue) of NAPL-impacted Soil; Enhanced Biodegradation of Groundwater

Capital Cost:	$4,500,000
Operation and Maintenance (O&M) Cost:	$1,900,000
Present-Worth Cost:	$6,400,000.
Construction Time:	7 months

The major components of Alternative 4 include the following:

1. Treating via in-situ soil stabilization (ISS) non-aqueous phase liquid (NAPL)-impacted soil in the Old Red Spring Area. This component includes removing the top surface soil (5 feet of soil below grade) to account for the increase in volume of the solidified material and to allow for 2 feet of backfill;
2. Removing surface soil (i.e., up to two feet below grade) in areas not targeted for ISS in the Old Red Spring Area and restoring with imported clean fill underlain by a demarcation layer;
3. Enhancing biodegradation of subsurface impacts via application of amendments, such as organic nutrients, oxygen-releasing compounds, or chemical products;
4. Plugging and abandoning the existing Old Red Spring well and installing a replacement well;
5. Surfactant/cosolvent flushing of NAPL-impacted soil under Excelsior Avenue,
6. Installing a containment barrier wall around NAPL-impacted soil under Excelsior Avenue;
7. Installing a groundwater extraction well within the barrier wall for hydraulic control under Excelsior Avenue;
8. Conducting long-term groundwater monitoring;
9. Implementing institutional controls (ICs) at the properties in the OU 2 Project Area, which would include the development of environmental easements/restrictive covenants to be filed in the property records of Saratoga County. The ICs relating to soil exposure would require compliance with an EPA-approved Site Management Plan (SMP) and would: a) be imposed for all areas where COCs exceed unrestricted use SCOs (6 NYCRR Section 375-6.3(b)); b) prevent any disturbance of the implemented remedy under Excelsior Avenue and in the areas of ISS; and c) prohibit single family housing and vegetable gardening, but would allow for recreational and/or commercial use of the Old Red Spring Area, which New York State defines as “restricted-residential” use. The ICs relating to groundwater exposure would restrict the use of the shallow groundwater aquifer throughout the OU 2 Project Area and would require compliance with the SMP. The ICs would also restrict new construction throughout the OU 2 Project Area unless an evaluation of the potential for vapor intrusion is conducted, and mitigation, if necessary, is performed in compliance with an EPA-approved SMP.
10. Developing an SMP to ensure the effectiveness of the engineering and institutional controls, as well as the long-term groundwater monitoring, periodic reviews and certifications.

Alternative 4 would include the removal of the top surface soil (5 feet of soil below grade in the area targeted for ISS treatment and 2 feet of soil on the area not targeted for ISS) in the Old Red Spring Area. This surface soil removal would allow for the expansion and volume increase of the solidified material.

Alternative 4 includes addressing NAPL-impacted soil in the Old Red Spring Area through ISS treatment. The ISS process would stabilize soil and groundwater containing NAPL into a solid mass (micro-encapsulation), as well as soil surrounding NAPL (macro-encapsulation), thereby preventing migration of COCs and NAPL beyond the stabilized mass. ISS bench-scale testing for selection of appropriate materials would be required prior to implementing this alternative.

Alternative 4 includes surfactant/cosolvent flushing of NAPL-impacted soil under Excelsior Avenue. Surfactant/cosolvent flushing is an in-situ remediation approach that enhances recovery of NAPL by flushing a surfactant/cosolvent solution through the NAPL-

impacted material using a network of injection and extraction wells. Reduction of the NAPL mass occurs by increasing the solubility of the NAPL constituents in the flushing solution or by increasing the NAPL mobility with reduction of the interfacial tension between the NAPL and soil. NAPL mobility and recovery can also be increased by reducing the NAPL viscosity. This is an approach that increases the mobility and bulk recovery of the NAPL and is typically more efficient than a solubilization approach. Potential surfactant/cosolvent mixtures would be confirmed based on the NAPL's physiochemical properties. For this application, the remediation goal would be to remove COCs from the NAPL and achieve reduction of COCs mass flux from the NAPL to groundwater. At many manufactured gas facilities NAPLs have been sufficiently weathered such that the more soluble COCs, (e.g., benzene and naphthalene), have already been removed from the NAPL. At sites, such as this one, where the NAPL is a continuing source of COCs, including BTEX and PAHs, surfactant/cosolvent flushing will enhance the weathering process by increasing the dissolution of COCs from the NAPL, thus significantly reducing potential impacts to groundwater posed by the remaining NAPL. Prior to implementing this alternative, a bench-scale treatability study would be conducted to select the appropriate surfactant/cosolvent mixture and to confirm the ability of the mixture to remove the COCs from the NAPL.

The design of this alternative would include ten injection wells and six extraction wells to flush the treatment zone under Excelsior Avenue. Extracted groundwater containing the surfactant/cosolvent additional surfactant/cosolvent, and reinjected solution and dissolved COCs would be stored in tanks, treated to remove the COCs, mixed with additional surfactant/cosolvent, and re-injected.

The containment barrier wall is the same as that described under Alternative 3A, a jet grout containment barrier to address NAPL under Excelsior Avenue. The jet grout barrier wall would tie into the existing barrier wall, north of Excelsior Avenue and would tie into the ISS monolith south of Excelsior Avenue. Based on the depth of NAPL observed below Excelsior Avenue and in the Old Red Spring Area, and consistent with the depth of the containment barrier walls on the National Grid and Spa Steel Properties, it has been assumed that the barrier wall within Excelsior Avenue would be installed to a depth of 30 feet below grade. Final barrier wall depth and other construction details would be confirmed as part of the remedial design for this alternative.

Amendments, such as organic nutrients, oxygen-releasing compounds, or chemical products, would be added to enhance the biodegradation of low level contamination that would be present in soil and groundwater beyond the limits of ISS, containment and surfactant/cosolvent treatment area. As described under Alternative 3A, application wells would be installed along the downgradient edge of the treatment area and containment barrier wall.

Alternative 4 includes installation of a groundwater extraction well within the containment area under Excelsior Avenue to maintain an inward gradient. This alternative also includes plugging and abandonment of the existing Old Red Spring well and installation of a replacement well following remedial construction.

Following the completion of remedial construction activities, disturbed surfaces (including vegetated surfaces, parking lots, roadways, sidewalks, curbs, etc.) would be replaced in kind.

Alternative 4 would also include the same groundwater monitoring component as the other alternatives. Periodic groundwater monitoring would be conducted to confirm groundwater flow direction and verify the extent and concentrations of residual dissolved phase COCs.

Alternative 6 – Excavation and Off-site Disposal of Contaminated Soil to Unrestricted Use; and Groundwater Monitoring

Capital Cost:	$9,200,000
Operation and Maintenance (O&M) Cost:	$1,600,000
Present-Worth Cost:	$10,800,000
Construction Time:	12 months

The major components of Alternative 6 include the following:

1. Excavating soil in the Old Red Spring Area and Excelsior Avenue that contains COCs at concentrations greater than NYSDEC SCO's for unrestricted use (6 NYCRR Section 375-6.3(b));
2. Plugging and abandoning the existing Old Red Spring well and installing a replacement well; and
3. Dewatering of groundwater in the OU Project Area as part of the soil excavation and conducting groundwater monitoring.

Alternative 6 would include the excavation of approximately 9,900 cy of soil extending to depths of 18 to 24 feet below grade. Excavation activities would be conducted using conventional construction equipment such as backhoes, excavators, front-end loaders, and dump trucks. Excavation areas would be dewatered to facilitate soil removal. Based on the proposed extent/depth of excavation activities, excavation support systems (such as steel sheet pile walls) are anticipated to be required for the excavation activities. A temporary excavation enclosure equipped with a vapor collection and treatment system would also be constructed over the proposed excavation area to reduce the potential for migration of vapors and nuisance odors during excavation activities. For the purpose of developing this alternative, it has been assumed that all subsurface and overhead utilities within the excavation limits would temporarily (or permanently) be relocated.

For the purpose of developing this alternative, it has been assumed that the bottom 3 feet of the excavation (approximately 1,000 cubic yards plus stabilizing admixture) would include NAPL- impacted soil that would be transported off-Site for treatment/disposal via low-temperature thermal desorption. The remaining excavated soil with low levels of contamination would be transported for off-Site disposal as a non-hazardous waste at a solid waste landfill. Water removed from the excavation areas would be treated to appropriate levels via a temporary on-site water treatment system and discharged to the local POTW via the sanitary sewer. Treatment of extracted groundwater by the existing treatment system on the National Grid Property would also be evaluated as part of the remedial design for this alternative. Excavated areas would be restored with imported clean fill material underlain by a demarcation layer. Following the completion of remedial construction activities, disturbed surfaces (including vegetated surfaces, parking lots, roadways, sidewalks, curbs, etc.) would be replaced to original contours. Alternative 6 includes abandonment of the existing Old Red Spring well and installation of a new well following remedial construction. The Old Red Spring gazebo would be preserved and moved during remedial construction activities. Following excavation and backfilling activities, groundwater monitoring would be conducted to confirm that groundwater standards and guidance values are achieved. Because all impacted soil would be removed from the Project Area, implementation of institutional controls would not be required.

COMPARATIVE ANALYSIS OF ALTERNATIVES

In selecting a remedy for a site, EPA considers the factors set forth in CERCLA §121, 42 U.S.C. §9621, by conducting a detailed analysis of the viable remedial alternatives pursuant to the NCP, 40 CFR § 300.430(e) (9) and EPA OSWER Directive 9355.3-01. The detailed analysis consists of an assessment of the individual alternatives against each of nine evaluation criteria and a comparative analysis focusing upon the relative performance of each alternative against those criteria.

The evaluation criteria are described below.

- Overall protection of human health and the environment addresses whether or not a remedy provides adequate protection and describes how risks posed through each exposure pathway (based on a reasonable maximum exposure scenario) are eliminated, reduced or controlled through treatment, engineering controls or institutional controls.

- Compliance with ARARs addresses whether or not a remedy would meet all of the applicable or relevant and appropriate requirements of Federal and state environmental statutes and requirements or provide grounds for invoking a waiver.

- Long-term effectiveness and permanence refers to the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met. It also addresses the magnitude and effectiveness of the measures that may be required to manage the risk posed by treatment residuals and/or untreated wastes.

- Reduction of toxicity, mobility, or volume through treatment is the anticipated performance of the treatment technologies, with respect to these parameters, a remedy may employ.

- Short-term effectiveness addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period until cleanup goals are achieved.

- Implementability is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.

- Cost includes estimated capital and annual operation and maintenance costs, as well as net

present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.

- State acceptance indicates if, based on its review of the RI/FS and Proposed Plan, the State concurs with the preferred remedy.

- Community acceptance will be assessed in the ROD and refers to the public's general response to the alternatives described in the Proposed Plan and the RI/FS reports.

A comparative analysis of these alternatives based upon the evaluation criteria noted above follows.

Overall Protection of Human Health and the Environment

Alternative 1 would not provide control of exposure to contaminated soils and groundwater, and offers no reduction in risk to human health posed by contaminated soils and groundwater.

The remaining Alternatives presented would each prevent exposures (i.e., direct contact, ingestion, and inhalation) to impacted soil and groundwater through invasive remedial activities. Alternatives 3A, 3B, and 4 would address NAPL and NAPL-impacted soil. Additionally, Alternatives 3A and 3B would include construction of a containment barrier wall and subsurface mat below Excelsior Avenue to encapsulate impacted media and mitigate future exposures. Alternatives 3A, 3B, 4 and 6 would each achieve protectiveness of human health and the environment. Unlike the other active alternatives, Alternative 6 would not require institutional controls to be protective of human health and the environment, since all contaminated soil and groundwater would be removed from the OU 2 Project Area, essentially being restored to pre-disposal conditions.

Alternative 3A would rely on ISS treatment and containment and Alternative 3B would rely on excavation and containment. Alternative 4 would utilize a combination of ISS treatment, containment, and surfactant/cosolvent flushing to address NAPL and NAPL impacted soil. Each alternative would include periodic groundwater monitoring to document the extent of dissolved phase impacts and trends in COC concentrations.

Alternatives 3A, 3B, 4 and 6 would reduce off-Site migration of COCs within the soil and groundwater through stabilization, containment, encapsulation, treatment with amendments and/or excavation.

Compliance with ARARs

EPA has identified New York State's 6 NYCRR Part 375-6.3(b) for unrestricted use as an ARAR, TBC or other guidance to address contaminated surface and subsurface soil in the portion of the Old Red Spring Area not targeted for ISS. ARARs for groundwater would include state and federal MCLs.

Alternative 1 would not meet cleanup levels for soil and groundwater. Contaminants in the soil and groundwater, which exceeds the cleanup levels, would remain in place and no measures would be implemented to reduce or eliminate the dissolution of contaminants into the groundwater.

Alternatives 3A, 3B, 4, and 6 would meet the ARAR for groundwater and soils, since the contaminated subsurface soil and groundwater would be treated or removed

Alternatives 3A, 3B, and 4 would address (through ISS treatment, containment, enhanced biodegradation, and/or excavation) NAPL and NAPL impacted soil and groundwater that contains the greatest concentrations of COCs. These Alternatives would each address the remedial goals for the principal threat waste. Based on the analytical results for soil samples collected to date, soil located outside the stabilization-containment-excavation limits of Alternatives 3A, 3B, and 4 would be expected to meet unrestricted SCOs. Alternative 6, excavation of soil containing COCs would meet unrestricted use SCOs and would address the remedial goals for the principal threat waste through excavation and off-Site disposal and treatment. Groundwater ARARs are expected to be achieved for Alternative 6 through removal of all source soils and dewatering during excavation. Excavated materials, ISS/jet-grout spoils, and process residuals generated during implementation of these alternatives would be required to comply with fugitive dust and VOC emissions requirements. Furthermore, these activities would be subject to Federal and state regulations related to the manifesting, transporting and treatment/disposal of wastes.

