SARATOGA SPRINGS (LAKE AVE.) NON-OWNED FORMER MGP SITE

SARATOGA SPRINGS, NEW YORK

Site-Specific Work Plan
for
Site Characterization

July 2003

Prepared for:

Niagara Mohawk
A **National Grid** Company

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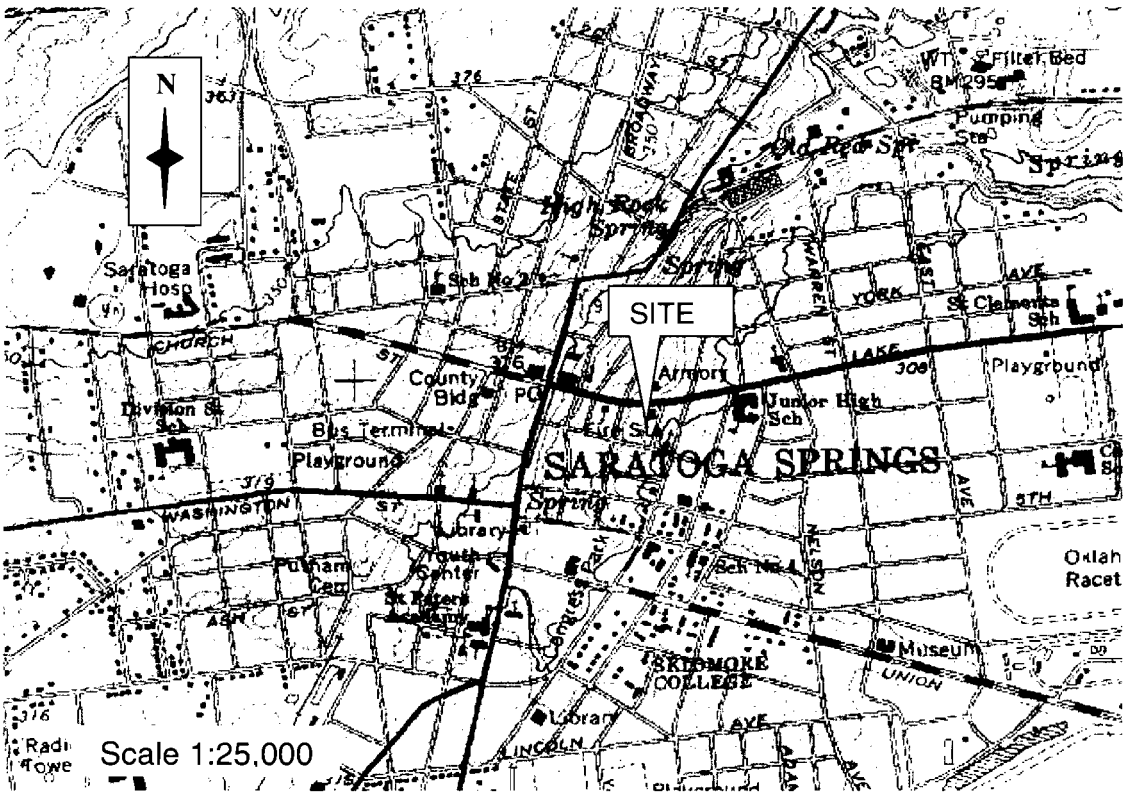
1.0 INTRODUCTION

This Work Plan presents the Site-specific scope of investigation activities and health and safety considerations for the Saratoga Springs (Lake Ave.) Non-owned Former Manufactured Gas Plant (MGP) Site. The purpose and objectives of the investigation, rationale for the investigation approach, data quality objectives, field investigation procedures, quality assurance/quality control (QA/QC) requirements, and generic health and safety requirements are presented in the Generic Work Plans for Non-owned Former MGP Sites, prepared previously by Foster Wheeler Environmental and approved by the New York State Department of Environmental Conservation (NYSDEC). This Site Characterization Work Plan is prepared pursuant to a Voluntary Cleanup Order (VCO) between Niagara Mohawk, A National Grid Company (Niagara Mohawk) and the NYSDEC dated July 3, 2001.

