WORK PLAN

Remedial Investigation/Feasibility Study
Rome (Jay and Madison Street) Former MGP Site
Rome, New York

Niagara Mohawk Power Corporation
A National Grid Company

November 2004

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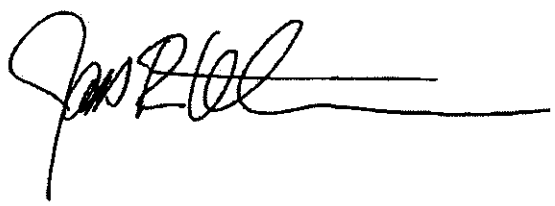

James R. Heckathorne
Vice President

November 2004

O'BRIEN & GERE
ENGINEERS, INC.

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1. Introduction

1.1. Project background

On December 7, 1992, Niagara Mohawk Power Corporation (NMPC) and the New York State Department of Environmental Conservation (NYSDEC) entered into an Administrative Order on Consent (AOC), Index Number DO-0001-9210. This order requires NMPC to investigate and, if necessary, remediate 20 former Manufactured Gas Plant (MGP) sites in New York. In accordance with the provisions set forth in the AOC, NMPC is required to investigate and, if necessary, remediate the site of a former location of a MGP located at the Jay and Madison Street Site in Rome, NY. A site location map is presented as Figure 1-1. In response to this order, NMPC implemented a Preliminary Site Assessment and Interim Remedial Measures (PSA/IRM) Study at the Jay and Madison Street Site beginning in February 1998. The PSA report was finalized in July 2002. Based on the results of the PSA a focused Remedial Investigation (RI) was recommended to further evaluate horizontal and vertical extent of chemical constituents in selected areas.

This Remedial Investigation Work Plan has been prepared by NMPC/National Grid in accordance with AOC Index Number DO-0001-9210. This document incorporates and references existing NYSDEC approved documents developed under AOC Index Number DO-0001-9210 including a Generic Quality Assurance Project Plan (GQAPP), Generic Field Sampling Plan (GFSP), and a site specific Health and Safety Plan (HASP).

1.2. Site description

The Rome (Jay and Madison Streets) former manufactured gas plant (MGP) site is located in the City of Rome, Oneida County, New York. The site originally consisted of two parcels: (tax account numbers TA 242.38.1.11 (entitled the "Western Parcel") and TA 242.49.1.7 (entitled "Eastern Parcel") totaling approximately 1.7 acres. The Western Parcel is located at 412 Erie Boulevard West, and is currently utilized as a NMPC natural gas regulator station. The Eastern Parcel is located at 106 South Madison Street and is currently occupied by a Burger King

restaurant and parking lot. The Polka Dot Dry Cleaners (410 Erie Boulevard West), and a residence (409 Woodrow Avenue), lie between these two parcels. A third parcel formerly owned by Rome Sentinel was added as part of the site in January 1998. This site borders the west side of the Western Parcel. Erie Boulevard forms the southwest border of the site. Woodrow Avenue borders the northeast side of the site. The usage of the surrounding properties is a mixture of commercial, industrial, and residential.

The Western Parcel and the Rome Sentinel Parcel are currently owned by NMPC. The Eastern Parcel is owned by FFCA of Scottsdale, Arizona, and leased to Carroll's of Syracuse, NY. It is currently occupied by a Burger King Restaurant. The residence at 409 Woodrow Avenue is owned by Mr. Oswald Secor, and the Polka Dot Dry Cleaners is a commercial property owned by Mr. Ralph Brackett.

1.3. Summary of previous investigations

A series of investigations have been completed at the NMPC Rome (Jay and Madison Streets) Site. The field investigation activities were conducted in accordance with the New York State Department of Environmental Conservation (NYSDEC) approved Final Work Plan for Preliminary Site Assessment/Interim Remedial Measures (PSA/IRM) Study at the Rome (Jay & Madison St.) Site, dated June 1996, and the Generic Field Sampling Plan (GFSP). The PSA/IRM work plan was addended via correspondence to include investigations for the Former Rome Sentinel Property (May 1998), Polka Dot Dry Cleaner Property (October 14, 1999) and the Eastern Parcel (October 2, 2000). In addition, an Interim Remedial Measure (IRM) was completed on the Western Parcel in accordance with the IRM Excavation Work Plan prepared by O'Brien & Gere, dated September 24, 1998.

The investigations and an IRM were completed in the following order:

Western Parcel Investigation - This effort was completed between February and March 1998 and included the completion of soil borings and monitoring wells and the collection of subsurface soil and ground water samples for analysis.

Former Rome Sentinel Property Investigation - This program was completed in May 1998 and included the completion of soil borings and monitoring wells and collection of surface soil, subsurface soil, and ground water samples for analysis

Interim Remedial Measure (IRM) - The IRM was completed between May and August 1999 and involved excavation of approximately 1,400 cubic yards (cu yds) of surface and subsurface soils containing PAHs in excess of NYSDEC cleanup goals, and the placement of topsoil over

surface soils containing elevated PAH levels. A detailed summary of this activity is provided in the Summary Report entitled Soil Excavation Interim Remedial Measures Construction Completion Report, Former Rome Sentinel Property, Rome, New York (O'Brien & Gere, October 1999).

Supplemental Well Installation and Ground Water Sampling - This effort was completed in October 1999 and included installation of two monitoring wells on the Polka Dot Dry Cleaners property. Soil and ground water samples were collected for analysis.

Eastern Parcel Investigation - This effort was completed between January and March 2001 and included the installation of twenty soil borings and three monitoring wells on the Eastern Parcel property. Soil and ground water samples were collected for analysis.

The results of these investigations are summarized in the July 2002 Preliminary Site Assessment Report.

In addition to the above, an investigation was also conducted on the *Polka Dot Dry Cleaners* property. The investigation included installation of a deep monitoring well adjacent to the existing shallow well and a shallow well at the eastern edge of the property. Three temporary monitoring wells were also installed through the floor of the building. Soil and ground water samples were collected for analysis. The results of this investigation were summarized in a letter report dated November 12, 2003.