Long-Term Effectiveness and Permanence

Alternative 1 would not reduce risk in the long term, since the contaminants would not be controlled, treated or removed. Alternative 6 provides the highest degree of long-term effectiveness and permanence, because the impacted soils are permanently removed

from the Site. Alternative 4 would utilize a combination of ISS treatment, containment, and surfactant/cosolvent flushing to address NAPL and NAPL impacted soil. Alternative 3A would address the material most-likely to be encountered during potential future subsurface activities by stabilizing soil in the Old Red Spring Area and encapsulating NAPL and NAPL impacted soil below Excelsior Avenue through a containment barrier wall and subsurface mat. Alternative 3B would address NAPL and NAPL-impacted soil by excavating soil in the Old Red Spring Area and encapsulation of soil below Excelsior Avenue through the installation of a containment barrier wall and subsurface mat. Alternatives 3A and 3b are considered equally effective as Alternative 6 based on the Site and surrounding property usage and the limited potential for exposures to soil and groundwater containing COCs following the completion of remedial construction activities. Under Alternative 3A and 4, if future subsurface activities were conducted in the Old Red Spring Area, activities would likely be conducted in areas restored with imported clean fill placed above stabilized soils.

Reduction of Toxicity, Mobility, or Volume of Contamination through Treatment

Alternative 1 would not actively treat, remove, recycle, or destroy impacted Site media. Alternatives 3A and 4 would address NAPL and NAPL-impacted soil by stabilizing soil in the Old Red Spring Area and installing a containment barrier wall under Excelsior Avenue, and would also include the application of amendments to enhance biodegradation of contamination in soil and groundwater. Alternative 4 also includes treatment through surfactant/cosolvent flushing of NAPL-impacted soil under Excelsior Avenue, which would remove COCs from the NAPL and achieve reduction of COC mass flux from the NAPL to groundwater, thus significantly reducing the toxicity, potential mobility, volume and concentration. Alternative 3B would address NAPL and NAPL-impacted soil by excavating soil in the Old Red Spring Area and encapsulation of soil below Excelsior Avenue through the installation of a containment barrier wall and subsurface mat. Alternative 6 would address soil containing COCs at concentrations greater than NYSDEC SCOs for unrestricted use (6 NYCRR Part 375-6.3(b)). Alternatives 3A, 3B and 4 are considered equally effective at reducing the toxicity, mobility, and volume of NAPL through the stabilizing, containment, treatment and/or excavation of NAPL and NAPL-impacted soil. These Alternatives would address the remedial goals for the principal threat waste at the OU 2 Project Area. Alternative 6 would equally achieve these criteria through excavation and off-Site disposal and treatment.

Short-Term Impacts and Effectiveness

There are no short-term impacts for the No Action alternative 1. With the exception of Alternative 1, each of the alternatives includes intrusive activities to address impacted soil containing COCs. Alternatives 3A, and 4 require pre-ISS excavation to a depth of 5 feet bgs (prior to ISS treatment of NAPL and NAPL-impacted soils in the Old Red Spring Area). Alternative 3B would include excavation of NAPL and NAPL-impacted soil in the Old Red Spring Area. Alternative 6 would include the excavation of soil containing COCs at concentrations greater than the SCOs for unrestricted land use. Each of these alternatives would pose potential short-term risks to remedial workers and the community from potential exposure to impacted soil, groundwater, and NAPL during ISS, soil excavation, off-Site transportation of excavated material, and backfilling. Additional short-term risks include the operation of construction equipment. Noise from driving sheeting under Alternatives 3B and 6 would impact the surrounding community as would noise from the operation of construction equipment under all active alternatives. All active alternatives would also result in an increase in local truck traffic from off-Site transportation of excavated materials and the importation of clean fill.

Community access to the area undergoing remedial construction would be restricted under each active alternative by temporary security fencing. Each active alternative would require reducing traffic to a single lane on Excelsior Avenue for a minimum of one to two months during construction of a containment barrier wall and subsurface mat under Excelsior Avenue. The Old Red Spring park would have to be closed and a small portion of the parking lot on the adjacent commercial property owned by The Mill, LLC would have to be closed during remedial construction activities.

The estimated duration of remedial construction activities for the alternatives and the estimated number of truck trips associated with each alternative are presented below.

- Alternative 1 - no time required and no truck trips
- Alternative 3A – 6 months and 630 truck trips
- Alternative 3B – 8 months and 850 truck trips
- Alternative 4 – 6 months and 450 truck trips
- Alternative 6 – 12 months and 1,250 truck trips

As a result, Alternatives 3B and 6 are expected to have the greatest short term impacts and Alternative 4, the least.

Implementability

Alternatives 3A, 3B and 4 would include long-term groundwater monitoring, implementation of institutional controls, amendment application to enhance biodegradation of low levels of contamination in the soil and groundwater beyond ISS/excavation and containment limits.

Each alternative (except Alternative 1) would include abandonment of the existing Old Red Spring well and installation of a replacement well. From a technical implementability standpoint, the well abandonment and installation activities do not require highly specialized equipment or personnel and could be easily implemented. As the properties within OU 2 Project Area are not owned by National Grid, access agreements with the City of Saratoga Springs and The Mill, LLC, would be required to implement the remedies and to conduct periodic field activities. Institutional controls would have to be obtained from the City of Saratoga Springs and The Mill, LLC.

Further, Alternatives 3A, 3B, and 4 include installation of a containment barrier wall. Implementing jet grouting (i.e., the presumed construction method) within Excelsior Avenue presents various implementability challenges. Numerous active and abandoned subsurface utilities are present beneath Excelsior Avenue. Installation of the vertical barrier walls across Excelsior Avenue perpendicular to the orientation of the utilities would require knowledge of the precise location of all utilities. Utilities would be located by trenching across the street at strategic locations supplemented with hand digging and/or air knifing. Equipment and personnel required to perform the work are readily available. In addition, these Alternatives would require space within the OU 2 Project Area for material staging and to set up and operate jet grouting equipment. Alternatives 3A and 3B also include installation of a subsurface mat to encapsulate impacted media. Vertical installation of the subsurface mat would be notably difficult, requiring approximately 800 to 1,000 injection points. The jet grouting equipment would be staged in the roadway requiring the closing of at least one lane of traffic at a time as the operation moved across the affected area.

Each of the alternatives (except Alternative 1) would include the treatment or excavation of soil. ISS, excavation, and transportation of soils for off-Site disposal are technically feasible remedial construction activities, although conducting these activities in an urban setting presents some logistical challenges. There is limited available space in the OU 2 Project Area for material handling and staging. Alternative 6 poses much greater implementability challenges due to the extent of the proposed excavation, space limitations, and presence of overhead and underground utilities. Alternative 6 would require the management of more than 9,900 CY of excavated soil and more than an estimated 340,000 gallons of groundwater; this would be challenging given the size and setting of the OU 2 Project Area. Alternative 6 would also require the temporary bypass or permanent rerouting of utilities, sewer, etc., located within the excavation.

Cost

The following table summarizes the estimated costs associated with implementing each of the remedial alternatives:

Alternative	Estimated Capital Cost	Estimated Present Worth Cost of O&M	Total Estimated Cost
1	$ 0	$0	$ 0
3A	$4,600,000	$1,900,000	$ 6,500,000
3B	$6,700,000	$1,900,000	$ 8,600,000
4	$4,500,000	$1,900,000	$ 6,400,000
6	$9,000,000	$1,600,000	$10,800,000

Estimated present worth cost assumes 30 years of O&M. A 4% discount (i.e., interest) rate is used to determine the total present-worth cost.

State Acceptance

NYSDEC concurs with the preferred remedy

Community Acceptance

Community acceptance of the preferred alternative will be assessed in the ROD following review of the public comments received on the various reports and the Proposed Plan.

PROPOSED REMEDY

Based upon an evaluation of the various alternatives, EPA and NYSDEC recommend Alternative 3A as the Preferred Alternative.

1. Treating via in-situ soil stabilization (ISS) non-aqueous phase liquid (NAPL)-impacted soil in the Old Red Spring Area. This component

includes removing the top surface soil (5 feet of soil below grade) to account for the increase in volume of the solidified material and to allow for 2 feet of backfill;
2. Removing surface soil (i.e., up to two feet below grade) in areas not targeted for ISS in the Old Red Spring Area and restoring with imported clean fill underlain by a demarcation layer;
3. Enhancing biodegradation of low levels of contaminated subsurface soil and groundwater in the Old Red Spring Area by the application of amendments, such as organic nutrients, oxygen-releasing compounds, and/or chemical products;
4. Plugging and abandoning the existing Old Red Spring water well and installing a replacement well;
5. Installing a containment barrier wall and a subsurface mat to encapsulate NAPL-impacted soil under Excelsior Avenue;
6. Conducting long-term groundwater monitoring;
7. Implementing institutional controls (ICs) at the properties in the OU 2 Project Area, which would include the development of environmental easements/restrictive covenants to be filed in the property records of Saratoga County. The ICs relating to soil exposure would require compliance with an EPA-approved Site Management Plan (SMP) and would a) be imposed for all areas where COCs exceed unrestricted use SCOs (6 NYCRR Section 375-6.3(b)); b) prevent any disturbance of the implemented remedy under Excelsior Avenue and in the areas of ISS; and c) prohibit single family housing and vegetable gardening, but would allow for recreational and or commercial use of the Old Red Spring Area, which New York State defines as "restricted-residential" use. The IC relating to groundwater exposure would restrict the use of the shallow groundwater aquifer throughout the OU 2 Project Area and would require compliance with the SMP. The IC would also restrict new construction throughout the OU 2 Project Area unless an evaluation of the potential for vapor intrusion is conducted, and mitigation, if necessary, is performed in compliance with an EPA-approved SMP.
8. Developing an SMP to ensure the effectiveness of the engineering and institutional controls, as well as the long-term groundwater monitoring, periodic reviews and certifications.

Alternative 3A includes the component of long-term groundwater monitoring. Sampling of monitoring wells would be conducted periodically and would be analyzed for VOCs, semi-volatile organic compounds (SVOCs) and metals. Following the completion of remedial construction activities, disturbed surfaces (including vegetated surfaces, parking lots, roadways, sidewalks, curbs, etc.) would be replaced to original contours.

Because this alternative would result in contaminants remaining on-site above health-based levels, CERCLA requires that the Site be reviewed at least once every five years. Also, provisions will be made for periodic reviews and certifications of the institutional and engineering controls. If justified by these reviews, additional remedial actions may be implemented at the Site.

In accordance with EPA Region 2's Clean and Green policy and in order to maximize the net environmental benefits, EPA will evaluate the use of sustainable technologies and practices during the design, construction and operation of the selected remedy.

Basis for the Remedy Preference

Alternative 3A provides the most cost-effective solution, applying the evaluation criteria given the reasonably anticipated future use of the Site. It also is the least disruptive of the community due to less extensive road closures and truck traffic through the community.

The recommended alternative involves relatively fewer short-term impacts, a permanent reduction in the toxicity, mobility, and volume of impacted media within the Old Red Spring Area, and reduces mobility and the potential for exposure. When compared to the other alternatives (excluding Alternative 1), the recommended alternative has a relatively lower potential for short-term impacts to the surrounding community and remedial workers. Potential exposures would be mitigated (to the extent practicable) by using proper personal protective equipment (PPE), air and work space monitoring, and proper planning and training of field personnel. During construction of the containment barrier wall and subsurface mat, Excelsior Avenue would not be closed and would remain open to traffic.

Alternative 1 was not selected, because it is simply a baseline for comparison with other alternatives and is not protective of human health and the environment. Alternative 4 was not selected, because the efficiency of subsurface flushing would be highly variable with much lower levels of treatment occurring in geological

units having lower permeability. Alternatives 6 and 3B were not selected, because of the increased impact of the road closures and extensive truck traffic through the community and their higher cost. Therefore, EPA believes that Alternative 3A provides the best balance of tradeoffs with respect to the evaluating criteria.

Based on information currently available, EPA believes the preferred alternative meets the threshold criteria and provides the best balance of tradeoffs among the alternatives with respect to the balancing and modifying criteria. EPA expects the Preferred Alternative to satisfy the following statutory requirements of CERCLA §121(b):

1) protective of human health and the environment;
2) comply with ARARs (or justify a waiver);
3) be cost effective;
4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and
5) satisfy the preference for treatment as a principal element (or justify not meeting the preference). The Preferred Alternative would achieve the remediation goals for the principal threat waste for NAPL and NAPL-impacted subsurface soil through treatment by ISS.

The Preferred Alternative would achieve the remediation goals for the principal threat waste for NAPL and NAPL-impacted subsurface soil through treatment by ISS.

LEGEND:

AREA BOUNDARY

0 200 400 Feet

GRAPHIC SCALE

NOTE:

1. 2010 IMAGERY PROVIDED BY BING IMAGERY SERVICE LICENSED THROUGH ESRI SOFTWARE.