2.0 SITE DESCRIPTION

The Saratoga Springs (Lake Ave.) Non-owned former MGP Site (the Site) is a former MGP approximately one acre in area located at Lake Avenue and Hodgeman Street, Saratoga Springs, Saratoga County, New York. The Site is zoned multi-family urban residential and is served by municipal water and sewer. The Site is bounded by Lake Avenue to the north, Hodgeman Street to the east, Alley Street to the south, and retailers to the west. The subject property appears to have been the site of a variety of uses subsequent to the cessation of MGP activities on-site over 100 years ago. Figure 1 illustrates the location of the property on the USGS 7.5 minute Saratoga Springs Quadrangle map.

Figure 1. Site Location Map



Source: USGS Saratoga Springs Topographic Quadrangle

2.1 Site History

Foster Wheeler Environmental performed a review of 13 Sanborn Fire Insurance Maps (1884, 1889, 1895, 1900, 1909, 1926, 1948, 1950, 1952, 1954, 1972, 1973, 1976) depicting the Site. Sanborn maps and other third party documentation are provided for informational purposes only. Niagara Mohawk cannot warrant the accuracy of such third party information. The results of the review are discussed, by year, below.

1884: A "High School" is depicted on the 1884 Sanborn map at the Site (Figure 2). Features indicative of a former MGP are not evident on the map.

1889: Consistent with the apparent land use depicted in the 1884 Sanborn map, a "Union Free School" is depicted on the 1889 Sanborn map at the Site. Features indicative of a former MGP are not evident on the map.

1895: Consistent with the apparent land use depicted in the 1884 and 1889 Sanborn maps, a school is depicted on the 1895 Sanborn map at the Site (Figure 3). A "Grammar Dept." expansion is depicted on the map. Features indicative of a former MGP are not evident.

1900: The Site appears unchanged from the 1895 map.

1909: The Site appears unchanged from the 1900 map.