1.4. Remedial investigation objectives

The objectives of the focused RI will be to collect sufficient environmental data to address data gaps identified in the PSA Study for the purpose of evaluating site wide remedies. The data gaps identified at each of the parcels that make up the Jay & Madison Street Site are as follows:

Former Rome Sentinel Property
As a result of the IRM completed in 1999, no further investigative activities are warranted on the Former Rome Sentinel Property. However, the following data need have been identified:

- further assess trends in ground water quality

Western Parcel
The results of the PSA indicate that there are no significant impacts to the soils or ground water on the Western Parcel. However, given the elevated concentrations of MGP-related constituents in the ground water at MW-5, the following data needs are identified:

- assess possible localized pocket of impacted soil at former holders

- continue to assess trends in ground water quality

Polka-Dot Property
A limited site investigation was conducted by O'Brien & Gere Engineers, Inc. (O'Brien & Gere) in October 1999 that included completion of two shallow monitoring wells. Soil and ground water samples were collected as part of this investigation. Analytical results revealed the presence of chlorinated VOCs in the soil and ground water samples. In addition, low concentrations (1 to 2 µg/L) of five PAHs were observed in the ground water sample collected from MW-10.

A second investigation was completed on the Polka Dot property by the owner's consultant, completed in April 2002 by Geoscience Technical Services, Inc. (Geoscience), potential impacts were found. The results of this investigation identified the presence of PAH compounds in soil samples from three of the six borings completed by Geoscience. The following data gaps were identified:

- better delineate the areal extent of PAH and VOC compounds on this property and the relationship of these compounds to past site usage

A followup investigation was conducted in 2003 to fill this data gap. The results were provided in a letter dated November 12, 2003 and will be incorporated into the RI Report.

Secor Property
No investigations have been completed to date on this parcel. Given the proximity of the Secor residence to the Site, the following information is needed:

- assess the potential presence of MGP-related constituents in soil and ground water

Eastern Parcel
The PSA identified impacted soil and/or ground water on the Eastern Parcel. The following information is necessary to identify remedial options for this parcel:

- assess the potential presence of MGP-related constituents on the north-northwest side of the Eastern parcel (northeast of Burger King)
- assess the potential migration of MGP-related constituents off-site toward Madison Street
- assess the potential migration of MGP-related constituents off-site toward Erie Blvd.
- assess the extent of impacted soil in on the west side of the Eastern Parcel (near the building)
- confirm and further assess the vertical and horizontal extent of contamination found on top of and within the glacial till at the SB-26 boring location
- confirm and further assess vertical extent of contamination found above the silty clay confining layer at the SB-19 boring location

- confirm and further assess the vertical and horizontal extent of contamination found below the confining layer at the SB-20 boring location
- assess the potential migration of ground water, within the backfill of the sewer line paralleling Erie Blvd, from the Eastern Parcel
- assess the potential for underground piping and holders to act as conduits for contamination migration
- further assess ground water quality trends at this parcel

1.5. Work plan organization

This focused RI/FS Work Plan is organized into section and appendices, outlined as follows:

Section 1	Introduction, including project background, site description and history, summary of previous investigations, and RI/FS objectives.
Section 2	Sampling and Analysis Plan
Section 3	Feasibility Study Approach
Section 4	Project Organization and Schedule

2. Sampling and Analysis Plan

This section defines the activities that will constitute the focused RI investigation at the Rome (Jay and Madison Street) Former MGP Site in Rome, New York. The activities described in this section are designed to achieve the project objectives described in Section 1.4.

Field investigation procedures and activities will be implemented in accordance with the four companion documents previously prepared by NM under AOC, Index Number DO-0001-9210, specifically for MGP site investigations. These companion documents are listed as follows:

1. Final Work Plan for the Preliminary Site Assessment/Interim Remedial Measures (PSA/IRM) Study at the Rome (Jay and Madison Street) Site, City of Rome, New York. 1996.

2. Generic Quality Assurance Project Plan for Site Investigations, NMPC, June 1996.

3. Generic Field Sampling Plan for Site Investigations, NMPC, June 1996.

4. Health and Safety Plan for PSA/IRM Study for the Jay & Madison Street Site, City of Rome, NY, June 1996.

2.1. Field sampling activities

This section describes the specific activities related to field data collection and the rationale for these activities and analyses. The field sampling program consists of soil boring completion and subsurface soil sampling, test pits, monitoring well installation, ground water elevation monitoring and sampling, and soil vapor monitoring. The proposed sample locations are shown on Figure 2-1. The objectives and proposed monitoring of the field sampling effort are summarized on Table 2-1.

The field sampling activities will be supervised by the Field Manager. A detailed discussion of the laboratory analytical program designed for this investigation is presented in Section 2.2.

2.1.1. Test pits

Objectives

To evaluate the presence and condition of the holder foundation and characteristics of the shallow subsurface beneath existing holder

foundation. If MGP residuals are present samples will be collected to chemically characterize residuals.

Methods
Two (2) test pits, one (1) at each gas holder location on the Western Parcel, will be excavated to investigate subsurface soil conditions. Test pit excavations will be conducted under the supervision of a field geologist in accordance with Section 7 of the GFSP. If visually impacted soil is observed, a sample may be collected and analyzed for MGP indicator parameters.

Data Uses
The visual assessment of the test pit excavation will be used to determine the integrity of the remaining structure, if any, and presence of possible impacts to subsurface soil. If samples are collected, the laboratory analysis of data will be used to characterize the compounds present in the residuals.

2.1.2. Soil boring and subsurface soil sampling

Objectives
The objectives of the soil boring and subsurface soil sampling effort are summarized on Table 2-1. Soil boring locations will be dependent on utility location and street access.

Methods - Soil borings
A total of 21 soil borings will be advanced during the RI field investigation. Of these borings, two will be advanced on the Western Parcel, five on the Polka-Dot Laundromat, two on the Secor residence, and seventeen on or in conjunction with the Eastern Parcel.