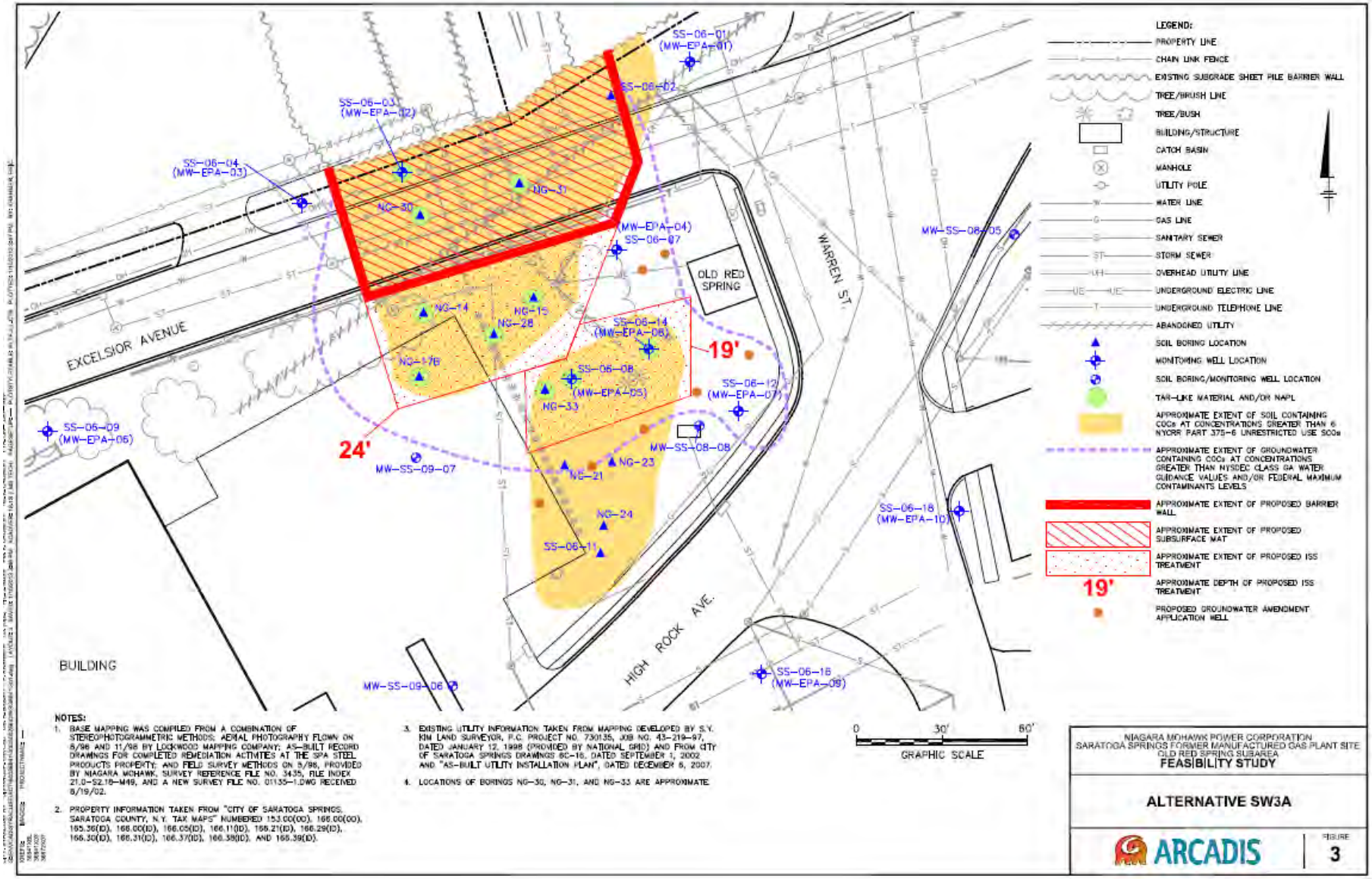
NIAGRA MOHAWK POWER CORPORATION
SARATOGA SPRINGS FORMER MANUFACTURED GAS PLANT SITE

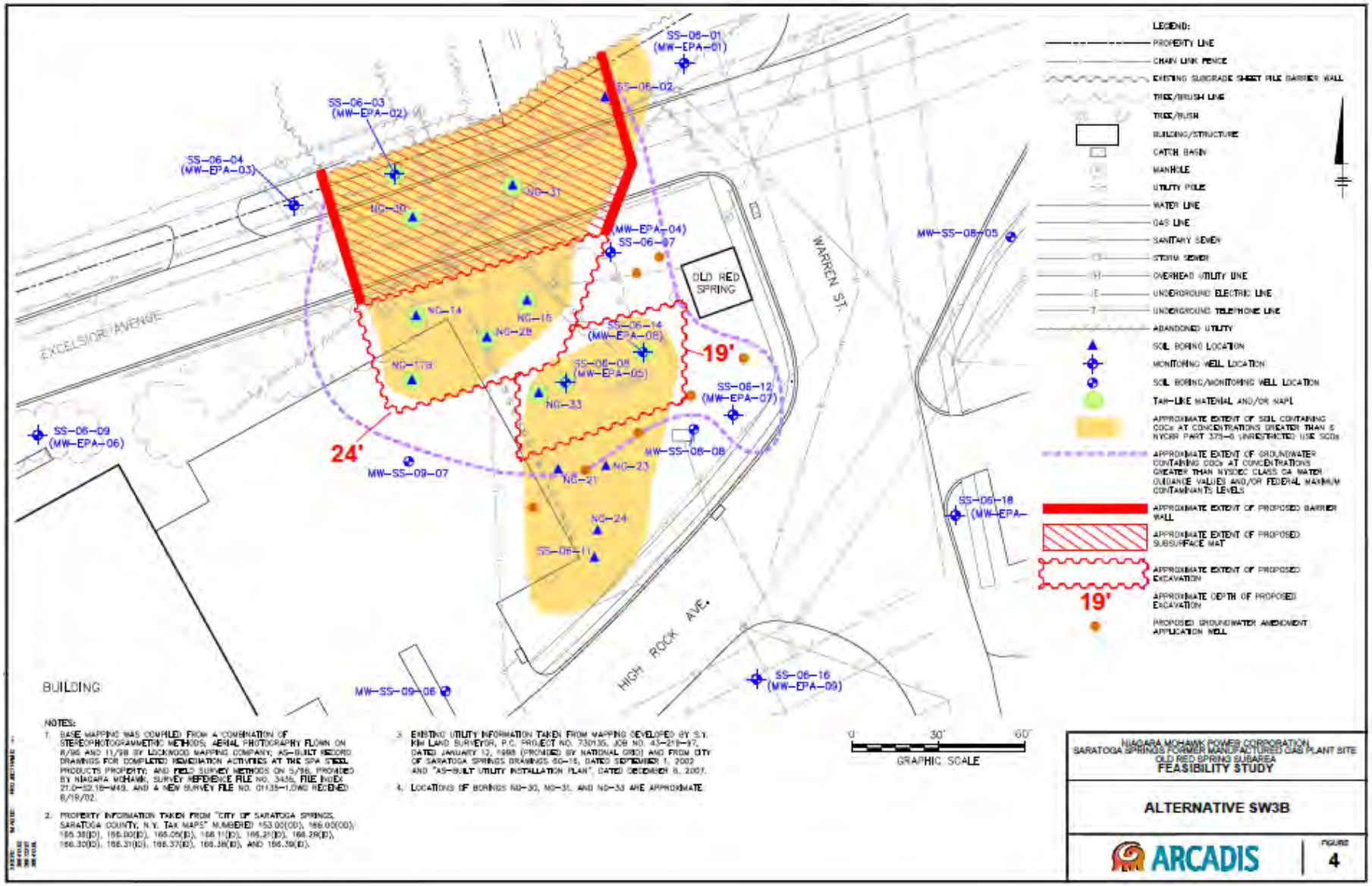
NIAGRA MOHAWK POWER CORPORATION SUPERFUND SITE

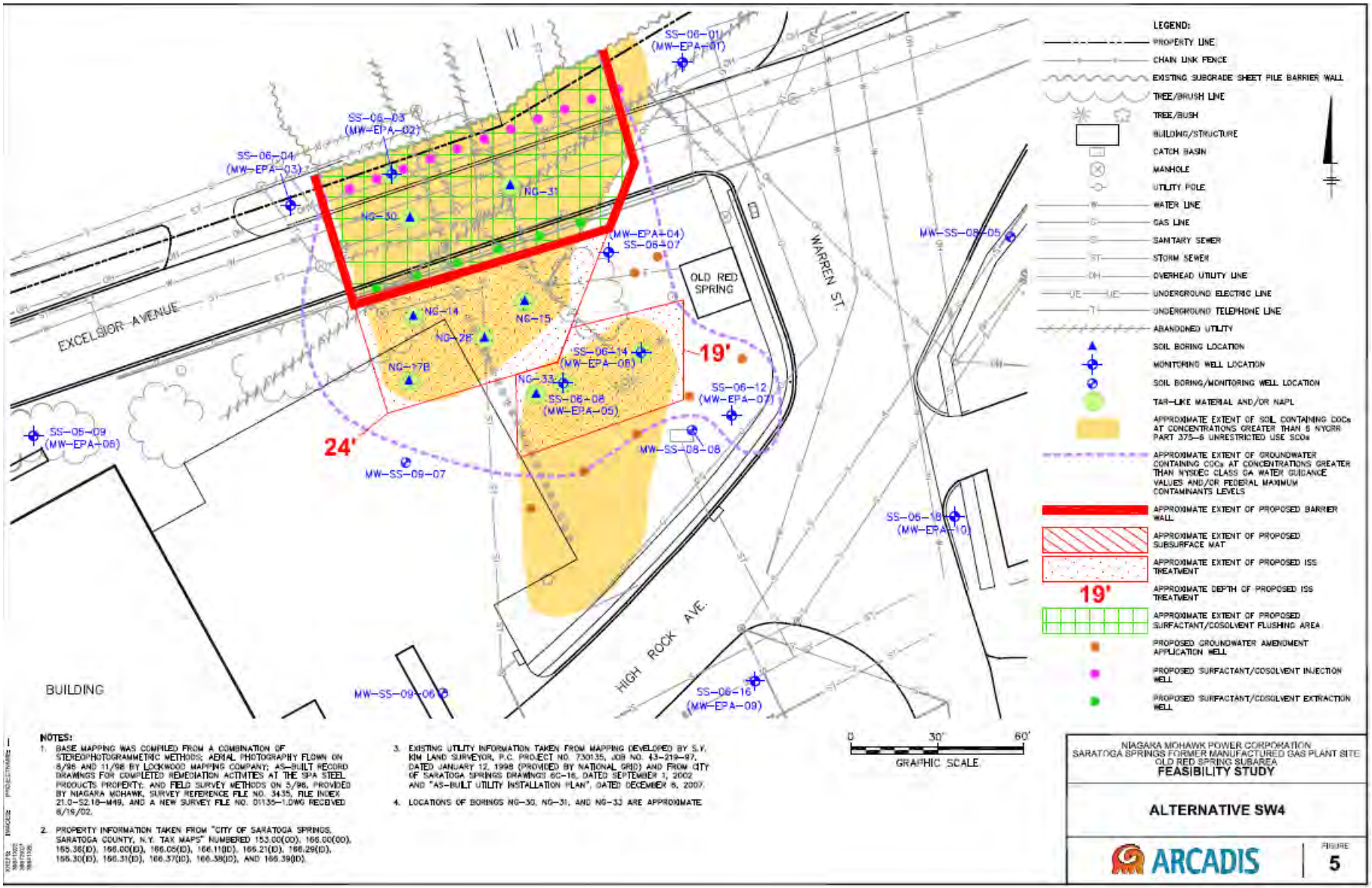
ARCADIS

FIGURE 1


NATIONAL GRID PROPERTY
EXISTING GROUNDWATER TREATMENT BUILDING
SPA STEEL PROPERTY
EXCELSIOR AVENUE CORRIDOR
EXCELSIOR AVENUE
WARREN ST.
OLD RED SPRING
OLD RED SPRING AREA
LIMITS OF PAVED PARKING LOT
HIGH ROCK AVE.
LEGEND:
PROPERTY LINE (APPROXIMATE)
CHAINLINK FENCE
GROUND SURFACE CONTOUR (ONE-FOOT INTERVAL)
EXISTING SUBGRADE SHEET PILE BARRIER WALL
TREE/BRUSH LINE
TREE/BUSH
BUILDING/STRUCTURE
OLD RED SPRING AREA
EXCELSIOR AVENUE CORRIDOR
OU-2
NOTES:
1. BASE MAPPING WAS COMPILED FROM A COMBINATION OF STEREOPHOTOGRAMMETRIC METHODS; AERIAL PHOTOGRAPHY FLOWN ON 6/96 AND 11/98 BY LOCKWOOD MAPPING COMPANY; AS-BUILT RECORD DRAWINGS FOR COMPLETED REMEDIATION ACTIVITIES AT THE SPA STEEL PRODUCTS PROPERTY; AND FIELD SURVEY METHODS ON 5/96, PROVIDED BY NIAGARA MOHAWK, SURVEY REFERENCE FILE NO. 3435, FILE INDEX 21.0-S2.18-M49, AND A NEW SURVEY FILE NO. 01135-1.DWG RECEIVED 8/19/02.
2. PROPERTY INFORMATION TAKEN FROM "CITY OF SARATOGA SPRINGS, SARATOGA COUNTY, N.Y. TAX MAPS" NUMBERED 153.00(OD), 166.00(OD), 165.36(ID), 166.00(ID), 166.05(ID), 166.11(ID), 166.21(ID), 166.29(ID), 166.30(ID), 166.31(ID), 166.37(ID), 166.38(ID), AND 166.39(ID).
3. ELEVATIONS ARE BASED ON NAVD 88 USING STATION G396, ELEVATION 306.010 FEET.
0 40' 80'
GRAPHIC SCALE
NIAGARA MOHAWK POWER CORPORATION
SARATOGA SPRINGS FORMER MANUFACTURED GAS PLANT SITE
OU-2 PROJECT AREA AND SURROUNDING AREAS
ARCADIS
FIGURE 2