Figure 2. 1884 Sanborn Map

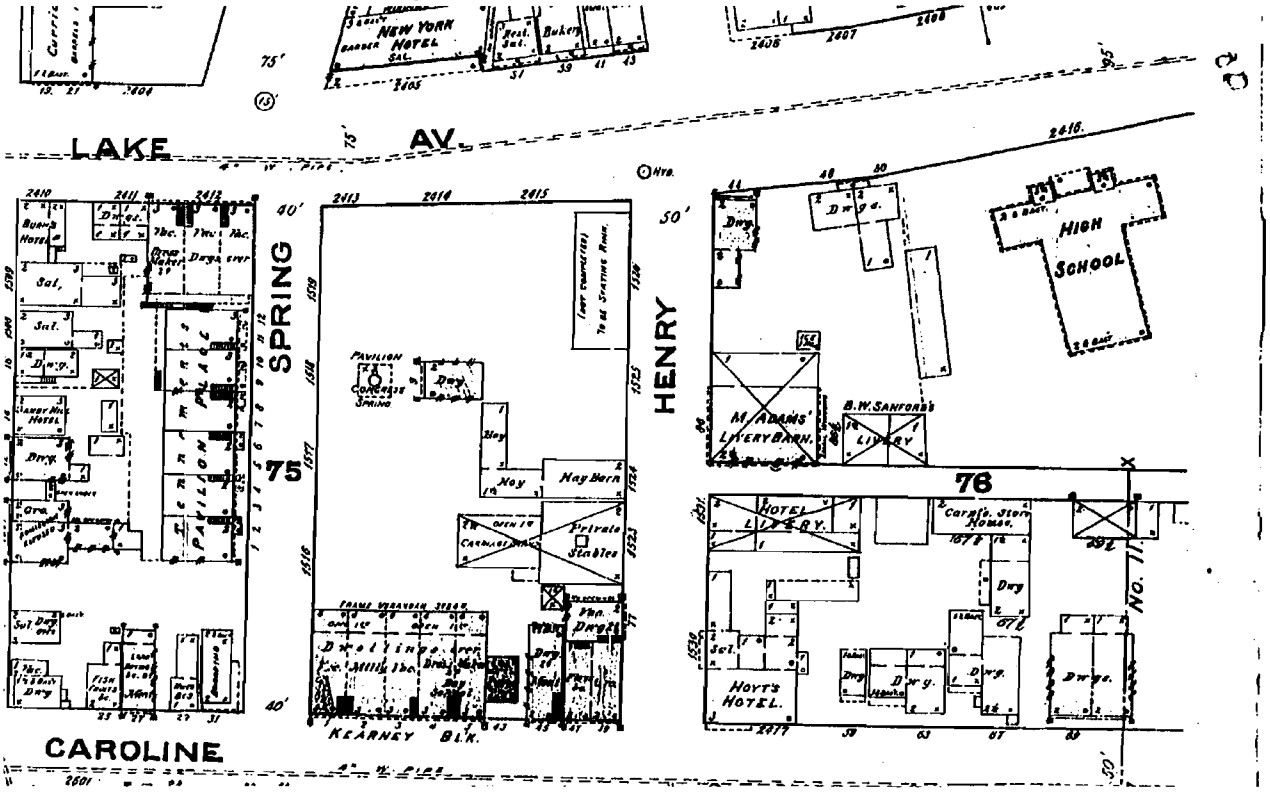
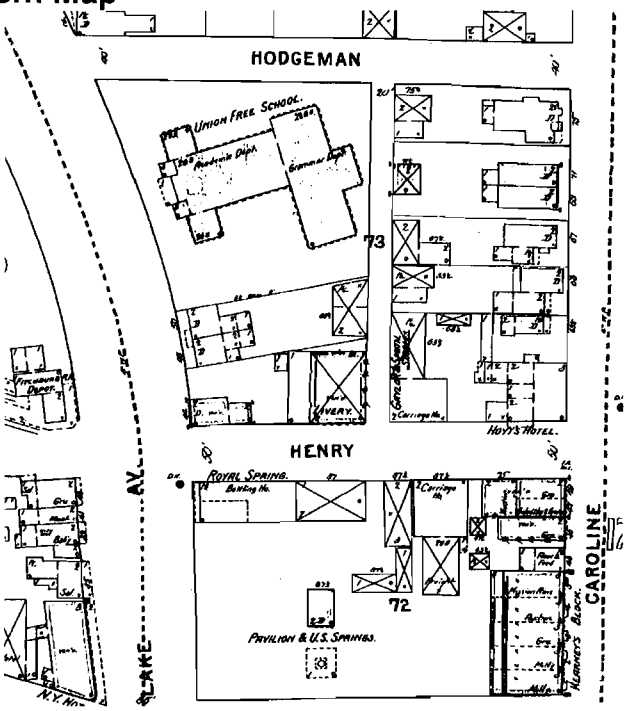


Figure 3. 1895 Sanborn Map



1926: An area within the school depicted on the 1926 Sanborn map is labeled as "Ruins of Fire." Other than this feature, the Site appears unchanged from the 1909 map.

1948: The school building appears to have been replaced by a "Central Fire Station" in the 1948 Sanborn map. Features indicative of a former MGP are not evident.

1950: The Site appears unchanged from the 1948 map.

1952: The Site appears unchanged from the 1950 map.

1954: The Site appears unchanged from the 1952 map.

1972: The Site appears unchanged from the 1954 map.

1973: The Site appears unchanged from the 1972 map.

1976: The Site appears unchanged from the 1973 map.

In addition to review of the Sanborn maps described above, which appear to predate the MGP activities at the Site, the Brookside Museum, the Saratoga Springs Public Library, the Saratoga Springs City Historian's office, and the Saratoga County Historical Society were contacted for information pertaining to the old gas works.

No information pertaining to the former MGP was available from either the Brookside Museum or the Saratoga County Historical Society. An 1866 Beers Atlas map depicting the former MGP was obtained from the Saratoga Springs Public Library. A gas house and a holder are depicted on this map. An 1876 map depicting a high school located on the site of the old MGP was also obtained from the library. Historic newspaper articles and excerpts from books and other

documents describing the history of the MGP were obtained from the Saratoga Springs City Historian's office. The following history of the MGP was prepared from the information described above.