Each soil boring will be advanced through the unconsolidated deposits to an approximate depth of 50 ft bls at the glacial till unit or refusal, whichever occurs first, to evaluate the vertical extent and/or concentrations of VOCS (BTEX), SVOCs (PAH), total organic carbon (TOC), and total cyanide. One soil boring (SB-49) will be completed to the bedrock using double-cased drilling methods as described in Section 6.1 of the GFSP. In the event that bedrock in not encountered within 10 ft of the top of the glacial till, the boring will be terminated at that depth.

Continuous split-spoon soil samples will be collected and classified by the field manager in accordance with methodologies in the GFSP, and screened for the presence of chemical constituents, based upon visual inspection, odors, PID screening, and ultraviolet (UV) light screening.

At a minimum one (1), and a maximum of five (5) soil samples from each soil boring will be analyzed for VOCs and SVOCs, TOC, and total cyanide. The selection of the actual number of samples submitted for laboratory analysis will be at the discretion of the Field Manager.

Four borings will be converted to shallow monitoring wells, six to deep monitoring wells, and up to three to temporary monitoring wells, as discussed in Section 2.1.2. Soil cuttings generating during drilling will be containerized and handled in accordance with the GFSP.

Data Uses - Soil boring
Soil samples will be obtained during completion of the soil boring and described by the Field Manager on a detailed boring log. These data will be used to enhance the understanding of the site subsurface stratigraphy. Selected soil samples will be analyzed for VOCs, SVOCs, TOC, and total cyanide constituents in site soils.

2.1.3. Monitoring well installation

Objectives
Provide a means for sampling site ground water, obtaining ground water elevations, and estimating the horizontal hydraulic conductivity of aquifer materials adjacent to each monitoring well screen.

Methods
Up to four shallow, six deep, and four temporary monitoring wells may be installed into boreholes completed as described in Section 2.1.1. at the locations shown in Figure 2-1. The shallow monitoring wells will be installed to an approximate depth of 19 ft below land surface (b.l.s.) consistent with existing shallow site monitoring wells. These shallow wells will be installed in borings adjacent to the deep boreholes. This will allow for properly constructed wells. Five of the six deep monitoring wells will be installed to the top of till. The remaining deep monitoring well will be installed to the top of bedrock or 10 ft below the top of the till, whichever is shallower (SB-49). Each temporary monitoring well will be installed to monitor the shallow zone.

Monitoring well installation and development will be conducted in accordance with the procedures described in the GFSP. Ground water on site ranges from 5 to 8 ft below grade. The till confining layer was encountered in previous site investigations at a depth of approximately 45 ft bls in the vicinity of SB-23 and SB-26 closest to Erie Boulevard and at the SB-25 location near Madison Street. As such the shallow monitoring wells will be installed to straddle the water table in accordance with GFSP Section 6.1. The deep well to be installed at the top of bedrock will be constructed as a double-cased well as detailed in the GFSP Section 6.1.

Upon completion, the monitoring wells will be developed in accordance with procedures described in the GFSP.

Data Uses - Monitoring wells
The monitoring wells will be used to establish ground water elevations and collect ground water quality samples

2.1.4. Ground water elevation monitoring and sampling

Objectives

The objective of ground water elevation monitoring is to assess ground water flow conditions at the site. The objective of ground water sampling is to evaluate the lateral and vertical extent of VOCs, SVOCs, and total cyanide constituents in ground water.

Methods - Ground water elevation monitoring

The water level in each monitoring well will be measured to provide information on ground water elevation and flow at the site. Ground water elevation measurements will be recorded to the nearest 0.01 feet from the top of each well casing using an electric water level indicator.

Methods - Ground water sampling

Prior to initiation of the drilling program, ground water samples will be collected from MW-1 and MW-2 and analyzed for cyanide to assess the concentrations cyanide previously observed at these locations. A complete set of ground water samples will be collected from each well on-site. This includes the 16 existing wells on the Former Eastern Parcel, Polka Dot Dry Cleaners, Western Parcel, and Rome Sentinel Parcel and the fourteen proposed wells.

Sample collection will be performed in accordance with the detailed procedures described in the GFSP. Ground water samples will be analyzed for total VOCs, total SVOCs, and total cyanide.

Data Uses

Ground water elevations will be used to evaluate ground water flow directions and hydraulic gradients.

The cyanide data from MW-1 and MW-2 will be used to evaluate whether additional investigations of a potential source of cyanide in this area is necessary.

Laboratory analysis data will be used to evaluate the presence and extent of VOCs (in particular BTEX), SVOCs (in particular PAHs), and total cyanide. In addition, the analytical data will be compared to New York State Class GA ground water standards and guidance values.

2.1.5. Soil vapor sampling

Objectives

Soil vapor samples will be collected from the area surrounding the Burger King building to assess the potential for migration of vapor to indoor air at concentrations that are incompatible with building uses and potential receptors.

Methods

Samples will be collected from 5 locations as illustrated on Figure 2-1. The procedures for collection and analysis are included in Appendix A.

Samples will be collected with summa canisters and analyzed for volatile organics using method TO-15.

Data uses
The soil vapor data will be used, as appropriate, with the Johnson & Ettinger Model to asses the potential indoor air concentrations that would result from migration of the vapor to the inside of the building. Specifically, a combined Tier 1 and Tier 2 evaluation will be completed. A more detailed discussion of the evaluation procedure is provided in Appendix B.

2.2. Analytical program

The Jay and Madison Street Site RI analytical program has been designed to further evaluate the extent of chemical constituents associated with historic site activities identified in the PSA/IRM Study. Laboratory analyses of environmental samples will be conducted in accordance with the NYSDEC 1995 Analytical Services Protocol (ASP)-October 1995 Revisions. The GQAPP presents the analytical methods and quality control objectives to be utilized for the RI. Table 2-2 presents a summary of the analytical program for the Jay and Madison Street Site.