LEGEND:
PROPERTY LINE
CHAIN LINK FENCE
EXISTING SUBGRADE SHEET PILE BARRIER WALL
TREE/BRUSH LINE
TREE/BUSH
BUILDING/STRUCTURE
CATCH BASIN
MANHOLE
UTILITY POLE
WATER LINE
GAS LINE
SANITARY SEWER
STORM SEWER
OVERHEAD UTILITY LINE
UNDERGROUND ELECTRIC LINE
UNDERGROUND TELEPHONE LINE
ABANDONED UTILITY
SOIL BORING LOCATION
MONITORING WELL LOCATION
SOIL BORING/MONITORING WELL LOCATION
TAR-LIKE MATERIAL AND/OR NAPL
APPROXIMATE EXTENT OF SOIL CONTAINING COCs AT CONCENTRATIONS GREATER THAN 6 NYCRR PART 375-6 UNRESTRICTED USE SCOs
APPROXIMATE EXTENT OF GROUNDWATER CONTAINING COCs AT CONCENTRATIONS GREATER THAN NYSDEC CLASS GA WATER GUIDANCE VALUES AND/OR FEDERAL MAXIMUM CONTAMINANTS LEVELS
APPROXIMATE EXTENT OF PROPOSED BARRIER WALL
APPROXIMATE EXTENT OF PROPOSED SUBSURFACE MAT
APPROXIMATE EXTENT OF PROPOSED ISS TREATMENT
19'
APPROXIMATE DEPTH OF PROPOSED ISS TREATMENT
PROPOSED GROUNDWATER AMENDMENT APPLICATION WELL
EXCELSIOR AVENUE
WARREN ST.
HIGH ROCK AVE.
OLD RED SPRING
BUILDING
SS-06-01 (MW-EPA-01)
SS-06-02
SS-06-03 (MW-EPA-02)
SS-06-04 (MW-EPA-03)
SS-06-07 (MW-EPA-04)
SS-06-14 (MW-EPA-06)
SS-06-08 (MW-EPA-05)
SS-06-12 (MW-EPA-07)
SS-06-09 (MW-EPA-06)
SS-06-18 (MW-EPA-10)
SS-06-11
SS-06-16 (MW-EPA-09)
MW-SS-08-05
MW-SS-08-08
MW-SS-09-07
MW-SS-09-06
NG-30
NG-31
NG-14
NG-15
NG-28
NG-17B
NG-33
NG-23
NG-21
NG-24
19'
24'
0
30'
60'
GRAPHIC SCALE
NOTES:
1. BASE MAPPING WAS COMPILED FROM A COMBINATION OF STEREOPHOTOGRAMMETRIC METHODS; AERIAL PHOTOGRAPHY FLOWN ON 8/98 AND 11/98 BY LOCKWOOD MAPPING COMPANY; AS-BUILT RECORD DRAWINGS FOR COMPLETED REMEDIATION ACTIVITIES AT THE SPA STEEL PRODUCTS PROPERTY; AND FIELD SURVEY METHODS ON 5/98, PROVIDED BY NIAGARA MOHAWK, SURVEY REFERENCE FILE NO. 3435, FILE INDEX 21.0-52.19-M49, AND A NEW SURVEY FILE NO. 01135-1.DWG RECEIVED 8/19/02.
2. PROPERTY INFORMATION TAKEN FROM "CITY OF SARATOGA SPRINGS, SARATOGA COUNTY, N.Y. TAX MAPS" NUMBERED 153.00(00), 166.00(00), 165.36(D), 166.00(D), 166.05(D), 166.11(D), 166.21(D), 166.29(D), 166.30(D), 166.31(D), 166.37(D), 166.38(D), AND 166.39(D).
3. EXISTING UTILITY INFORMATION TAKEN FROM MAPPING DEVELOPED BY S.Y. KIM LAND SURVEYOR, P.C. PROJECT NO. 730135, JOB NO. 43-219-97, DATED JANUARY 12, 1998 (PROVIDED BY NATIONAL GRID) AND FROM CITY OF SARATOGA SPRINGS DRAWINGS SC-16, DATED SEPTEMBER 1, 2002 AND "AS-BUILT UTILITY INSTALLATION PLAN", DATED DECEMBER 6, 2007.
4. LOCATIONS OF BORINGS NG-30, NG-31, AND NG-33 ARE APPROXIMATE.
NIAGARA MOHAWK POWER CORPORATION
SARATOGA SPRINGS FORMER MANUFACTURED GAS PLANT SITE
OLD RED SPRING SUBAREA
FEASIBILITY STUDY
ALTERNATIVE SW3A
ARCADIS
FIGURE
3


SS-06-01 (MW-EPA-01)
SS-06-02
SS-06-03 (MW-EPA-02)
SS-06-04 (MW-EPA-03)
NG-31
NG-30
(MW-EPA-04)
SS-06-07
OLD RED SPRING
WARREN ST.
EXCELSIOR AVENUE
NG-14
NG-15
NG-28
SS-06-14 (MW-EPA-08)
NG-17B
SS-06-08 (MW-EPA-05)
19'
SS-06-12 (MW-EPA-07)
NG-33
MW-SS-06-05
SS-06-09 (MW-EPA-06)
24'
MW-SS-09-07
MW-SS-06-08
NG-23
NG-21
NG-24
SS-06-11
SS-06-18 (MW-EPA-
HIGH ROCK AVE.
BUILDING
MW-SS-09-06
SS-06-16 (MW-EPA-09)
LEGEND:
PROPERTY LINE
CHAIN LINK FENCE
EXISTING SUBGRADE SHEET PILE BARRIER WALL
TREE/BRUSH LINE
TREE/BUSH
BUILDING/STRUCTURE
CATCH BASIN
MANHOLE
UTILITY POLE
WATER LINE
GAS LINE
SANITARY SEWER
STORM SEWER
OVERHEAD UTILITY LINE
UNDERGROUND ELECTRIC LINE
UNDERGROUND TELEPHONE LINE
ABANDONED UTILITY
SOIL BORING LOCATION
MONITORING WELL LOCATION
SOIL BORING/MONITORING WELL LOCATION
TAR-LIKE MATERIAL AND/OR NAPL
APPROXIMATE EXTENT OF SOIL CONTAINING COCs AT CONCENTRATIONS GREATER THAN 6 NYCRR PART 375-6 UNRESTRICTED USE SCOs
APPROXIMATE EXTENT OF GROUNDWATER CONTAINING COCs AT CONCENTRATIONS GREATER THAN NYSDEC CLASS GA WATER GUIDANCE VALUES AND/OR FEDERAL MAXIMUM CONTAMINANTS LEVELS
APPROXIMATE EXTENT OF PROPOSED BARRIER WALL
APPROXIMATE EXTENT OF PROPOSED SUBSURFACE MAT
APPROXIMATE EXTENT OF PROPOSED EXCAVATION
19'
APPROXIMATE DEPTH OF PROPOSED EXCAVATION
PROPOSED GROUNDWATER AMENDMENT APPLICATION WELL
NOTES:
1. BASE MAPPING WAS COMPILED FROM A COMBINATION OF STEREOPHOTOGRAMMETRIC METHODS, AERIAL PHOTOGRAPHY FLOWN ON 8/96 AND 11/98 BY LOCKWOOD MAPPING COMPANY; AS-BUILT RECORD DRAWINGS FOR COMPLETED REMEDIATION ACTIVITIES AT THE SPA STEEL PRODUCTS PROPERTY; AND FIELD SURVEY METHODS ON 5/96, PROVIDED BY NIAGARA MOHAWK, SURVEY REFERENCE FILE NO. 3436, FILE INDEX 21.0-32.16-M43, AND A NEW SURVEY FILE NO. 01135-1.DWG RECEIVED 8/19/02.
2. PROPERTY INFORMATION TAKEN FROM "CITY OF SARATOGA SPRINGS, SARATOGA COUNTY, N.Y. TAX MAPS" NUMBERED 153.00(OD), 166.03(OD), 166.38(D), 166.00(D), 166.05(D), 166.11(D), 166.21(D), 166.28(D), 166.30(D), 166.31(D), 166.37(D), 166.38(D), AND 166.39(D).
3. EXISTING UTILITY INFORMATION TAKEN FROM MAPPING DEVELOPED BY S.T. KIM LAND SURVEYOR, P.C. PROJECT NO. 730135, JOB NO. 43-218-97, DATED JANUARY 12, 1998 (PROVIDED BY NATIONAL GRID) AND FROM CITY OF SARATOGA SPRINGS DRAWINGS 60-15, DATED SEPTEMBER 1, 2002 AND "AS-BUILT UTILITY INSTALLATION PLAN", DATED DECEMBER 8, 2007.
4. LOCATIONS OF BORINGS NG-30, NG-31, AND NG-33 ARE APPROXIMATE.
0
30'
60'
GRAPHIC SCALE
NIAGARA MOHAWK POWER CORPORATION
SARATOGA SPRINGS FORMER MANUFACTURED GAS PLANT SITE
OLD RED SPRING SUBAREA
FEASIBILITY STUDY
ALTERNATIVE SW3B
ARCADIS
FIGURE
4