On July 11, 1853 the Saratoga Gas Light Company began construction of Saratoga Springs' first gas works at the corner of Lake Ave. and Hodgeman Street. The gas works consisted of a "gas house" which was 80 feet long by 30 feet wide by one story high [Saratogian, 1941], and a gas holder which had a capacity of 25,000 cubic feet [HAER, undated]. (Note: according to the Historic American Engineering Record [undated], the dimensions of the gas house were 40 ft by 25 ft.) The plant operated from 1854 until 1875.

In 1875 the gas house was purchased by the city of Saratoga Springs and converted into a high school. The date of demolition of the gas holder associated with MGP is unknown. In 1883, due to strong odors, the building was demolished, and a new high school was built in its place [Britten, 1959]. Between 1889 and 1895 an extension, known as the Grammar School, was added to the rear of the high school. On October 22, 1923 the entire high school was destroyed by fire [Callahan, 1938].

According to the Historic American Engineering Record (Historic American Engineering Record, undated), the MGP was constructed at the Site in 1853 by the Saratoga Light Company. The MGP consisted of one 40 ft by 25 ft building and a 25,000 cu ft capacity gasholder.

According to Callahan (1938), the gas house associated with the MGP "was purchased by the town [of Saratoga Springs] and made into a High School." In 1883 the gas house was razed and replaced with a new school building.

Brown's Directory of American Gas Companies 1907-1926 indicates that gas production began by the Saratoga Gas, Electric Light and Power Co. using the Lowe process sometime before 1907. However, because information pertaining to the Site presented above indicates that gas production ceased at the Site by 1875, the information provided in Brown's Directory is considered likely to apply to a different Saratoga Springs MGP location.

On December 1, 1998 two underground storage tanks were removed from the Site. Both tanks were 2,000 gallons steel tanks of unknown age that had not been in service for approximately 20 years. One tank appears to have been used to store gasoline. The other tank appears to have been used to store No. 2 heating oil. NYSDEC observed the removal of both tanks as well as the collection of soil samples in the vicinity of the tanks. The soil samples were tested for volatile and semivolatile organic compounds. Trace amounts of methyl tertiary butyl ether (MTBE) were found under the gasoline tank and beneath the former gasoline pump island. Contaminants were not detected in soil associated with the No. 2 fuel oil tank. Concentrations of MTBE detected in soil associated with the gasoline tank were below the STARS guidelines for further action, so no further action was required at the Site [Pasaretti, 1999].

2.2 Current Conditions

Aboveground structures related to the former MGP are no longer evident on-site. The Site is owned by the City of Saratoga Springs and is occupied by the Central Firehouse. The remainder

of the Site is paved. The Site is located in a commercial area of Saratoga Springs. Commercial properties and municipal roads border the Site.

3.0 SCOPE OF INVESTIGATION

The scope of the Site Characterization of the Saratoga Springs (Lake Ave.) Non-owned Former MGP Site is described below. Preliminary sample locations are shown on Figure 4. Field activities will be performed in accordance with the Generic Plans.

1. Advancement of a maximum of two (2) soil borings to a target depth of 30 feet to assess subsurface conditions. Soil borings will be installed within the footprint of the former holder only if test pit information (see #3, below) indicates that the holder was formerly a below-grade holder. (Note: If holder foundation remnants nor suspected MGP residuals are not encountered through the test pit investigation, the suspected location of the holder (see Figure 4) will be considered inaccurate and the boring program will be reconsidered.) If installed, the boring within the former holder footprint will be advanced to the apparent bottom of the holder. The soil borings will be installed slightly off-center to avoid potential impediments (e.g. pedestals) to accessing the holder bottom. The consulting geologist will instruct the drilling subcontractor to advance the augers based on holder floor depth information and will utilize best field practices to confirm the floor of the holder. If refusal is encounter prior to expected depth of the holder floor, the augers will be removed and a boring will be installed within a five to ten foot radius of the original boring. A boring will be installed immediately adjacent to any below-grade holders to allow evaluation of subsurface soils below the holder bottom. If soil borings indicate the presence of MGP impacts, soil borings will be advanced deeper until there is reasonable assurance that the impacted zone has been penetrated. One to three soil samples will be collected from such impacted borings to define the nature and extent of contamination. One sample will be collected from borings that do not appear to be impacted by MGP constituents to verify soil conditions.