2.3. Qualitative human health exposure assessment

The qualitative human health exposure assessment (QHHEA) will be developed consistent with Appendix 3B of New York State *Technical Guidance for Site Investigation and Remediation*, DER-10 (NYSDEC 2002).

The objective of the QHHEA is to identify and characterize exposure pathways at the Site, and estimate the likely magnitude, frequency, duration, and route of exposure to human receptors. Exposure is defined as the contact of a receptor with a chemical or physical agent. An exposure pathway describes a mechanism by which a receptor may be exposed to a constituent present at or migrating from the site.

The QHHEA will summarize potential exposure pathways at the site and identify whether each pathway is complete or incomplete. This evaluation will provide a qualitative assessment of risk to humans from potential exposure to site media. Based on a preliminary conceptual model of the site, the potential exposure to ground water, soil, and air will be evaluated. Based on the current understanding of current and potential future site uses, three scenarios will be evaluated as exposure pathways for the Site:

- Commercial/indoor worker
- Construction worker
- Site worker (e.g. utility worker)

The results of the QHHEA will be summarized in the RI report.

2.4. Remedial investigation report

Upon completion of the field investigation, a RI Report will be developed and submitted to the NYSDEC. However, if BTEX and PAH constituents are detected at levels, above TAGM 4046 Recommended Soil Cleanup Values or above Class GA Ground Water Standards requiring further investigation an interim data summary report will prepared and submitted with proposed future actions.

The focused RI Report will integrate and present the results of the focused RI and PSA. The report will incorporate the following components:

- Executive summary
- Introduction including purpose and objectives of the assessment, site history, site location and description, and regional setting.
- Site base map with field investigation locations.
- Field investigation procedures including surface soil sampling, subsurface soil sampling, monitoring well installation, ground water sampling and analysis.
- Site conceptual model including site hydrogeology, and nature and extent of ground water contamination.
- Applicable chemical-specific standards, criteria, and guidelines (SCGs) evaluation.
- A qualitative human health exposure evaluation
- Conclusions and recommendations, including the necessity for remedial action.
- Supporting data including laboratory analytical data, soil boring logs, and ground water sampling logs will be included in the report.
- An updated FWIA, if applicable.

3. Feasibility Study

Based on the results of the Human Health Exposure Assessment and the Fish and Wildlife Impact Analysis, a Feasibility Study (FS) Report may be developed for the site. The objective of the FS will be to develop, screen, and evaluate remedial alternatives for the site to provide sufficient information for the selection of a remedy. The FS Report will be developed consistent with USEPA's CERCLA process as outlined in *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (USEPA, 1988) and NYDEC's Technical and Administrative Guidance Memorandum "Selection of Remedial Actions at Inactive Hazardous Waste Sites" (NYSDEC, 1990). The FS Report will be developed in accordance with the following outline:

- Executive summary
- Introductory section including FS objectives and a concise summary of the site conditions
- Development of Remedial Alternatives section including
  - a discussion of remedial action objectives for the site based on consideration of site contaminant exposure and migration pathways and potentially applicable chemical-specific standards, criteria, and guidelines (SCGs)
  - identification of the areas and volumes of media to be addressed
  - identification and evaluation of remedial technologies and process options
  - a description of a range of remedial alternatives.
- Screening of Alternatives, if needed to reduce the range of alternatives for detailed analysis including:
  - evaluation of alternatives based effectiveness, implementability, and cost
  - selection of alternatives which will undergo detailed analysis
- Detailed Analysis of Alternatives section including:
  - focused evaluation of alternatives with respect to the following evaluation criteria:
  - overall protection of human health and the environment
  - compliance with SCGs
  - long-term effectiveness and performance
  - reduction in toxicity, mobility, and volume through treatment
  - short-term effectiveness
  - implementability
  - cost
  - state and community acceptance
- Remedy selection

4. Project Organization and Schedule

4.1. Project organization

The management and technical staff required in execution this project and their areas of responsibility as described as follows:

NMPC/National Grid Project Manager
NMPC/National Grid's project manager will be responsible for overall coordination and conduct of the RI/FS. This individual will be responsible for the timely delivery of all documents, reports, and other information required by the Order. All communication with the NYSDEC regarding this project will be through the NMPC/National Grid project manager unless otherwise authorized or directed.

Consultant Technical Advisor
The technical advisor will provide technical support and overall quality assurance. The primary objective of quality assurance is to facilitate compliance with regulatory agency guidance and regulations. The technical advisor will address the broad range of technical activities and disciplines needed for successful support of the RI/FS.

Consultant Project Manager
The project manager is responsible for maintaining the schedule, keeping the project within budget, and ensuring the technical adequacy of the work performed.

Consultant Field Manager
The field team leader is responsible for controlling activities at the site, including the activities of the drilling crew. The field team leader must be well versed in every aspect of field work, including but not limited to, well drilling and sampling procedures.

Health and Safety Officer
The site health and safety officer is responsible for implementation of the Health and Safety Plan. If the health and safety officer observes unsafe conditions, the officer will have stop-work authority.

Project Quality Assurance Manager
The Project Quality Assurance Manager is responsible for verifying that QA requirements are followed by the field teams, laboratory, and other subcontractors.

4.2. Project schedule

A schedule of project activities with milestones is provided on Figure 4-1.

The project schedule graphically illustrates activities through the Data Summary submittal. The work plan schedule includes a meeting between NYSDEC and NMPC personnel to discuss the data and the resulting Site Conceptual Model provided with the Data Summary. If no data gaps are defined, then the RI Report will be submitted 90 days following receipt of NYSDEC written acceptance of the Site Conceptual Model. If data gaps are identified, then additional investigations will be completed to fill the gaps prior to development of the RI Report.