LEGEND:
PROPERTY LINE
CHAIN LINK FENCE
EXISTING SUBGRADE SHEET PILE BARRIER WALL
TREE/BRUSH LINE
TREE/BUSH
BUILDING/STRUCTURE
CATCH BASIN
MANHOLE
UTILITY POLE
WATER LINE
GAS LINE
SANITARY SEWER
STORM SEWER
OVERHEAD UTILITY LINE
UNDERGROUND ELECTRIC LINE
UNDERGROUND TELEPHONE LINE
ABANDONED UTILITY
SOIL BORING LOCATION
MONITORING WELL LOCATION
SOIL BORING/MONITORING WELL LOCATION
TAR-LIKE MATERIAL AND/OR NAPL
APPROXIMATE EXTENT OF SOIL CONTAINING COCs AT CONCENTRATIONS GREATER THAN 6 NYCRR PART 375-6 UNRESTRICTED USE SCOs
APPROXIMATE EXTENT OF GROUNDWATER CONTAINING COCs AT CONCENTRATIONS GREATER THAN NYSDEC CLASS GA WATER GUIDANCE VALUES AND/OR FEDERAL MAXIMUM CONTAMINANTS LEVELS
APPROXIMATE EXTENT OF PROPOSED BARRIER WALL
APPROXIMATE EXTENT OF PROPOSED SUBSURFACE MAT
APPROXIMATE EXTENT OF PROPOSED ISS TREATMENT
19'
APPROXIMATE DEPTH OF PROPOSED ISS TREATMENT
APPROXIMATE EXTENT OF PROPOSED SURFACTANT/COSOLVENT FLUSHING AREA
PROPOSED GROUNDWATER AMENDMENT APPLICATION WELL
PROPOSED SURFACTANT/COSOLVENT INJECTION WELL
PROPOSED SURFACTANT/COSOLVENT EXTRACTION WELL
SS-06-01 (MW-EPA-01)
SS-06-03 (MW-EPA-02)
SS-06-04 (MW-EPA-03)
SS-06-05 (MW-EPA-04)
SS-06-07
SS-06-09 (MW-EPA-06)
SS-06-10 (MW-EPA-10)
SS-06-12 (MW-EPA-07)
SS-06-14 (MW-EPA-08)
SS-06-16 (MW-EPA-09)
SS-06-08 (MW-EPA-05)
NG-30
NG-31
NG-33
NG-14
NG-15
NG-17E
NG-17B
MW-SS-08-05
MW-SS-08-08
MW-SS-09-07
MW-SS-09-06
19'
24'
EXCELSIOR AVENUE
WARREN ST.
HIGH ROCK AVE.
OLD RED SPRING
BUILDING
0
30'
60'
GRAPHIC SCALE
NOTES:
1. BASE MAPPING WAS COMPILED FROM A COMBINATION OF STEREOPHOTOGRAMMETRIC METHODS; AERIAL PHOTOGRAPHY FLOWN ON 8/98 AND 11/98 BY LOCKWOOD MAPPING COMPANY; AS-BUILT RECORD DRAWINGS FOR COMPLETED REMEDIATION ACTIVITIES AT THE SPA STEEL PRODUCTS PROPERTY; AND FIELD SURVEY METHODS ON 5/96, PROVIDED BY NIAGARA MOHAWK, SURVEY REFERENCE FILE NO. 34.35, FILE INDEX 21.0-52.18-M49, AND A NEW SURVEY FILE NO. 01135-1.DWG RECEIVED 6/19/02.
2. PROPERTY INFORMATION TAKEN FROM "CITY OF SARATOGA SPRINGS, SARATOGA COUNTY, N.Y. TAX MAPS" NUMBERED 153.00(00), 166.00(00), 165.36(D), 166.00(D), 166.05(D), 166.11(D), 166.21(D), 166.29(D), 166.30(D), 166.31(D), 166.37(D), 166.38(D), AND 166.39(D).
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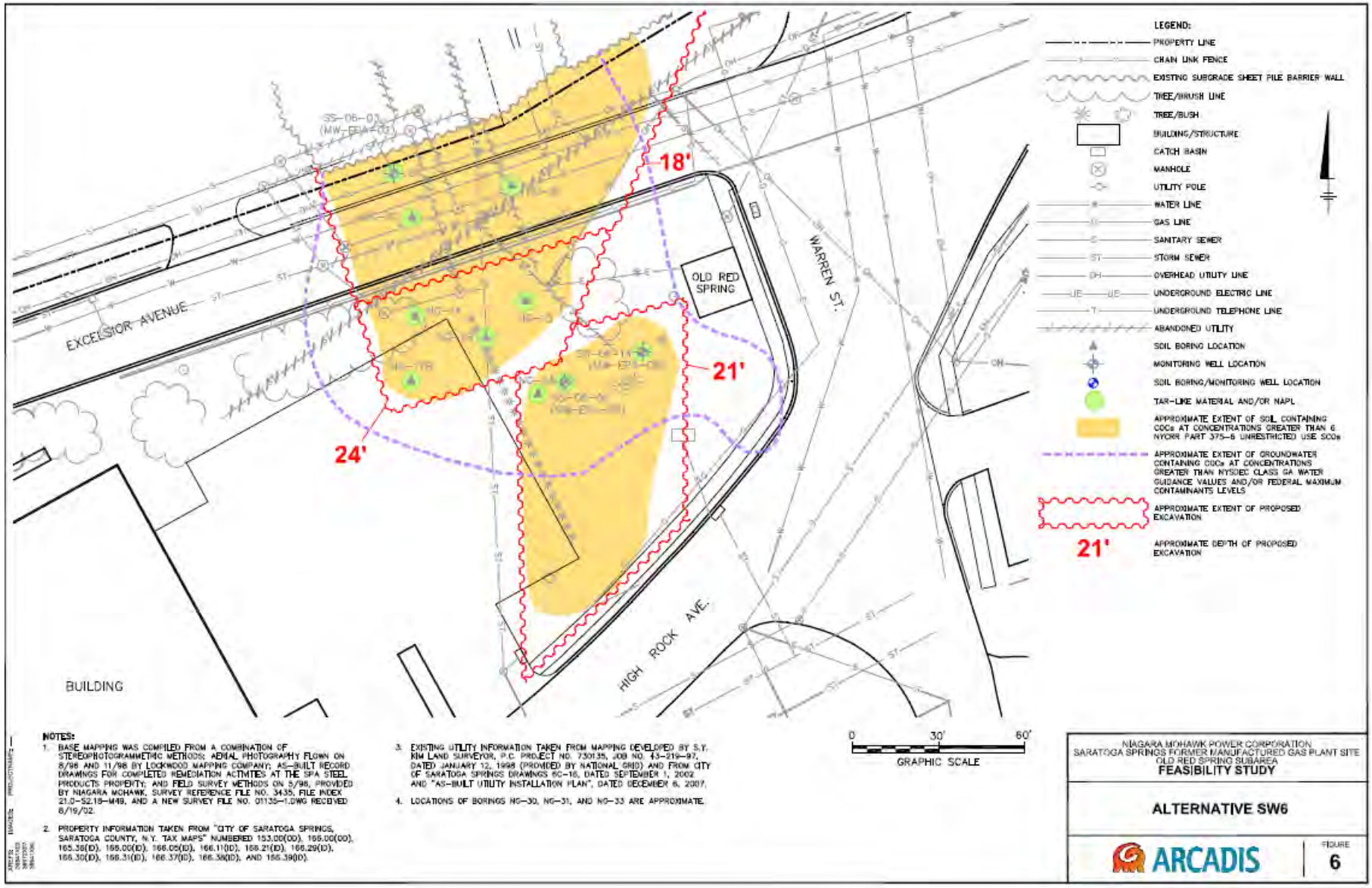
4. LOCATIONS OF BORINGS NG-30, NG-31, AND NG-33 ARE APPROXIMATE.
NIAGARA MOHAWK POWER CORPORATION
SARATOGA SPRINGS FORMER MANUFACTURED GAS PLANT SITE
OLD RED SPRING SUBAREA
FEASIBILITY STUDY
ALTERNATIVE SW4
ARCADIS
FIGURE
5



NOTES:

1. BASE MAPPING WAS COMPILED FROM A COMBINATION OF STEREOPHOTOGRAMMETRIC METHODS: AERIAL PHOTOGRAPHY FLOWN ON 8/98 AND 11/98 BY LOCKWOOD MAPPING COMPANY; AS-BUILT RECORD DRAWINGS FOR COMPLETED REMEDIATION ACTIVITIES AT THE SPA STEEL PRODUCTS PROPERTY; AND FIELD SURVEY METHODS ON 5/98, PROVIDED BY NIAGARA MOHAWK, SURVEY REFERENCE FILE NO. 3435, FILE INDEX 21.0-S2.18-M49, AND A NEW SURVEY FILE NO. 01135-1.DWG RECEIVED 8/19/02.
2. PROPERTY INFORMATION TAKEN FROM "CITY OF SARATOGA SPRINGS, SARATOGA COUNTY, N.Y. TAX MAPS" NUMBERED 153.00(00), 165.00(00), 165.38(D), 165.00(D), 166.05(D), 166.11(D), 166.21(D), 166.29(D), 166.30(D), 166.31(D), 166.37(D), 166.38(D), AND 166.39(D).
3. EXISTING UTILITY INFORMATION TAKEN FROM MAPPING DEVELOPED BY S.Y. KIM LAND SURVEYOR, P.C. PROJECT NO. 7501.35, JOB NO. 43-219-97, DATED JANUARY 12, 1998 (PROVIDED BY NATIONAL GRID) AND FROM CITY OF SARATOGA SPRINGS DRAWINGS SC-16, DATED SEPTEMBER 1, 2002 AND "AS-BUILT UTILITY INSTALLATION PLAN", DATED DECEMBER 6, 2007.
4. LOCATIONS OF BORINGS NG-30, NG-31, AND NG-33 ARE APPROXIMATE.

NIAGARA MOHAWK POWER CORPORATION
SARATOGA SPRINGS FORMER MANUFACTURED GAS PLANT SITE
OLD RED SPRING SUBAREA
FEASIBILITY STUDY

ALTERNATIVE SW6

ARCADIS

FIGURE 6

ATTACHMENT 2

TO RESPONSIVENESS SUMMARY

PUBLIC NOTICE

The EPA Invites Public Comment on the Proposed Cleanup Plan for the Niagara Mohawk Power Corporation Superfund Site in Saratoga Springs, New York

The U.S. Environmental Protection Agency has issued a proposed plan for the Niagara Mohawk Power Corporation Superfund site in Saratoga Springs, New York. The proposed plan identifies the EPA's preferred cleanup plan for addressing the remaining contaminated soil and ground water at the site and the rationale for this preference.

A manufactured gas plant operated at the Site. Coal tar from this plant was found to be present at the site. The soil and ground water are contaminated with polycyclic aromatic hydrocarbons and volatile organic compounds. The EPA's proposed plan calls for a variety of cleanup measures including: 1) removing surface soil in the Old Red Spring area and replacing existing Old Red Spring water well with a new well, 2) solidifying and stabilizing other areas of contaminated soil, 3) installing barrier walls to contain contaminated soil under Excelsior Avenue, 5) injecting a non-hazardous additive into soil and ground water to promote breakdown of the contamination, and 6) implementation of institutional controls, to limit land and ground water use.

As part of the public comment period, the EPA will hold a public meeting to discuss and receive comments on the preferred cleanup plan. The public meeting will include a formal presentation by the EPA on the preferred cleanup plan and other cleanup options considered for the site. The public meeting comments on the proposed plan for the record. You can submit written comments at the public meeting or by mail or email.

For more information, please contact Sophia Kelley, Community Involvement Coordinator, at 212-637-3670.

Public Meeting
Thursday, March 7, 2013
7 - 9 p.m.
Saratoga Spa State Park
Administration Building
19 Roosevelt Drive
Saratoga Springs, NY 12866

The Proposed Plan and other site documents are available electronically at http://www.epa.gov/region02/superfund/npl/niagaramohawk/

Project documents are also available for public review at the following information repositories established for the Site:

Saratoga Springs Public Library
49 Henry Street
Saratoga Springs,
New York 12866

USEPA Region 2, Superfund Records Center
290 Broadway, 18th Floor
New York, NY 10007-1866
(212) 637-4308

The EPA is taking written comments on the proposed plan for the Niagara Mohawk Power Corporation Superfund Site through March 28, 2013. Comments should be emailed or post marked by **March 28, 2013** and sent to:

Maria Jon, Remedial Project Manager
U.S. Environmental Protection Agency
290 Broadway, 20th Floor
New York, NY 10007-1866
Telephone: (212) 637 3967
Fax: (212) 637-3966
Email: NiagaraMohawkComments.Region2@epa.gov

ATTACHMENT 3

TO RESPONSIVENESS SUMMARY

March 7, 2013 PUBLIC MEETING ATTENDANCE SHEET

Niagara Mohawk Power Corporation Superfund Site

PUBLIC MEETING

7:00 – 9:00 pm on Thursday, March 7, 2013

SIGN IN HERE

Saratoga Spa State Park
Administration Building
Saratoga Springs, NY

First Name	Last Name	Suffix
Stephen	Le Fevre	

☐ DO NOT ADD TO MAILING LIST

Organization

U.S. FOIA Exemption 6 Redaction

First Name	Last Name	Suffix
TOM	KOOHAN	

☐ DO NOT ADD TO MAILING LIST

Organization

U.S. FOIA Exemption 6 Redaction

First Name	Last Name	Suffix
DENNIS	MURPHY	MR.

☐ DO NOT ADD TO MAILING LIST

Organization

U.S. FOIA Exemption 6 Redaction

First Name	Last Name	Suffix
Deborah	McLaughlin	

☐ DO NOT ADD TO MAILING LIST

Organization

Email Address

@

U.S. FOIA Exemption 6 Redaction

First Name	Last Name	Suffix
JOHN	ROCKWELL	

☐ DO NOT ADD TO MAILING LIST

Organization

U.S. FOIA Exemption 6 Redaction

Niagara Mohawk Power Corporation Superfund Site

PUBLIC MEETING

7:00 – 9:00 pm on Thursday, March 7, 2013

SIGN IN HERE

Saratoga Spa State Park
Administration Building
Saratoga Springs, NY

First Name	Last Name	Suffix
V.	Garlanda	

☐ DO NOT ADD TO MAILING LIST	Address: Number and Street	Apartment/Unit
	P.O. Box 71	

City	State	Zip code
SS	NY	12866

Organization	Email Address
EMC + SCSWCD	@

First Name	Last Name	Suffix

☐ DO NOT ADD TO MAILING LIST	Address: Number and Street	Apartment/Unit

City	State	Zip code

Organization	Email Address
	@

First Name	Last Name	Suffix

☐ DO NOT ADD TO MAILING LIST	Address: Number and Street	Apartment/Unit

City	State	Zip code

Organization	Email Address
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☐ DO NOT ADD TO MAILING LIST	Address: Number and Street	Apartment/Unit

City	State	Zip code

Organization	Email Address
	@

First Name	Last Name	Suffix

☐ DO NOT ADD TO MAILING LIST	Address: Number and Street	Apartment/Unit

City	State	Zip code

Organization	Email Address
	@

Niagara Mohawk Power Corporation Superfund Site

PUBLIC MEETING

7:00 – 9:00 pm on Thursday, March 7, 2013

SIGN IN HERE

Saratoga Spa State Park Administration Building Saratoga Springs, NY

First Name	Last Name	Suffix
Megan	Hennessey	

☐ DO NOT ADD TO MAILING LIST

Address: Number and Street: 11 Excelsior Ave | Apartment/Unit:

City: Saratoga Springs | State: NY | Zip code: 12866

Organization: Courtyard by Marriott | Email Address: mhennessey @ sbihosp.com

First Name	Last Name	Suffix
ERIC	DAMBAUGH	

☐ DO NOT ADD TO MAILING LIST

Address: Number and [redacted]

City [redacted]

Organization | Email Address: @

First Name	Last Name	Suffix
Patricia	Oller	

☐ DO NOT ADD TO MAILING LIST

[redacted]

Organization: Saratoga Today | Email Address: Patricia @Saratogapublishing.com

First Name	Last Name	Suffix
Timothy	Wales	

☐ DO NOT ADD TO MAILING LIST

[redacted]

Organization: City of Saratoga Springs | Email Address: tina.wales @saratoga-springs.org

First Name	Last Name	Suffix
Tina Crowley		

☐ DO NOT ADD TO MAILING LIST

Address: Number and Street: 6723 Towpath Rd | Apartment/Unit:

City: Syracuse | State: NY | Zip code: 13214

Organization: ARCADIS | Email Address: tina.crowley @ arcadis-us.com

U.S. FOIA Exemption 6 Redaction

U.S. FOIA Exemption 6 Redaction

U.S. FOIA Exemption 6 Redaction

ATTACHMENT 4

TO RESPONSIVENESS SUMMARY

March 7, 2013 PUBLIC MEETING TRANSCRIPT

In The Matter Of:

Proposed Cleanup Plan For The
Niagara Mohawk Power Corp. Superfund Site

Public Hearing Minutes
March 7, 2013

Martin Deposition Services, Inc.
Malta Commons Business Park
100 Saratoga Village Boulevard
Building 37, Suite 37C
Malta, New York 12020

Original File 03-07-2013 EPA.TXT
Min-U-Script® with Word Index

STATE OF NEW YORK : COUNTY OF SARATOGA

CITY OF SARATOGA SPRINGS

PUBLIC HEARING ON THE

PROPOSED CLEANUP PLAN

FOR THE

NIAGARA MOHAWK POWER CORPORATION

SUPERFUND SITE

SARATOGA SPRINGS, NEW YORK

A Public Meeting was held on Thursday, March 7, 2013 at the Saratoga Spa State Park Administration Building, 19 Roosevelt Drive, Saratoga Springs, New York at 7:00 p.m.