2. Three (3) additional borings will be converted to monitoring wells to: a) confirm suspected local groundwater flow direction, and b) evaluate groundwater quality entering and migrating from the Site. One groundwater monitoring well will be installed in a location expected to be upgradient of MGP-related structures, in close proximity to the property line, if possible. One groundwater monitoring well will be installed in an on-site location expected to be downgradient of former MGP-related structures, as close as possible to the property line. The third monitoring well will be placed in an on-site location to allow further evaluation of site conditions and evaluation of local groundwater flow direction. If the locations of one or more of the soil borings installed per (#1), above, meet groundwater monitoring objectives, they will be converted to monitoring well(s). Groundwater monitoring wells will be constructed of 2-inch PVC Schedule 40 screen and riser, with a target depth of 30 feet. The screened interval in the groundwater monitoring wells will be determined based on field observations of the corresponding subsurface borings. Monitoring wells will also be installed in locations where NAPL is identified in soil borings. Such wells will be equipped with a sump to collect mobile NAPL, if present, and to be used as a measuring point for such NAPL. If a confining geologic unit or bedrock is encountered during installation of borings for monitoring wells, the drilling program will be reevaluated. The nature and depth of the confining layer and the subsurface conditions will be evaluated prior to continuation of the boring. One subsurface soil sample will be collected from each boring installed for installation of a monitoring well.

3. Excavation of two (2) test pits: two "T-shaped" test pits will be located across the wall of the gas holder to determine the location, construction, and whether MGP impacts associated with the holder are present. The portion of the T-shaped test pit normal to the location of the former holder will be extended a maximum length of 30 feet to locate remnants of the holder structure, as limited by the on-site structure and the property boundary. Should no evidence of the former holder foundation be encountered after excavation of this 30 ft pit, this activity will be re-evaluated in consultation with NYSDEC. Should the former holder foundation be encountered in the test pit, the tangential portion of the test pit will be extended along the