Table 2-1

Rome (Jay and Madison Street) Former MGP Site
Rome, New York

Remedial Investigation Sampling Summary

Investigation Area and Objectives	*Sampling Scope*	*Analytical Protocol*
Former Sentinel Property		
Assess ground water quality trends	Collect 6 ground water samples from the existing monitoring wells (MW-6S, 6D, 7S, 7D, 8S, 8D)	6 ground water samples: VOCs (8260) SVOCs (8270) total cyanide
Western Parcel		
Assess possible localized pocket of impacted soil	Complete 2 soil borings (SB-34 and SB-35) to the glacial till unit through each holder foundation; collect a maximum of 5 soil samples from each boring	10 soil samples: VOCs (8260) SVOCs (8270) total cyanide
Assess the potential presence of cyanide in the ground water at MW-1 and MW-2	Collect ground water samples (2) from MW-1 and MW-2 prior to RI	2 ground water samples: total cyanide
Assess ground water quality trends	Collect 5 ground water samples from the existing monitoring wells (MW-1 through MW-5)	5 ground water samples: VOCs (8260) SVOCs (8270) total cyanide
Polka-Dot Dry Cleaner		
	Collect ground water samples from each permanent monitoring well	4 ground water samples: VOCs (8260) SVOCs (8270) total cyanide
Secor Residence		
Assess the potential presence of MGP-related constituents	Complete 2 soil borings to the glacial till unit, if possible; collect a maximum of 5 soil samples from each boring; 1 boring will be converted to a deep monitoring well, potentially install a temporary well in one boring	10 soil samples: VOCs (8260) SVOCs (8270) total cyanide
	Collect ground water samples from the temporary and permanent monitoring wells	2 ground water sample: VOCs (8260) SVOCs (8270) total cyanide

Table 2-1 cont'd

Rome (Jay and Madison Street) Former MGP Site
Rome, New York

Remedial Investigation Sampling Summary

Investigation Area and Objectives	*Sampling Scope*	*Analytical Protocol*
Eastern Parcel		
Assess the potential for migration of vapor to indoor air	Collect 5 soil vapor samples around the Burger King building	VOCs (T0-15)
Assess the potential presence of MGP-related constituents on the west side of the Eastern parcel (vicinity of Burger King)	Complete 9 soil borings (SB-36, SB-37, SB-38, SB-39, SB-40, SB-41, SB-42, SB-43, SB-44) to the glacial till unit; collect a maximum of 5 soil samples from each boring	45 soil samples: VOCs (8260) SVOCs (8270) total cyanide
Assess the potential migration of MGP-related constituents off-site toward Madison St	Complete 2 additional soil borings (SB-45 and SB-46) to the glacial till unit; collect a maximum of 5 soil samples from each boring; SB-46 will be converted to a shallow monitoring well; Collect 1 ground water sample from the newly installed monitoring well	10 soil samples: VOCs (8260) SVOCs (8270) total cyanide 1 ground water sample: VOCs (8260) SVOCs (8270) total cyanide
Assess the potential migration of MGP-related constituents off-site toward Erie Blvd.	Complete 2 additional soil borings (SB-47 and SB-48) to the glacial till unit; a maximum of 5 soil samples will be collected from each boring; A shallow and deep monitoring well will be installed adjacent to SB-48; Collect 2 ground water samples (1 from each well) from the newly installed monitoring wells	10 soil samples: VOCs (8260) SVOCs (8270) total cyanide 2 ground water samples: VOCs (8260) SVOCs (8270) total cyanide
Confirm and further assess the vertical and horizontal extent of contamination found below the confining layer at the SB-26 boring location	Complete 1 soil boring (SB-49) to up to 10 ft below top of the glacial till unit; collect a maximum of 5 soil samples. Boring will be double cased at top of confining unit and terminated at top of bedrock, if encountered. Convert this boring to a deep monitoring well. Collect 1 ground water sample from the newly installed monitoring well	5 soil samples: VOCs (8260) SVOCs (8270) total cyanide 1 ground water sample: VOCs (8260) SVOCs (8270) total cyanide

Table 2-1 cont'd

Rome (Jay and Madison Street) Former MGP Site
Rome, New York

Remedial Investigation Sampling Summary

Investigation Area and Objectives	*Sampling Scope*	*Analytical Protocol*
Eastern Parcel con't		
Confirm and further assess vertical extent of contamination found above the confining layer at the SB-19 boring location	Complete 1 soil boring (SB-50) to the glacial till unit; collect a maximum of 5 soil samples; convert this boring to a deep monitoring well Collect 1 ground water sample from the newly installed monitoring well	5 soil samples: VOCs (8260) SVOCs (8270) total cyanide 1 ground water sample: VOCs (8260) SVOCs (8270) total cyanide
Confirm and further assess the vertical and horizontal extent of contamination found below the confining layer at the SB-20 boring location	Complete 1 soil boring (SB-51) to the glacial till unit; collect a maximum of 5 soil samples; convert this boring to a deep monitoring well Collect 1 ground water sample from the newly installed monitoring well	5 soil samples: VOCs (8260) SVOCs (8270) total cyanide 1 ground water sample: VOCs (8260) SVOCs (8270) total cyanide
Assess the potential migration of ground water, within the backfill of the sewer line paralleling Erie Blvd, from the Eastern Parcel	Locate the sewer line; complete a deep boring (SB-52); collect a maximum of 5 soil samples; convert this boring to a shallow monitoring well; Collect 1 ground water sample from the newly installed monitoring well	5 soil samples: VOCs (8260) SVOCs (8270) total cyanide 1 ground water sample: VOCs (8260) SVOCs (8270) total cyanide
Further assess ground water quality	Collect 3 ground water samples from the existing monitoring wells (MW-11, MW-12, MW-13)	3 ground water samples VOCs (8260) SVOCs (8270) total cyanide

Table 2-2

Rome (Jay and Madison Street) Former MGP Site
Rome, New York

Remedial Investigation Analytical Program Summary

Field Task	*Analyses*	*Environmental Samples*	*Field Duplicates*	*Equipment Blank*	*Trip Blanks**	*MS*	*MSD*	*Total Samples*
Subsurface Soil Samples	VOCS	105	6	6	6	6	6	135
	SVOCs	105	6	6		6	6	129
	Total Cn	105	6	6		6	6	129
Ground Water Samples	VOCs	28	2	0	2	2	2	36
	SVOCs	28	2	0	0	2	2	34
	Total Cn	28	2	0	0	2	2	34
Ground Water Samples (MW-1/MW-2)	Total Cn	2	0	0	0	0	0	2

* - Ground water samples only

Category B deliverables will be provided (except for cyanide-only analysis for MW-1 and MW-2). A Data Useability Report (DUSR) will be prepared following review and evaluation of the analytical data. The DUSR will identify data gaps caused by non-compliant or rejected data and indicate corrective actions to be taken.