A P P E A R A N C E S :

MARIA JON, Remedial Project Manager U.S. Environmental Protection Agency

SALVATORE BADALAMENTI, Remedial Section Officer, U.S. Environmental Protection Agency

LARISA ROMANOWSKI, Community Involvement Coordinator, U.S. Environmental Protection Agency

S P E A K E R S :

MS. ROMANOWSKI: It's just a few minutes past seven. I think we should go ahead and get started. We have a bit to cover.

I know there are varying levels and knowledge about what we are discussing tonight. I want to make sure we get it all in and get everybody's comments and all questions get answered.

Just to welcome you all, my name is Larisa Romanowski. I am a Community Involvement Coordinator with the U.S. Environmental Protection Agency. My office is located in Hudson Falls. I'm also joined by a couple of colleagues from our New York office. We have Sal Badalamenti, who is our Eastern New York Remediation Section Chief. We also have Maria Jon, who is the Project Manager for the site that we are going to be discussing tonight.

As many of you know, the purpose of the meeting tonight is to talk

about the proposed cleanup plan for the Niagara Mohawk Superfund Site. We will get into more of the details about what entails.

The proposal itself was released by EPA in late February and that initiated a public comment period. That public comment period began in late February and is running through the 28th of March. Public input is really an important part of the Superfund process. It's important we take public input into consideration as we are evaluating our proposals before a final decision is made.

A couple of things I would like to point out is that we do have a stenographer here tonight. She is going to be preparing a transcript of the meeting. That meeting transcript will be available online and will be available publicly just so everyone is aware of that. The real purpose of having her here, too, is she can capture all of your questions and

comments as part of the public comment period.

Again, everyone is welcome to stand up and present at the end of the meeting if you have a comment or question. Sal and Maria are here to answer those for you.

I don't want you to feel that you need to talk tonight. You can also submit comments in writing via other means. We have information sheets in the back where you can get all the information about how you could submit something in writing. I do have comment sheets in the back. If you want to write a comment, you are welcome to do that. You also can submit by postal mail, by e-mail, by fax. We have all of that information for you. Again, we would like to put that in by the 28th of March. So all of those comments that we receive as part of this process, those are going to be addressed in what's called the Responsiveness Summary. That

Responsiveness Summary is part of the Record of Decision, which is the final decision document that will outline exactly what will happen. So I want you all to understand that, as well.

What I would like to do is briefly go over the agenda for this evening. First, Sal will go ahead and give us a brief overview of the Superfund Program. Then Maria will go ahead and give us a bit of the site background and history and tell us more about what has been done. Then she will discuss the Proposed Plan, the actual plan that has been presented in the document. There is a copy of the document in the back. It's also available online. She will be outlining all of the preferred cleanup methods, as well as all of the various alternatives that were looked at.

Then, finally, we will end our meeting with your comments and questions. That is how the evening

will go. I will wrap things up after everything has been presented.

Without further ado, I will go ahead and pass it on to Sal. Sal will get us going.

MR. BADALAMENTI: Thank you, Larisa.

In 1980, Congress established the Comprehensive Environmental Response Compensation Liability Act, it's called CERCLA. It's often called the Superfund. The goals of the Superfund Program are to protect human health and the environment by cleaning up polluted sites. We involve communities in the Superfund process, and we make responsible parties pay for work performed at Superfund Sites in most cases.

There are sites where there are no responsible parties that can be found, or they are bankrupt, and the Superfund pays for those sites. In most cases, we try to get the responsible parties to pay for the

cleanups. At this site, the responsible party is paying for the cleanup work.

So the Superfund process, there are a bunch of steps we go through. It starts with a preliminary assessment, a site investigation, where we have scant information about the site. It's sufficient to know there is some hazard there. We don't know the specific details, but it's enough information to prioritize the site, put it on the National Priority List. Once it's on the priority list, it becomes highly focused as one of the sites that we pay a lot of attention to and do a lot of work and try to accelerate the cleanup as much as possible.

We follow that with a very detailed remedial investigation and feasibility study. The remedial investigation tries to get the complete extent of the problem, what media it has impacted, whether it's

groundwater, whether it's soil, whether it's streams or it's creeks. And as part of that process, we do a Risk Assessment, as well. We determine what are the pathways that people could be exposed, what are the pathways that the environment can be exposed to these chemicals. Once we have that information, then we establish the goals that we need to accomplish to address those risks, and we evaluate and create some alternatives as to what the best methods are.

So in the Feasibility Study, we evaluate the alternatives and based upon certain -- there are nine criteria under the Superfund that we consider. Maria will get into those criteria later. At that point, which is where we are right now, we have come out with a Proposed Plan. We are seeking public comment, and we are hoping by the end of March to have a Record of Decision where the Agency

will determine what the final decision for the site is.

At that point the responsible parties will start the design work. We anticipate that to take approximately a year, maybe a little less in this case. We expect then to have those specifications bid upon by the construction contractor, and we are hoping that by next year, they will be out in the field starting the work and possibly finishing it by next fall.

And after construction is completed, the EPA will continue to have the site monitored to make sure the remedy is working as intended, and, thereafter, there will be five year reviews that occur routinely to do a more thorough evaluation of how well the remedy is working.

There will come a point in time when all the standards have been achieved, and we will be able to delete the site from the National

Priority List. At that point the site will be able to be reused for whatever purposes are possible. So that is the summary of the process.

With that, I will let Maria get into the details. Some of these alternatives have a lot of technical jargon. We are trying to reduce that as much as possible. If you feel you need clarification, please don't hesitate. We will try to speak in layman's language. Maria and I are both engineers and very accustomed to this stuff, and sometimes we slip.

Thank you.

MS. JON: Thank you.

MR. BADALAMENTI: One more second. We have up here a sample. We are talking about this D-NAPL, which is a Dense Non-Aqueous Phase Liquid that we have found in the ground. There is also an L-NAPL, which is lighter than water and floats on top of the groundwater. But when we talk about these terms, you will be able to

see what it is. You may take a look after the meeting. Please don't remove this from the table and please don't open it.

Thanks.

MS. JON: Thank you.

Good evening, everyone. Thank you for coming to this meeting. I want to provide you with a brief background and history of the site. The Niagara Mohawk Superfund Site is located in Saratoga Springs, New York at the corner of Excelsior Avenue and East Avenue. It's a former Manufacturing Gas Plant or MGP site. Gas manufacturing began in 1868 and ended 1929. Later it was used for gas storage and distribution until the 1950's.

Gas manufacturing operations produced coal tar and other waste materials as byproducts. These waste materials were released at the site. The site was placed on the EPA National Priority List (NPL) in 1990.

Currently, the property is owned by National Grid.

Coal tar in the form of Non-Aqueous Phase Liquid, or NAPL, was found in soil, subsurface soil, groundwater at the site. Coal tar contaminants include Polycyclic Aromatic Hydrocarbons, PAH's, and Volatile Organic Compounds, VOC's. And PAH's include anthracene, chrysene, benzo(a)pyrene, and some of these are contaminants of concern at the site. We also found some VOC's such as benzene, toluene, ethylbenzene and xylene, which are collectively known as BTEX.

This is the area view of the site. If as you can see, the main plant, which is the former manufacturing gas plant, is a seven-acre property. We also have other properties that were affected by the release of the coal tar material for the main plant. In order to facilitate the cleanup of the site,

usually we sometimes divide the cleanup process into two phases. We call it Operable Units or OU's. Operable Units includes the former MGP site, which is currently owned by National Grid, the former Skating Rink property, which is approximately 2.3 acres, and the underground sewer line that goes through the Niagara Mohawk property and continues along sections of the Spring Run Creek down to I-87. Another portion of this site includes sections of the Spring Run Creek, which is not shown on this here, and a section of the property known as the former Spa Steel property.

Remediation of those areas were completed in 2002. In September 1995, EPA issued a Record of Decision describing the cleanup of these properties. They were completed in 2002.

OU 2, which is the subject of this proposed plan, includes the -- First, I want to go back to the main

picture. It's this area (indicating) right across the former Spa Steel property. It's owned by the former Spa Steel property on the south by High Rock Avenue and on the east by Warren Street. OU 2 includes contamination in the subsurface soil and groundwater in approximately a half acre area. This area of the OU 2 Project Area includes a section of Excelsior Avenue, a section of the paved parking lot for a commercial business owned by The Mill, LLC and small green space owned by the Old Red Spring well and an associated pavilion. This is a photograph of the OU 2 Project Area looking from the north. This is Excelsior Avenue, the section where there is coal tar in the subsurface soil, the Old Red Spring, the green area around the spring, and a section of the adjacent parking lot.

Now, this is a diagram of the OU 2 Project Area. For purposes of developing the cleanup alternatives

that we are presenting, that we will be presenting in this job, meaning we have divided the OU 2 Project Area into two sections, one is Excelsior Avenue, and the second section is a portion is the Old Red Spring Area, which also includes the parking lot, sections of the parking lot.

Remedial Investigation and Feasibility Study for the OU 2 Project Area. We conducted an investigation to evaluate the nature and extent of the groundwater soil and vapor contamination, as well as evaluated the cleanup options to address their contamination found at the site. This is a cross-section of the geology underneath the OU 2 Project Area. To give you an idea where we found coal tar and where the Old Red Spring well obtains its water, okay, to give you an idea where we are, this is Excelsior Avenue, this area here. Then we have the Old Red Spring Area and Warren Street.

AUDIENCE MEMBER: Can you go over that again?

MS. JON: This is Excelsior Avenue. This is where there is asphalt pavement. Then we have the Old Red Spring area and Warren Street. So the geology of the OU 2 Project Area consists of urban fill and some areas covered by asphalt pavement. That is here and here (indicating).

There is shallow overburden groundwater and deep aquifers. Underneath the overburden groundwater, we have a silty clay unit, which is a confined layer which is approximately 50 feet thick. Below that, we have a till unit, which is also 50 feet thick. The Old Red Spring well gets its water from the big aquifers, is not getting the water from the shallow groundwater. The City of Saratoga Springs is served by the public water supply which is drawn from the Loughberry Lake, located upgradient from the site. As you can see, we

have, there are some monitoring wells and some borings drilled down to the surface of the clay layer, which detects some coal tar residue and some of the monitored soil bored. Like here in the red area, we found some coal tar and here, too (indicating). We didn't find anything on this side of OU 2.

So the Remedial Investigation (RI) for the OU 2 area began in 2008 and was completed in 2011. Forty-three soil samples were collected from borings. We collected groundwater from 17 monitoring wells. They were analyzed for PAH's and VOC's. Based on the data we collected, the contaminants, the coal tar migrated from the main plant from the manufacturing property across the street to the OU 2 Project Area, the underground silty clay unit, from the surface of the silty clay unit, which is located at 15 to 24 feet below the ground surface. The silty clay layer

serves as a confining unit. NAPL was spread laterally following the contours of the clay surface.

In some monitoring wells on the borings we found NAPL impact. This is a figure that shows the contour of the surface clay unit. You can see there is a depression here and also down here where the NAPL has, where it is residing currently. No NAPL had been observed below the clay unit, and we found NAPL in discontinuous thin intervals.

This is another cross-section beneath the OU 2 Project Area. There are only a couple of borings where we found NAPL right here residing on top of the surface of the clay unit, right here, too (indicating). We didn't find anything here, nothing here, okay, and nothing was here or here.

Groundwater Investigation. Based on the samples we have collected from the groundwater monitoring, as well as the groundwater flow,

underneath the project area is generally southeast across this site. This is the direction of the groundwater flow. We found groundwater in the shallow aquifers containing contaminants of concern that exceeded the class GA standards and /or federal Maximum Contaminant Levels. Immediately downgradient wells from this area are not detected for COC's or Contaminants of Concern from this site. So the Old Red Spring well has not been impacted by COC's from the site.

To give you an example of what I'm talking about, the flow -- this is a contour map of benzene found in the groundwater in the shallow aquifers. As you can see, it is not detected outside of this line, which indicates that the groundwater contamination is within this area, which is the OU 2 area. It has not migrated off site. The monitoring wells located outside of the OU 2 area are showing

non-detect for Compounds of Concern related to the Niagara Mohawk Superfund Site.

Risk Summary: The Baseline Human Health Risk Assessment and a Summary of Risks to Future Residents and Ecological Risk Assessment.

Baseline Human Health Risk Assessment. Estimated cancer risks and non-cancer hazards, potential exposure to contaminants of concern -- assuming no cleanup or institutional controls.

There are four steps that we need to follow in order to determine any risk, so we do a data collection and data evaluation and hazard identification. We do an exposure assessment and toxicity assessment and risk characterization. So EPA evaluated the potential risks from consumption of groundwater from the shallow aquifer to future adult and child residents under current and future land use scenarios.