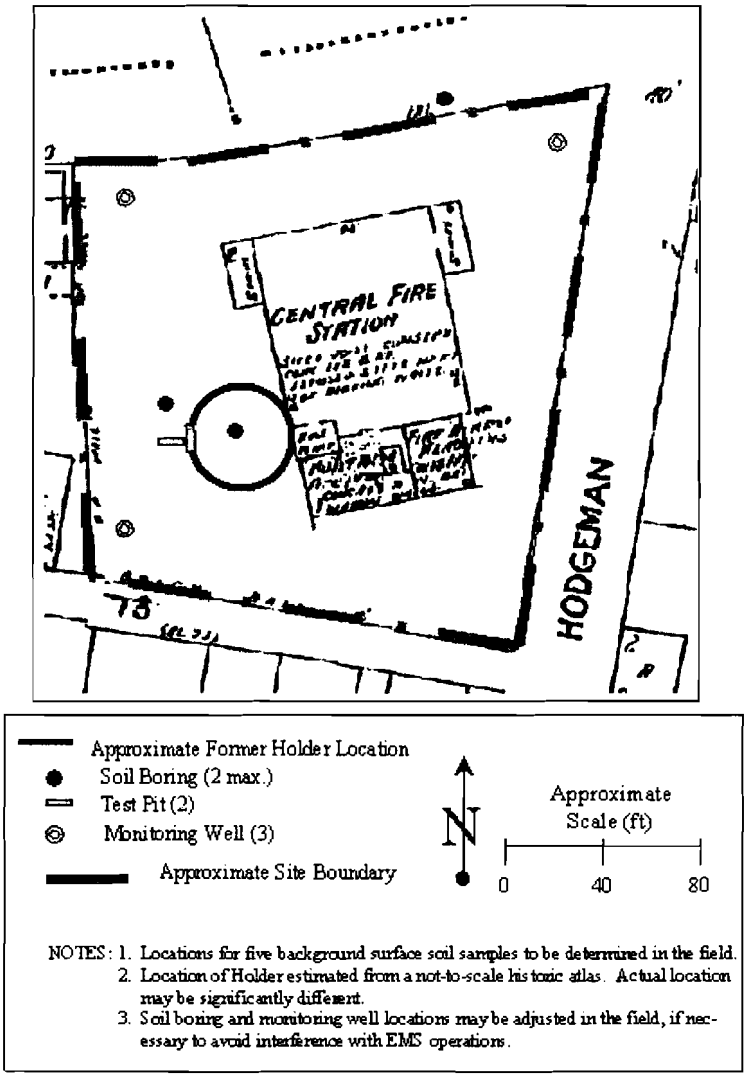


Figure 4. Site Characterization Samples and Test Pit Locations

wall to provide information related to the construction and orientation of the holder wall. If the test pits indicate that the structure was formerly an at-grade holder, two (2) subsurface soil samples will be collected from soil beneath the holder bottom to document soil chemistry with respect to New York State standards, criteria, or guidance (SCGs). If the test pits indicate that the holder was formerly a below-grade holder and the holder bottom is

inaccessible to excavation equipment, the holder will be further characterized using soil borings (see #1, above). Test pit locations depicted on Figure 3 are approximate; locations will be modified in the field, if necessary, to maintain an appropriate buffer between test pit excavations and on-site structure(s) to protect the integrity of associated foundations. The test pit(s) will be backfilled at the end of each work day, thereby minimizing potential impacts on the local community.

4. Surface soil samples will not be collected. The MGP ceased operations over 125 years ago. The original Site buildings were demolished in 1883 and a new school building constructed, which was subsequently destroyed by fire in 1923. In 1929, the currrent building on the site, a firehouse, was constructed. The current surficial soil is therefore not representative of conditions at the close of MGP operations.

5. Analytical samples will be collected from specific sample locations/intervals based on field observations at the following frequency (see Table 1, for analytical testing details):

   a) One to three (3) soil samples will be collected from each soil boring, two subsurface soil samples will be collected from the at-grade holder (via test pits), and one subsurface soil sample will be collected from each monitoring well location. Subsurface soil samples will be analyzed for BTEX, PAHs and total cyanide; 10% of these subsurface soil samples will be analyzed for the suite of Target Compound List (TCL) and Target Analyte List (TAL) constituents (see #1, above) to evaluate whether impacts from operations other than the MGP are present on-site.

   b) One soil sample will be collected from each soil boring location and analyzed for TOC. If test pits indicate that a given structure was formerly an at-grade holder, one soil sample will be collected at each test pit location from beneath the holder bottom and analyzed for TOC. One TOC sample will also be collected from borings installed for monitoring wells.

   c) One (1) round of groundwater samples will be collected from each monitoring well and analyzed for full TCL/TAL parameters.

   d) Based on field observations, one sample may be collected for GC fingerprint analysis, particularly if non-MGP impacts are suspected.

   e) If soil borings indicate the presence of an unconsolidated confining layer, one (1) Shelby tube sample will be collected for analysis of geotechnical parameters (i.e., porosity, permeability, bulk density, grain size, Atterberg Limits, % moisture, and specific gravity).

6. A baseline ground survey of the Site will be performed to develop a base map of the Site for development of the Site GIS and for presentation of data. This baseline survey will encompass surveying surface features, elevations (two-foot contours), underground utilities, structures, materials of construction, easements, property lines, and other relevant information located within the survey limits identified for the Site. The second phase, Post Investigation Survey, will be conducted upon completion of the field investigation activities and will include the survey of wells installed, soil borings drilled, and test pits excavated.

TABLE 1
Summary of Laboratory Analyses for Site Characterization
Saratoga Springs (Lake Ave) Non-owned Former MGP Site

			Field QC Samples			Laboratory QC Samples			
Subtask	Sample Matrix	Laboratory Analysis	No. of Samples	Trip Blanks[3]	Field Duplicates	Equipment/ Field Blanks	MS/MSD[1]	MSB/LCS[2]	Total
Surface Soil	Soil	TCL VOCs, SVOCs, TAL metals	0[4]	0	0	0	0	0	0
Subsurface Soil	Soil	BTEX, PAHs, total cyanide	4[5] - 8	0	1	1	1/1	1/1	10 - 14
		TOC	5	0	0	0	0	0	5
		GC Fingerprint	≤ 1	0	0	0	0	0	≤ 1
		TCL VOCs, SVOCs, PCBs/Pest. TAL metals,	1	0	1	1	1/1	1/1	7
		Geotechnical parameters[6]	≤ 1	0	0	0	0	0	≤ 1
Groundwater	Water	TCL VOCs, SVOCs, TAL metals.	3[7]	1	1	1	1/1	1/1	10

NOTES:

1 MS/MSD: matrix spike/matrix spike duplicate.

2 MSB/LCS: matrix spike blank/laboratory control sample.

3 Trip blanks will be analyzed for TCL VOC parameters only.

4 Due to likely confounding effects associated with historical events (i.e. fire) and current use of the Site, collection of surface soil samples is not proposed at the Site.