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FIGURE 1-1

ADAPTED FROM: ROME NEW YORK, 7.5 MINUTE QUADRANGLE

NIAGARA MOHAWK ROME SITE
(JAY & MADISON STREET) ONEIDA COUNTY, NY

QUADRANGLE LOCATION

SITE LOCATION MAP

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 KILOMETER

FILE NO. 1118.080.019

DATE: FEBRUARY 2000

SCALE: 1:24000

O'BRIEN & GERE ENGINEERS INC.

PLOT DATE: 2/1/00

Sep 29, 2004 - 4:27pm

FIGURE 2-1

ROME SENTINEL PARCEL

N.M.P.C. WESTERN PARCEL

FORMER N.M.P.C. EASTERN PARCEL

ROME CANAL

IP 434.66

WOODROW AVE

MADISON ST.

EDGE OF PAVEMENT

SB-27 SB-28 SB-31 SB-29 SB-30 SB-32 SB-33

MW-9D MW-6S SB-11 SB-2 GAS REG BLDG MW-1

FORMER 100,000 CU.FT GAS HOLDER

TP-1 SB-34 SB-12 SB-10 SB-3

HOUSE SB-53 SB-38 MW-13 SB-24

FORMER 23,000 CU.FT GAS HOLDER SB-17 SB-15 SB-14

FORMER 50,000 CU.FT GAS HOLDER SB-16

MW-10 D SB-39 MW-2 SECOR PROPERTY SB-37 SV-1 SB-40 SB-19 SB-18 D SB-50

MW-7S MW-7D SB-9 SB-4 SB-1 TW-3 SV-5 BURGER KING SB-45

TP-2 MW-4 SB-13 SB-8 SB-5 SB-35 MW-3 TW-2 MW-14 SV-2 SB-41 SB-22 SB-21 MW-12 SB-25

FORMER 250,000 CU.FT GAS HOLDER

POLKA DOT DRY CLEANERS

SV-4 SB-42 GENERATORS SV-3 COAL STORAGE ROOM PURIFIERS SB-54 S SB-46

MW-8D MW-8S SB-6 SB-7 MW-9 MW-9D SB-44 SB-43 RETORTS

WATER GAS PLANT ENGINE RM. D DYNAMO SB-20 SB-51 D

MW-5 TW-1 SB-23 MW-11 SB-26 SB-49

S SB-52

EDGE OF PAVEMENT

W.WESTBORO ST.

ERIE BLVD.

SB-47

ERIE CANAL

EDGE OF PAVEMENT

D S SB-48

NUNN'S HOSPITAL SUPPLY INC.

WENDY'S

NOTE:

CANAL AND W. WESTBORO ST. LOCATIONS ARE APPROXIMATE.

LEGEND

- MW-9 — MONITORING WELL LOCATIC
- SOIL BORING LOCATION
- TW-1 — TEMPORARY WELL
- PROPOSED SOIL BORING LOCATION
- S — PROPOSED SHALLOW MONITORING WELL
- D — PROPOSED DEEP MONITORING WELL
- SOIL VAPOR POINT
- TP — PROPOSED TEST PIT LOCATIONS
- SURFACE SOIL REMOVAL AREA
- SUB-SURFACE EXCAVATIONS
- PROPERTY LINE

NIAGARA MOHAWK
ROME SITE
(JAY & MADISON STREET)
ONEIDA COUNTY, NY

SAMPLING LOCATIONS

60 0 60

SCALE IN FEET

FILE NO. 1118.29053.007
SEPTEMBER 2004

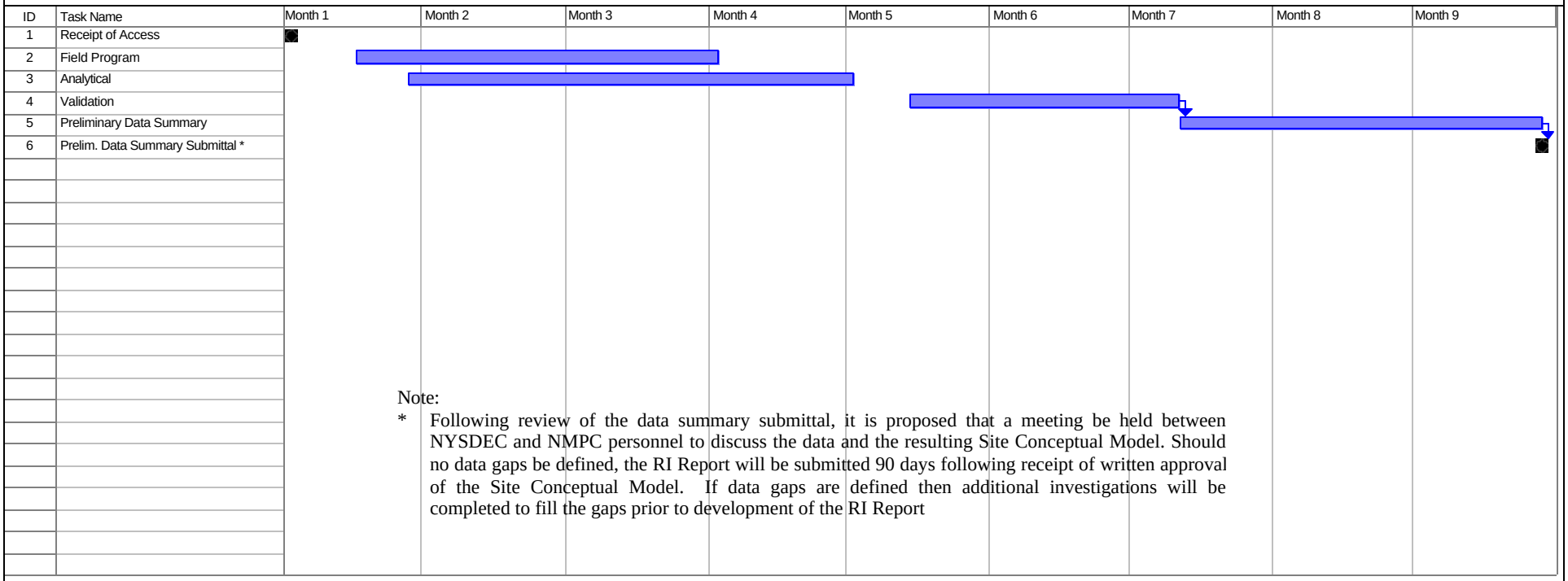
O'BRIEN & GERE ENGINEERS INC.