Currently residents receive drinking water from an upgradient municipal source. If this source wasn't available in the future, adult and child residents would potentially be exposed to COC's in the shallow aquifer. Keep in mind, there is -- right now there is no risk. The water supply is from an upgradient source. This risk assessment assumes that in the future if that source wasn't available, then there is a potential exposure based on using the shallow groundwater aquifers, which is impacted with PAH's and some VOC's. So the exposure would include exposure to COC's in the shallow groundwater and the exposure to groundwater while showering and inhalation of vapors during showering.

This is a Summary of Risk to Future Residents. The estimates of excess cancer risk for the adult and child residential exposure exceed EPA's acceptable risk range of one in

10,000 to one in a million.

The main contributor to this risk were benzene and naphthalene.

The total future Hazard Index for a child for non-cancer health effects for the adult and child resident is above EPA's goal of protection of an HI of one (1). The primary contaminants of concern that contribute to this HI risk are fluorene, naphthalene and pyrene.

Ecological Risk Assessment. Since the contamination within the OU 2 Project Area is not migrating beyond the area, and they are not discharging to surface water, which the closest one is the Spring Run Creek which is also downgradient from the OU 2 Project Area, so there is no NAPL discharge into the surface water, so there is no unacceptable risk to ecological receptors.

Remedial Action Objectives. The objectives are the following:

Eliminate the migration of

contaminants within the subsurface soil into groundwater;

Remove, treat or contain principal threat waste;

Protect human health by preventing exposure to contaminated soil and groundwater, and;

Restore groundwater to levels that meet state and federal standards.

Remedial Alternatives. We evaluate five remedial alternatives to determine the risk. Alternative 1 is a no-action alternative. It has no cost associated and no action. It's been considered as a baseline for comparison with the other alternatives. In this situation under the no-action alternative, contamination remains the same or remains in place. We evaluated 3-A, 3-B, Alternative 4 and 6, which I will discuss now.

Alternative 3-A, there are several components that consist or make up the Alternative 3-A. The

first one is to treat via in-situ soil stabilization or ISS, Non-Aqueous Phase Liquid, or NAPL, impacted soil in the Old Red Spring area. Remember, the Old Red Spring Area, we subdivided it in two areas which include the Old Red Spring park, and parts of the parking lot.

Removing surface soil up to two feet below grade in areas not targeted by ISS in the Old Red Spring Area, and restore with imported clean fill.

Enhancing biodegradation of contaminated subsurface soil and groundwater in the Old Red Spring area by the application of non-hazardous additives.

Plugging and abandoning the existing Old Red Spring well and installing a replacement well.

As I said before, the groundwater from the Old Red Spring well is not impacted. But since the well is very old, it's been there for over 100 years, the concern is if we

do remediation or construction in the area, we may damage the well. So before we do any construction, before we start doing any construction, the well is going to be probably abandoned and it will be replaced after we are finished with the construction.

Another component is installing a containment barrier wall and a subsurface mat, encapsulate NAPL-impacted soil under Excelsior Avenue. Then conducting long term groundwater monitoring, implementing institutional controls and developing a Site Management Plan.

The construction time for this alternatives is six months. The total cost is $6,500,000, and the truck trips, that is 630 trips, which account for the transportation of the soil that would be removed, the first bullet and second bullet, and also any material that can be hazardous or known to be hazardous.

The next slide is a

presentation, a figure indicating alternative, presenting the Alternative 3-A.

This is the Excelsior Avenue corridor. This is the Old Red Stream area, the Old Red Stream well, and the adjacent parking lot owned by The Mill, LLC. So here we have the containment of Excelsior Avenue. Here we have the ISS on the soil, which will be done here for the NAPL impact of soil, as well as these areas. Here we only have very low levels of contamination in the subsurface soil. So in order to address those very low levels, it is proposed to inject non-hazardous additives here in the injection wells to treat the contamination in the subsurface.

Alternative 3-B -- sorry. This is a computer monitor, and it shows alternative to 3-A where this is Excelsior Avenue here where the impacted subsurface soil would be encapsulated. The other side, on the

north side of Excelsior Avenue, is the barrier wall, which is already in place for the former Spa Steel property, just a small section of their property. Then we have the ISS areas over here.

Alternative 3-B Components. Alternative 3-B includes all of the aspects of 3-A as discussed before, with the exception that for the area where we have NAPL impacted subsurface soil, instead of doing ISS, that area would be excavated and removed, off site disposal.

The construction time is eight months. The total cost is $8,600,000, and the number of truck trips 850.

Components of Alternative 4. Alternative 4 also includes all aspects of Alternative 3-A with the exception that the surfactant/cosolvent flushing of NAPL impacted soil will be under Excelsior Avenue containment system and also a groundwater extraction well will be

installed in order to maintain hydraulic control. Construction time is seven months, total cost is $6,400,000, and the number of truck trips, 450.

Components of Alternative 6. Alternative 6 consists of excavating soil, all of the impacted soil, in the Old Red Spring Area and Excelsior Avenue, the dewatering of the groundwater in the OU 2 Project Area as part of the soil excavation and conducting groundwater monitoring. Also includes plugging and abandoning the existing Old Red Spring water well and installing a replacement well. This alternative brings the site to predisposal conditions. The construction time is 12 months, total cost is $10,800,000, and the number of truck trips 1,250.

This is a diagram indicating the entire excavation area, the Excelsior Avenue, Old Red Spring, all of this area, and all of the soil will be

removed and excavated and sent to a disposal area.

Evaluation Criteria for Superfund Remedial Alternatives. EPA evaluated all of the alternatives against nine criteria. They are the following:

Overall protection of human health, compliance with applicable or relevant and appropriate requirements, long-term effectiveness and permanence, reduction of toxicity, mobility, or volume through treatment. Short-term effectiveness, implementability, cost, state acceptance, and community acceptance.

The preferred alternative that the EPA proposes is Alternative 3-A. The EPA believes Alternative 3-A most effectively meets the Evaluation Criteria. It reduces risk to human health and the environment, minimizes impact of remedial activities on the community, uses permanent solutions, and is cost effective.

So the Components of Preferred Alternative 3-A, again, we are treating via in-situ soil stabilization Non-Aqueous Phase Liquid impacted soil in the Old Red Spring area; removing surface soil, about two feet below grade, in areas not targeted for in-situ soil stabilization in the Old Red Spring area, and restoring that area with clean fill; enhancing biodegradation of contaminated subsurface soil and groundwater in the Old Red Spring Area by the application of non-hazardous additives; plugging and abandoning the existing Old Red Spring water well and installing a replacement well; installing a containment barrier wall and subsurface mat to encapsulate NAPL-impacted soil on Excelsior Avenue; conducting long-term groundwater monitoring; implementing institutional controls and developing a Site Management Plan.

Construction time is six months,

total cost is $6,500,000 and the number of truck trips will be 630.

EPA relies on public involvement to insure that input from the community is considered during the selection of the cleanup plan. EPA's final decision on the cleanup will be described in a Record of Decision, which will be issued after the EPA reviews all comments received during the public comment period. The comments and the EPA's responses will be included with the Record of Decision.

Public comment period will be open February 26th. The comment period on the Proposed Plan starts on February 26th, going through March 28th. The Administrative Record file, which includes the Proposed Plan and all supporting documentation or document, they are available at the local library, Saratoga Springs Public Library, Reference Section, 49 Henry Street, Saratoga Springs, and also

available at the EPA Record Center, 290 Broadway, 18th Floor, New York, New York. You may submit your comments via e-mail to myself, Maria Jon. You can send via e-mail: NiagaraMohawkComments.Region2@epa.gov. The address is the same as the Superfund Center, but it's floor number 20. It's 290 Broadway, 20th Floor, New York, New York.

That concludes my presentation. Thanks for your patience.

MR. BADALAMENTI: I have a few comments for clarification. You have heard several times about the Old Red Well -- the Old Red Spring well, about it being replaced. What is being replaced is the underground well structure. The pavilion will not be removed. There will be a new well placed close after the construction is finished, and then it will be piped into the well, and it will seem like it's the same well as what you are seeing today.

Another thing is that we indicated that we prefer Alternative 3-A. The State of New York, the D.E.C., also concurs with that recommendation. We do have some representatives from D.E.C. here today.

And the third thing, you have heard us separate the Excelsior Avenue piece of the puzzle as separate from everything else. There is a reason for that. There are a lot of utilities under Excelsior Avenue there. Moving them and the excavation, if the excavation alternative was chosen, it will affect electric power, water lines, sewer lines, and I believe there are fiberoptic fiber lines there, and gas lines. So it's not impossible, but it's a challenge. That is why the cost of that alternative is very high. That is all I wanted to add.

MS. JON: Also you will have to remove the utilities above ground,

relocate them as part of Alternative 6 also, not only in the subsurface soil, but also above ground.

MS. ROMANOWSKI: Thank you, Maria. Thank you, Sal.

Again, I would like to point out this information she has presented here is also available on some information sheets that are available in the back. You don't need to scribble this down. We do have that information and you are welcome to take the sheets with you.

Again, the public comment period runs until the 28th of March. We will take the opportunity now to go ahead and open up the floor for your questions and comments.

Again, your feedback is important. The EPA values the public comment. It helps us get the community input we need to inform our decision-making process. We certainly thank you for being here. We welcome your participation and look forward to

any comments and questions you may have.

Again, Sal and Maria are here, they can address any questions you may have. They will do that shortly.

Any comments that are received in writing, again, those will be captured in that Responsiveness Summary as part of the final Record of Decision.

What we will ask you to do at this time, I will move the podium and we will ask everyone that would like to speak, you are welcome to come up. For the purpose of the transcript, we ask that you state your name and if you could spell your last name for Joan's purposes so that she can make sure she gets it down accurately. I will pull this over here, and we can begin that portion of the meeting.

Does anyone have any questions or comments they would like to present at this time?

If you wouldn't mind, please

state your name, and spell your last name for Joan.

MR. LE FEVRE: My name is Steve Le Fevre, L-E F-E-V-R-E, and I guess just as a background, I'm a Licensed Professional Geologist.

As you indicate, you don't really have any scientific or technical basis for abandoning and replacing the Old Red Spring well, and I get the impression that you are really doing it to kind of accommodate the contractor, that you don't want him to get too close to damage it. I would propose that the Old Red Spring well is a historic feature of Saratoga Springs. I think you should take the appropriate precautions.

You talk about installing sheet piling along Excelsior Avenue. You could install sheet piling between the construction area and well if you want.

Furthermore, you indicate you will excavate down only five feet in

some areas, and two feet in others.

So I propose that you really try to take whatever measures you can to protect the well. If it turns out afterwards that the integrity of the well has been compromised and damaged, you look at replacement. If you replace the well, you will have to do a double case well, because you will drill through contamination.

MR. BADALAMENTI: Yes.

MR. LE FEVRE: Then I have a question. Do you know yet when you are doing your soil excavation where you will have your air quality monitoring stations? I assume you will have an air monitoring program that will be implemented. You will have thresholds that you will establish for when work would have to be stopped.

MR. BADALAMENTI: Yes, those plans will be developed during the design process.

And regarding the well, we don't

think it's a double case well right now. It's rather old.

MR. LE FEVRE: No, the new well will probably have to be double cased.

MR. BADALAMENTI: Yes, we intend to replace it with a double case well to go through the clay layer.

MS. JON: Yes, that is what will happen.

MR. LE FEVRE: I personally think you can take the appropriate precautions. You don't need to replace the well.

MR. BADALAMENTI: We indicated we were excavating three to five feet. We are, in fact, going down to the clay layer, which is about, varies from 11 to 24 feet.

MR. LE FEVRE: Where does it say that?

MR. BADALAMENTI: Not in that area of the Old Red Spring, but the ISS is going down to the clay area.

MR. LE FEVRE: Will you install that via injection?

MR. BADALAMENTI: There are several processes possible with an auger-type thing or with an actual mixing with a bucket and the arm.

MR. LE FEVRE: Okay.

MR. BADALAMENTI: There will be some closer earth movement near the well. That is our concern.

MR. LE FEVRE: Well, I guess I would request that maybe you not abandon the well initially, you wait and see, you know, if there has been a compromise.

MS. JON: Thank you.

MS. ROMANOWSKI: Anyone else?

MR. WALES: My name is Tim Wales, W-A-L-E-S and I'm the City Engineer for the City of Saratoga Springs, and I had a question on the proposed institutional controls.

You may know, this is kind of a Comprehensive Plan. This is an area for potential development, a very important area of the city. So when you say "institutional controls," I

assume you kind of mean in that little triangle there, and Mr. Roohan is here, who, I believe, owns the property. He may have more questions regarding that. You don't propose institutional controls other than that area, the area of Old Red Spring, is that correct?

MR. BADALAMENTI: That's correct.

MS. JON: That's correct.

MR. BADALAMENTI: Nice seeing you face-to-face.

MR. ROOHAN: My name is Tom Roohan, R-O-O-H-A-N.

Sal, do you think you can go back to page 27 on your PowerPoint presentation? And is there a place we can get a copy of this PowerPoint?

MS. ROMANOWSKI: It's posted online, and there is a website posted in the back of the room.

MR. ROOHAN: Obviously, this is a parking lot which this business depends on. So when we start this,

where do these people park and what do I say to my tenant who doesn't want to pay the rent because all of this is going on?

MR. BADALAMENTI: Hopefully, we will infringe just on the corner there. I'm not sure what additional logistics will be required by the construction contractor.