5 Minimum quantity based on assumption that holder foundation is at-grade. One sample will be collected from each test pit at the holder location and one sample will be collected from each monitoring well location. Totals for BTEX, PAHs and total cyanide reflect subtraction of 10% (one sample) to be analyzed for TCL/TAL parameters.

6 Porosity, permeability, bulk density, grain size, Atterberg Limits, % moisture and specific gravity.

7 Based on one round of groundwater sampling, to be performed a minimum of 6 weeks following groundwater monitoring well installation.

7. Maps depicting the groundwater flow direction and the soil and groundwater analytical data will be developed in GIS for incorporation into the Site Characterization Report (see below). The figures will provide a graphical summary of the data. Boring logs and cross sections will also be developed based on the field data for presentation in the Site Characterization Report.

8. The analytical data generated from the field activities will undergo data validation. A Data Usability Summary Report (DUSR) will be prepared following completion of the data validation task.

9. Data obtained through the Site Characterization will be presented in a Site Characterization Report (SCR) for the Site. The SCR will include a qualitative evaluation of potential risks to human health and the environment, based on site characterization data.

4.0 HEALTH AND SAFETY INFORMATION

Health and safety requirements for Site Characterization activities are provided in the Generic Health and Safety Plan. The Site-Specific Hospital Route Map and Emergency and Site Contacts are provided as Attachments A and B to this Work Plan.

5.0 PROJECT SCHEDULE

The proposed project schedule for implementation of the Saratoga Springs (Lake Ave.) Non-owned Former MGP Site Characterization activities is as follows.

Duration or Date (Calendar Days)	Activity
January 31, 2003	Niagara Mohawk submits Site-specific Work Plan for Site Characterization.
60 days after NYSDEC approval of final Site-specific Work Plan for Site Characterization	Niagara Mohawk procures consultant to implement Site Characterization efforts.
30 days after procurement of consultant to implement Site Characterization.	Niagara Mohawk submits locations for proposed background samples and performs site reconnaissance.
14 days after NYSDEC approval of background sample locations	Niagara Mohawk mobilizes for survey and Site Characterization activities.
14 days after investigation	Niagara Mohawk performs post-investigation survey and mapping.
60 days after completion of Site Characterization activities.	Niagara Mohawk submits Data Usability Summary Report to NYSDEC.
170 days after submission of Data Usability Summary Report.	Niagara Mohawk submits draft Site Characterization Report to NYSDEC.

This conceptual project schedule identifies major milestones for the overall Site Characterization for the Saratoga Springs (Lake Ave.) Non-owned Former MGP Site. Niagara Mohawk may perform Site Characterization activities at a number of sites subject to the VCO concurrently. In order to complete these investigations as efficiently as possible, Niagara Mohawk may adjust the schedule of intermediate activities (e.g., field investigation, survey, etc.) at the Site to coincide with activities at other non-owned former MGP sites, if feasible.

6.0 REFERENCES

Britten, 1959: Chronicles of Saratoga, Evelyn Barrett Britten, 1959

Callahan, 1938: Early Saratoga Schooldays, Julia A. Callahan, Circa February/March 1938

HAER, undated: The Historic American Engineering Record, HAER No. NY-313

Pasaretti, 1999: Tank Closure Report - 60 Lake Avenue, Saratoga Springs, NY, February 5, 1999. Passaretti Geological & Environmental Consultants, Inc.