I:\DV71\Projects\1118\29053\dwg\FIGURES\007.dwg

Figure 4-1

Project Schedule

Remedial Investigation
Rome (Jay & Madison St) Former MGP Site
Rome, New York



Note:

* Following review of the data summary submittal, it is proposed that a meeting be held between NYSDEC and NMPC personnel to discuss the data and the resulting Site Conceptual Model. Should no data gaps be defined, the RI Report will be submitted 90 days following receipt of written approval of the Site Conceptual Model. If data gaps are defined then additional investigations will be completed to fill the gaps prior to development of the RI Report

Project: Project2
Date: Thu 9/30/04

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

Appendix A

Soil vapor sampling protocol

Soil vapor sample collection procedures

Sampling objectives
This method involves the collection of a sample of vapor from the unsaturated soil for analysis for use in evaluating the potential exposure through migration to indoor air. The samples will be analyzed using method TO-15. This method involves the use of a pre-evacuated canister for collection and transport of the sample.

Sampling considerations
The following factors should be considered when designing the sampling program:

- *Depth to ground water* – Soil vapor samples should be collected from between 3 to 5 ft below grade to minimize potential for influence from surface air intrusion. In situations where the ground water is less than 3 ft below grade extra caution should be taken to minimize infiltration of air through the hole during sampling.
- *Type of soil* – It may be difficult to draw air into the sampler in low-permeability soils. In these instances, there is a likely chance that surface air will be drawn in via the sampling hole. Low flow rates, smaller air volumes, and/or thicker, more substantial surface seals may be needed to minimize this potential.
- *Constituents of concern* –The constituents of concern should be identified prior to selecting the analytical method to be used for the program.
- *Detection limit* – Different constituents have different action levels. Therefore, it is important to consider the action levels to assess whether the detection limit is sufficient.
- *Sample depth* – The depth of the sample should be between a minimum of 3 - 5 ft below the depth of the lowest point in the building and a minimum of 5 ft below grade to avoid short-circuiting. At depths shallower than 5 ft there are issues associated with pressure gradients induced by ambient and internal air pressure differences. However, the sample should not be collected within 1 ft of the ground water table to avoid entrainment of water.

Sample collection point installation
The sample collection device is typically tubing constructed of Teflon. Caution should be used when using Tygon® or other flexible tubing as it volatile organics are adsorbed to this type of material.

1. If surface is covered by asphalt of concrete a nominal hole shall be drilled through the surface.
2. A 1 to 2 inch hole shall hole shall be completed to 5 ft below grade using a slide hammer, drill or soil gas sampling device.
3. A 6 ft length of 3/16-inch (outside diameter) Teflon tubing shall be placed to the base of the hole
4. Bentonite chips or other low permeability material shall be placed into the hole at the surface to act as a seal to minimize short circuiting of the vapor extraction process.
5. Attach a 6- to 8-in length of Tygon® tubing to the end of the Teflon tubing

6. Attach the Tygon® tubing to the metering pump of the Summa canister

If a shield point sampling device is used:

1. Attach length of 3/16-inch (outside diameter) Teflon® tubing in the end of a 3-inch slotted aluminum shield point.
2. Feed this assembly through a hollow hardened, ¾-inch diameter, steel sampling probe.
3. Drive the probe to the desired depth using a slide hammer or hand-held electric impact hammer.
4. Retract the probe 3 to 6 inch using a manual jack to expose the vapor intake slots of the shield point.
5. Remove the hollow probe from around the tubing.
6. Bentonite chips shall be placed into the hole to act as a seal to minimize short-circuiting of the vapor extraction process.
7. Place a 6- to 8-inch length of new Tygon® tubing on the end of the Teflon® tubing. Feed the Tygon® tubing through a pinching shut-off valve.
8. Attach the Tygon® tubing to the metering pump of the Summa canister
9. Proceed with sample collection
10. Once the sample is collected, withdraw the tubing and fill the hole with bentonite
11. Restore the surface with like materials as appropriate

Sample collection

Consistent with the TO-15 method requirements, a summa canister will be used to collect the sample. The pre-evacuated canister results in a vacuum that is used to draw the sample into the canister. Canister sizes vary from 1 liter to 6 liters

1. Evacuate the sampling probe by drawing 1 to 3 hole-volumes of air using a personal sampling pump (Gilian model HFS113A or equivalent) set at a flow rate of 0.5 to 1.0 L/min.
2. Attach the sampling valve of the Summa canister to the tubing.
3. Open the valve on the summa canister. The rate at which the sample is drawn into the canister is regulated by a flow meter that is preset. To minimize the potential for desorption of constituents from the soil, the flow rate should be low, less than 500 milliliters per minute. In low permeability soil the flow rates may need to be adjusted even lower to also avoid short-circuiting.
4. Once the meter shows that the canister is full, close the valve and detach the sampling valve from the tubing.
5. A tag or similar device should be attached to the canister with the following information: site name, sample location identification, sample date, sampling time, and total draw time. This information should also be provided on the chain-of-custody form.