MR. ROOHAN: Okay. You might understand, that is not good enough for me, because I will tell you -- and Mr. Jones is here -- when they drilled all of these wells, they were a pain in the ass because those contractors had bid a job to do some work, they didn't really care about time or, you know, getting in there and getting out. That is what they want to do. That's how they make their money.

I don't want to be struck. I don't want the contractors who bid say, gee, we can come on your property? Because I live here, so I see what goes on down here. So the

minute, you know, I go to work, they are not there, and my wife will say, hey, what is going on down at the hill? I don't know. They are going in drilling or pulling wells, doing all of these things, you know. And my tenants are unhappy. There is dirt all over, their people are trapped; it's very frustrating.

MR. BADALAMENTI: I see.

MR. ROOHAN: Because I also watched what happened at OU 1. There they worked Christmas, Thanksgiving, weeks, all kinds of noise, all kinds of hours and look at what we were left with, an ugly, paved parking lot with pods on it for storage. Occasionally they used it as an area when there is a National Grid issue in our area. It's used as a staging area, and that is certainly appropriate, but how much money did you spent to fix OU 1?

MS. JON: $15 million?

MR. ROOHAN: $15 million, and look at what we're left with.

MS. JON: No, we only addressed the creek also. We cleaned up the creek.

MR. ROOHAN: I'm old. All my life that was not called Spring Line Creek, it was called Gas Creek -- it's obvious why. My concern is I want to be very specific about what we will be left with when they are done here. I am not happy with what you left us with across the street. The guys that paved it are thrilled, because the pavement is this thick over seven acres, and it rolls -- you know, it collects water and everything, but what a waste in a city of our size to waste that land. It looks like hell, you know, surrounded by fences, concrete blocks to protect the monitoring equipment and wells. It's really a big disappointment.

We are concerned about this product, which is at a 20 foot depth, because people might get it in their water. We live in a community where

the Health Department and D.E.C. do not allow you to have wells that shallow. We are doing all of this work, we are going to torture my friends who are building this nice building across the street, which in none of our pictures does it show up because it's fairly new. I don't know how they will get into their building when they start this work. But we are doing this to protect something no one can get at. I mean, all of this is city property.

Then you got the street. My parking lot -- you know, I spent a lot of money to extend water to all of those buildings. I have a storm water culvert, which is not a culvert, it's a brick structure. We are over here making a mess, doing stuff. You are in a very, very fragile area. We have a county sewer line that pumps 1200 gallons a minute. Something happens to that, you can't get away fast enough, you know what I mean? So

there's a lot going on. I understand why you don't want to dig up in this street, because of everything. So it seems to me personally -- most of us are clients of National Grid's -- that we are penalizing National Grid to fix something that is not catastrophic, because they are still standing. If it was a bankrupt company, I don't know, the Federal government would reach into its jeans, which are also our jeans, and spend money. Doesn't seem like the best use of capital. To me, you fixed the one that was scary. There is no more product in Spring Run Creek -- do you call it Spring Run?

MS. JON: Yes.

MR. ROOHAN: None of this is moving around by your own tests which you have done over and over again. So I just don't see the importance of this. Because I'm selfish. Where the spring was, that is beautiful. That is a real asset for the community. The other property is not. And we

have got people that have invested money.

Across the street, my friends at The Courtyard-Marriott have built that new thing, people that built houses on High Rock. Everybody takes very good care of their property. They are proud of everything. I'm worried that the box culvert, which is not a box culvert, it's a hand-laid brick storm water structure. A box culvert is very different in my estimation.

I know I'm torturing you. Could we go to the next one, please, page 28?

So my question here is I understand what we are doing in the road, because we have all of these utilities, which would keep Tim up all night if you guys were digging in there, because Lord only knows what could happen. So here this looks to me, much like the previous speaker, we are going deep and taking a lot of dirt out.

MR. BADALAMENTI: That is where that is going down to the clay layer. That is where the mixing with the concrete will occur and that represents a solidified mass.

MR. ROOHAN: We are pumping a product in there to solidify, to eliminate movement?

MR. BADALAMENTI: In that area it's a mixing of soil and concrete.

MR. ROOHAN: How far down would it be?

MR. BADALAMENTI: Down 11 to 24 feet over the entire site down to the clay.

MR. ROOHAN: So now if I'm an excavator, OSHA tells me I have to be back 20 feet to the 20 feet that I'm down. Are you going to drive sheeting down there? How high are you going to --

MR. BADALAMENTI: Until the design's completed, I can't answer in exact detail.

MR. ROOHAN: But this dirt will

be moved down to the red clay?

MR. BADALAMENTI: Correct, and very carefully near the brick culvert.

MR. ROOHAN: Could I have your home number, Sal, in case they damage it? You understand my concern that, you know, when I built my house across the street, we got a big foundation so we were down 30 feet and then we were back 45 feet to ground level, because there were men working there and there were things going on, so you can't dig a hole straight down. It will be way out into that parking lot.

I know the drawings haven't been done --

MR. BADALAMENTI: Right.

MR. ROOHAN: I'm just talking practicality.

Just in closing, the contamination is not moving. It's not an area where people will drill wells. There is one well, which we hope will be maintained. I mean, I think that is a community asset a lot of people

are proud of. There wouldn't be water usage. It's not a permitted thing to have a shallow well in our county, and I am just disappointed, as a neighbor and a property owner, that OU 1 is so ugly. You know, I don't know how we could have made it more ugly, because you could have sealed it, just like you would seal a landfill, put a lawn on it, at the least a skating rink. National Grid spends a lot of money and mows it, takes very good care of it. Seems to me they worked on with the city on Spring Run Trail. It's got trees along there. It's very popular. I never walked it that I haven't seen half a dozen people on it. You know, it's a plan that came together and worked well for everybody. And I just don't know why the other piece was left, we were left with that piece, you know?

MR. BADALAMENTI: Can I respond?

MR. ROOHAN: Absolutely, yes.

MR. BADALAMENTI: I wasn't here

for OU 1. But OU 2, the plan is to restore all services to their original condition.

MR. ROOHAN: So we will have new trees, the power will be underground. It would look like if I had gone to the City of Saratoga Springs and proposed a park, and I went through the approval process with the Planning Board Design Review Commission or somebody, and it would come out just like that?

MR. BADALAMENTI: Yes, that is my understanding of what the restoration will look like, yes.

MR. ROOHAN: I don't want to lose site of when National Grid pays the bills, we pay the bills. I don't like to see them penalized because that doesn't cost us $6.4 million. It will probably cost us 12. Because they borrow the money, they have their own internal costs, and we pay it back.

So I just don't think it's the

best -- I don't think it's needed like the other work that was done in the neighborhood. I don't think it's required. I don't think there is any risk. You have the wells that you can test any time you want. When the work is done, you will put more wells and keep testing it anyway. That cost stays with us going forward.

Anyway, I have talked enough. I'm sure there are other people who want to talk. Thank you for listening.

MR. BADALAMENTI: Thank you.

MR. GOUTOS: I'm Peter Goutos, G-O-U-T-O-S, and I'm an Environmental Engineer and active in the community at a number of community projects.

I have been around OU 1 the entire time in Saratoga Springs. I had investigated practically all of the properties around OU 2, as well as Spring Run Brook, and been involved with the review of the post-remedial efforts on Spring Run Brook.

One of the things I would like you to consider as you take on such a comprehensive restoration and remedial project is you put together costs for the project and it's millions of dollars. Startlingly, it's a lot more than I anticipated given the $15 million for OU 1.

Does the cost include the impact of the communities? We have a very vibrant activity in Saratoga Springs year 'round now, but most importantly in the summer. This area is a conduit for us for a variety of things that go on. We have the Farmer's Market just down the road, we have a lot of running and recreational things going on. From a parochial standpoint, I happen to be one of the race directors for one of the major road races, the Fire Cracker 4, which goes right through this on the 4th of July. I mean, last year there were 300 to 400 runners that met up with an all around celebration in the community that had

60,000 perhaps come in for a three-day event. Did the costs consider the impact, and did you consider that we do have to live with this in the period of time that it will take to be implemented? So I would be a proponent for a reasoned approach.

And what Mr. Roohan stated was quite accurate. Going down to the clay layer, 20 feet, 40 feet, of course you will have sheet piling, of course there will be a lot of hidden opportunities for delays and whatnot. But consider what you did at OU 1. You did have excavation; it was effective. You did put a substantial cap over it and made it impervious to future infiltration. My question is along the lines, technically, why not minimize the amount of excavation you want to do and come up with a solution that allows a reasonable amount of contamination to stay in the ground, perhaps with in-situ treatment with a short tenure construction schedule,

because you would be taking less out, perhaps avoid sheet piling if you could, because the mere fact you do that around the environment that we are in now with a developed area that has come on and with townhouses, enhanced the Van Raalt Mill, which is now The Mill, the new construction across the street, and the Marriott, you have a lot going on here, not to mention the sewer system utilities.

Now, from a completely parochial viewpoint, on the 4th of July, I really need that road.

MR. BADALAMENTI: Can I respond?

MR. GOUTOS: Please.

MR. BADALAMENTI: We are fully aware the city will limit when construction can take place. That had been, I believe, considered in the cost estimates. We have been told they won't allow construction during a certain period, and we intend to abide by that. This is my first time up to the site, and I was shocked at how

small it is. I was speaking with the responsible parties today, and this could be done rather quickly. It's a small site. It could be done without closing Excelsior Avenue completely. There will always be one lane open. It can be done outside of the tourist season.

MR. GOUTOS: You don't contemplate the 4th of July being part of the construction program?

MR. BADALAMENTI: I'm not certain when it will start, what the exact limits are of -- when the City does not want us to start, if that is within that period.

MR. GOUTOS: I will put my comments in writing just to let you know from a standpoint of what we anticipate which are 4,000 runners coming through there. One lane will be pretty tough in the last quarter, the last half mile of a four mile race. It's actually a competitive raise, too, so it's kind of dicey

there.

I would ask you to consider a reasoned approach on the amount of mediation you need to do. It's been there awhile. We are all on community water.

Thank you.

MS. ROMANOWSKI: Anyone else? Do you have any questions or do you want to make any comments?

MR. WALES: In response to your question, the Commissioner of Public Works and myself have had several discussions with the EPA and expressed concerns about the timing of the project, the closure of the streets. We are involved in the process and obviously during track season, it's very important that timing be considered. So we are cognizant of that with working with the EPA. The Commissioner of Public Works is concerned about the project.

MS. ROMANOWSKI: Okay, looks like that maybe everybody has had a

chance to speak?

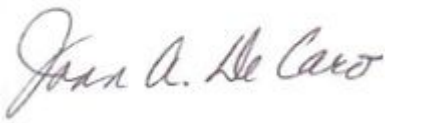
We would like to thank you for coming up this evening. Again, any information you have -- we have the Proposed Plan. There are hard copies in the back. It's available online. What was presented this evening is this plan, and the hard copy of that document is there. There is information how you can submit comments. Some people don't want to say things verbally. They like to write things down. You are able to do that the time period which is March 28th.

We thank you for your participation.

(The Public Hearing concluded at 8:22 p.m.)

C-E-R-T-I-F-I-C-A-T-I-O-N

I, JOAN A. DE CARO, Shorthand Reporter and Notary Public in and for the State of New York, do hereby CERTIFY that I recorded stenographically the foregoing testimony taken at the time and place herein stated and the preceding testimony is a true and accurate transcript hereof to the best of my knowledge and belief.



JOAN A. DE CARO

Dated: 3-12-2013

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ATTACHMENT 5

TO RESPONSIVENESS SUMMARY

WRITTEN COMMENTS SUBMITTED DURING THE PUBLIC COMMENT PERIOD

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SENIOR ENGINEERING TECHNICIAN

ALBERT FLICK
SENIOR ENGINEERING TECHNICIAN

March 26, 2013

Ms. Maria Jon
Remedial Project Manager
U.S. Environmental Protection Agency
Eastern New York Section
290 Broadway, 20th Floor
New York, NY 10007-1886

Re: Proposed Cldeanup for the Former Niagara Mohawk Power Corporation Superfund Site, Excelsior Avenue, City of Saratoga Springs, NY

Dear Ms. Jon:

After reviewing the information and reports provided by your office, and attending the Public Meeting and presentation on March 7th in Saratoga Spa State Park, the City of Saratoga Springs concurs with the USEPA and NYSDEC that Alternative 3A is the best alternative for remediation of the above mentioned superfund site in the City, and we support the advancement of this option for the site. As mentioned previously, we are concerned with construction during the summer months and we have a strong desire for Excelsior Avenue to remain at least partially open for the majority of the construction period. Additionally, the City will require that National Grid (successor to Niagara Mohawk) pay for a construction representative of the City's choosing, during the construction period. Please let me know if you have any questions.

Sincerely,

Timothy W. Wales, P.E.
City Engineer

CC: DPW Commissioner Scirocco
Brad Birge, Planning Dept.

From U.S. FOIA Exemption 6 Redaction
To: Region2 NiagaraMohawkComments@EPA
Date: 03/26/2013 02:52 PM
Subject: Excelsior dump

Hello.

As someone who lives near Excelsior and thus near the abandoned plant, I strongly believe the extra steps to remove the contaminated soil must be taken. I see this as just a ticking bomb. If everyone just ignores it and leaves it as it is, this situation will just blow up one day. I say clean it up now, remove the contamination, deal with the minor inconveniences all for the greater good of the entire town. Clean it up, there's a plan in place, it's not enormously expensive. Let's fix this before it gets worse.

Thank you for your time and for reading this.

Gregory