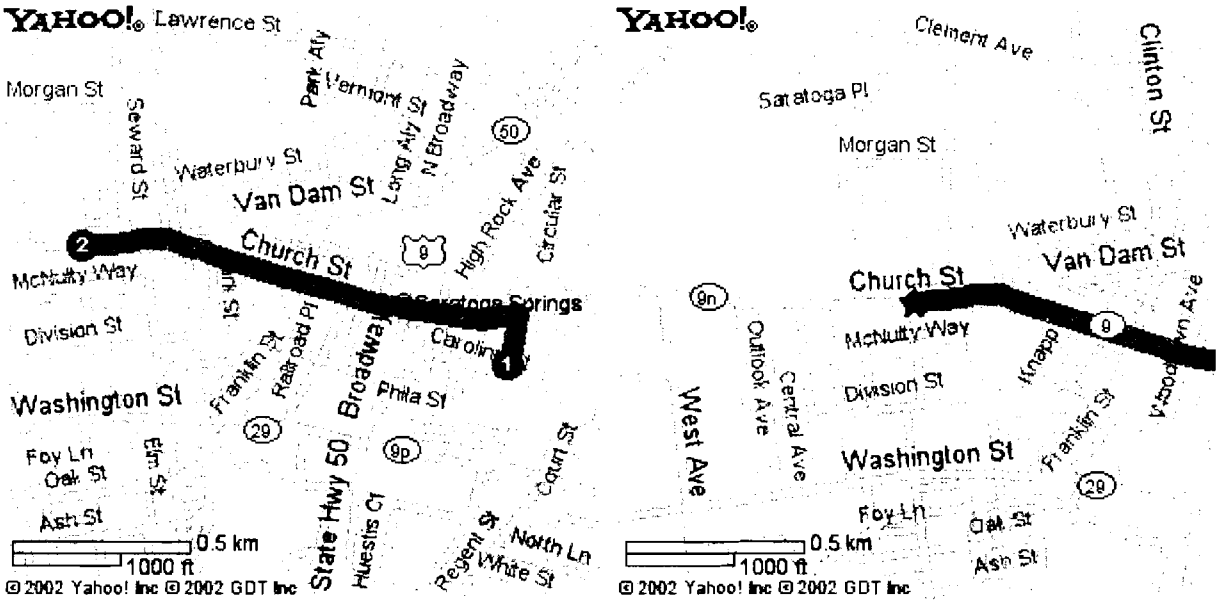
Radian, 1985: Survey of Town Gas and By-Product Production and Locations in the U.S. (1880-1950); Robert Eng, Radian Corporation for USEPA (EPA/600/7-85/004), February 1985.

Saratogian, 1941: Saratogian, August 18, 1941.

ATTACHMENT A

HOSPITAL ROUTE MAP

Saratoga Hospital
211 Church St # 1
Saratoga Springs, New York
518-587-3222



DIRECTIONS:

1.	Start on **HODGEMAN ST**	0.1 miles
2.	Turn Left on **LAKE AVE**	0.2 miles
3.	Continue on **CHURCH ST**	0.6 miles

ATTACHMENT B

EMERGENCY AND SITE CONTACTS

EMERGENCY AND SITE CONTACTS

Contact	Firm or Agency	Telephone Number
Police		911
Fire		518-584-1800
Hospital	Saratoga Hospital 211 Church St. Saratoga Springs, NY	518-587-3222
Ambulance		518-584-1800
NM Project Manager Edward F. Neuhauser, Ph.D.	Niagara Mohawk	315-428-3355
NM Safety Department Brian Powell	Niagara Mohawk	315-428-6194
Consultant Project Manager TBD	TBD	TBD
Consultant Project Environmental and Safety Manager TBD	TBD	TBD
Consultant Field Operations Lead (FOL) TBD	TBD	TBD
Chemtrec		800-424-9300
National Response Center		800-424-8802
NYSDEC Spill Hotline	NYSDEC	800-457-7362 518 457-7362
Poison Control Center		800-336-6997
Underground Facility Protective Organization	UFPO	800-962-7962
Utility Emergencies (Electric & Gas)	Niagara Mohawk	800-932-0301

The Emergency Phone Numbers listed are preliminary. Upon mobilization, the FOL will verify all numbers, and document the changes in the Site Logbook. Any changes will also be documented with a field change request form and appended to this Site-Specific Work Plan.