Appendix B

Vapor intrusion potential evaluation

Vapor Intrusion Potential Evaluation (VIPE)

1.0 Objective

The objective of the vapor Intrusion Potential Evalaution (VIPE) is to assess if constituents detected in sub-surface environments have the potential to migrate via vapor infiltration to the indoor air of buildings at concentrations that represent unacceptable indoor concentrations relative to building uses and exposed receptors.

2.0 Guidance

The VIPE will conducted be in accordance with the Environmental Protection Agency (EPA), 2002, *Draft Guidance For Evaluating The Vapor Intrusion to Indoor Air Pathway From Groundwater And Soils*, USEPA-OSWER. Docket ID No. RCRA-2002-0033. (OSWER Guidance).

The draft OSWER Guidance is indicated for use at RCRA Corrective Action, CERCLA (National Priorities List and Superfund Alternative Sites), and Brownfield sites. The OSWER Guidance allows for a flexible approach, allowing for the application of data screening steps, as appropriate, and site-specific considerations regarding the buildings in the vicinity of the site. The building on the site is a commercial building. As such, the VIPE Work Plan has been prepared in the context of an commercial building setting.

3.0. General Methodology

The OSWER guidance recommends a tiered approach to VIPEs. The evaluation will be guided by the Site conditions and available Site data and the "starting tier" may be selected based on the these conditions and data. As part of the data evaluation, the draft OSWER guidance identifies three tiers of assessment that involve increasing levels of complexity and specificity.

- *Tier 1 - Primary Screening:* The primary screening is designed to be used with general knowledge of a site and the chemicals known or reasonably suspected to be present in the subsurface. The primary screening process evaluates if chemicals of sufficient volatility and toxicity are present; if inhabited buildings are located above or in close proximity to subsurface contamination; and if current conditions warrant immediate action. If these conditions do not occur, the pathway is classified as incomplete and not evaluated further.

- *Tier 2 - Secondary Screening*: The secondary screening analysis compares measured or modeled concentrations of target chemicals in various media (groundwater, soil gas, and/or indoor air) to conservative health based numerical criteria. These numerical

criteria reflect reasonable worst-case estimates of site-specific conditions such as depth of contamination, soil type, building specific properties, and receptor populations.

- *Tier 3 – Detailed Site-Specific Pathway Assessment*: If the results of the Tier 1 and Tier 2 evaluation suggests that further assessment is warranted, a Tier 3 evaluation may be considered. The Tier 3 assessment may involve the collection of more detailed site-specific information such as confirmatory soil vapor, sub-slab, and/or indoor air sampling.

The tiered evaluation process presented in the OSWER Guidance represents a logical and linear progression designed to screen out sites not needing further consideration and focuses attention on those sites that need further consideration of the vapor intrusion pathway. However, the OSWER Guidance also states that the evaluation may proceed directly to Tier 2 or 3, or may use other technically sound approaches in evaluating the vapor intrusion pathway.

4.0. Site-specific Methodology

As a variety of data has already been developed for this Site, this VIPE has been streamlined to integrate the Tier 1 and Tier 2 process into a single data evaluation step, which is presented in this section.

4.1 RFI data evaluation and other monitoring data

The data evaluation applies site-specific considerations to classify the vapor infiltration pathway as complete or incomplete at the site.

This task will consist of a detailed review of analytical data and facility specific information as it relates to the performance of the VIPE. A qualitative review of available soil data will be performed. Indoor air, soil vapor and nearby ground water data are unavailable, however, and therefore a soil vapor sampling plan will be performed as described in 2.1.4 of this work plan. The data collected via the proposed soil vapor sampling plan will be reviewed and summarized for use in the VIPE according to OSWER guidance.

Statistical summaries of analytical data: The available analytical data for volatile organic constituents detected. Statistical summaries will include the frequency of detection, minimum, maximum, and average detected concentrations, range of detection limits, and the location of the maximum detected concentration. The analytical data summaries will be presented on Tables and Figures as appropriate.

Development of Conceptual Site Model (CSM): Based on the information reviewed, a summary conceptual site model will be developed. The CSM will identify the potential source areas, migration pathways, receptor populations, and receptor exposures. The CSM will be used as

the basis to discuss the potential design of proposed measurement and modeling activities, as well as health risk benchmarks (i.e. occupational) to support the VIPE and assessment of health risks.

Review of Site Conditions: Available RFI data will be reviewed to evaluate site conditions as they relate to the potential indoor air migration pathway. Specifically, the site geology, soil properties, and hydrogeology will be reviewed, as well as facility-specific considerations such as building construction, uses, size and ventilation rates, potential preferential migration pathways, worker activities, and other relevant information.

Screening calculations for Constituents of Potential Concern (COPCs): Screening comparisons and calculations, if indoor air modeling is appropriate, will be performed for constituent concentrations detected in soil vapor. First, screening comparisons of soil vapor data to risk-based screening values, which are contained in the OSWER guidance will be performed.

Subsequently, for COPCs that may not screen out via the OSWER comparison values, screening indoor air concentrations will be derived from soil vapor data. The screening indoor air concentrations will be derived using the Johnson & Ettinger Model recommended by USEPA (USEPA 2002), and will incorporate site specific information (eg. porosity, permeability, moisture, depth to contamination and chemical specific data (e.g. diffusion coefficients, Henry's law constant, solubility). If Site-specific data are not available then appropriate default values will be selected for model inputs.

The derived concentrations will be screened by comparison to published risk-based indoor air screening concentrations.

If the results of screening process indicate that concentrations are below the published risk-based concentrations it would be concluded that the vapor intrusion pathway is incomplete and no further action would be necessary.