URS

October 28, 2005

Mr. John Helmeset
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway, 11th Floor
Albany, New York 12233-7017

RE: Final Work Plan
Former Off-Site Gasholder Associated With the Homer Former MGP Site
City of Cortland, New York

Dear Mr. Helmeset:

On behalf of New York State Electric & Gas Corporation (NYSEG), URS is pleased to present the New York State Department of Environmental Conservation (NYSDEC) with three copies of *Final Work Plan* for the above-referenced site, dated October 2005.

NYSEG and URS appreciate the NYSDEC's assistance with this project. If you have any questions or comments, please contact Mr. Tracy Blazicek of NYSEG at (607) 762-8839.

Very Truly Yours,

URS Corporation

Michael Gutmann
Project Manager

Enc.

cc: Tracy Blazicek, NYSEG – 3 copies
File: 11174305.00000/C-1

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NYSEG

New York State Electric & Gas Corporation

Former Off-site Gasholder Associated with the Homer Former MGP Site Cortland, New York

INVESTIGATION WORKPLAN
OCTOBER 2005

Prepared For:
New York State Electric & Gas Corporation
Kirkwood Industrial Park
Binghamton, New York

URS

URS Corporation - New York

WORK PLAN

FORMER OFF-SITE GASHOLDER ASSOCIATED WITH THE HOMER FORMER MGP SITE

CITY OF CORTLAND, NEW YORK

FINAL

PREPARED FOR:

NEW YORK STATE ELECTRIC & GAS CORPORATION

PREPARED BY:

URS CORPORATION

77 GOODELL STREET

BUFFALO, NEW YORK 14203

OCTOBER 2005

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1.0 INTRODUCTION

On behalf of New York State Electric and Gas Corporation (NYSEG), URS Corporation – New York (URS) has prepared this Work Plan for the investigation of a former off-site gasholder located in the City of Cortland, New York (see Figure 1). The former gasholder is believed to have been located on the properties currently occupied by residences at 43 and 45 Charles Street (see Figure 2). This facility was possibly associated with the former Manufactured Gas Plant (MGP) operated by the Homer & Cortland Gas Light Company. The former MGP site was located on Homer Avenue in the Village of Homer and was approximately one mile north of the former gasholder.

1.1 Objective

The objective of the current investigation is to determine if physical remnants of the former gasholder or any associated piping remain on the site and to establish the nature and extent of any environmental impacts resulting from the operation of the former gasholder.

1.2 Site History

In May 1867, the Homer & Cortland Gas Company purchased approximately one third of an acre of land from Sarah Adams for the future location of the former gasholder along with a 14-foot-wide right-of-way along her property. In July 1867, the Homer & Cortland Gas Company acquired the rights from Sarah Adams to install a gas pipeline extending from the former gasholder east through her property (eight feet south of her house) to North Church Street. Sanborn maps from 1887, 1892, 1902, and 1908 indicate the presence of a 22,000-cubic-foot gasholder approximately 100 feet east of Saint Mary's of the Vale Catholic Church. In February 1913, the Homer & Cortland Gas Light Company sold the one third of an acre upon which the gasholder was located and the 14-foot right-of way to Edward S. Dalton and L.R. Chase. Sanborn maps from 1915 and 1926 indicate the gasholder was no longer present and the residences currently located at 43 and 45 Charles Street existed at that time.

2.0 SCOPE OF WORK

Based on the historical data provided above, NYSEG and URS recommend a phased approach to the investigation of the former gasholder location. This approach will commence with the implementation of non-intrusive methods (i.e., geophysical survey) to help identify the presence of physical remnants of the former gasholder and any associated piping and then progress to applicable intrusive methods, based on data obtained from the geophysical survey, to establish the nature and extent of any impacts to soil and groundwater resulting from the operation of the former gasholder. NYSEG/URS propose the following potential phases to the investigation:

- Geophysical surveys
- Test pit excavation
- Geoprobe® soil borings
- Monitoring well installation
- Groundwater sampling
- Soil vapor and indoor air sampling
- Site survey

Please note that not all of the investigation phases proposed above may be necessary. A description and rationale for each is presented in Table 1.

2.1 Task 1 - Geophysical Surveys

Surface geophysical surveys utilizing ground penetrating radar (GPR) and an electromagnetic conductivity meter (EM-31) will be conducted at the 43 and 45 Charles Street properties. The purpose of these surveys will be to identify the presence of physical remnants of the former gasholder and any associated piping. URS will procure a subcontractor specializing in geophysical surveys to conduct the work. A URS Geologist will supervise and assist the subcontractor.

adjacent to the former MGP site. If MGP-impacted soil is removed, clean material would be obtained to backfill the test pits. All test pits will be restored to pre-excavation conditions.

Two soil samples may be collected from each of the five test pits (for a potential of ten samples). In each test pit, one of the soil samples would be collected from the area exhibiting the highest level of contamination based on visual inspection and/or photoionization detector (PID) readings. If contamination is detected in the test pit, the second soil sample would be collected from below this area of contamination to define its vertical limit (i.e., until native materials are encountered). If no contamination is detected in the test pit, one soil sample would be collected from the bottom of the test pit and the second soil sample would not be collected. Any soil samples collected from the test pits will be analyzed for the parameters listed in Table 2. Sample volume requirements are provided in Table 3. Soil sampling procedures are provided in Appendix A-1 and sample handling and custody procedures are provided in Appendix A-4.

After each test pit is excavated, the mini-excavator would be decontaminated prior to the excavation of the next test pit and before the vehicle leaves the site. Due to the limited work area available and the fact that the project area is in residential yards, a decontamination pad will not be constructed. Instead, when the test pit has been approximately 90% backfilled, the excavator bucket will be decontaminated over the hole such that the decontamination fluids infiltrate the test pit. Since the remaining soil to be placed back into the test pit came from the upper 10% of the test pit (i.e. what would have been surface soil before the excavation) it is presumable clean and will not contaminate the bucket prior to moving to the next test pit. A high-pressure steam cleaner would be used to decontaminate the mini-excavator (Appendix A-5).

Fieldwork associated with the test pit excavations would be performed using the personal protective equipment (PPE) requirements and the air monitoring action levels provided in the Health and Safety Plan (HASP), which may be found in Appendix A-7.

2.3 Task 3 - Geoprobe® Soil Borings

If data obtained during the geophysical survey and test pit excavations indicate the presence of former gasholder components and/or MGP-impacted soils, NYSEG/URS will install direct-push (Geoprobe®) soil borings to more fully delineate the extent of the contamination. For initial planning purposes, URS assumes that twelve Geoprobe® soil borings will be required in

the vicinity of the former gasholder to determine the presence of potentially impacted soils. The location of the Geoprobe® borings (potential locations are shown on Figure 4) will be contingent on the results of the geophysical survey, the observations from the test pits, the location of on-site structures, and the locations of potential subsurface utilities. Geoprobe® borings may also be advanced in the vicinity of any piping identified during the geophysical survey. If impacted soils are identified, additional Geoprobe® borings may be advanced to assist in determining both the vertical and horizontal extents of the impacted soils. URS would procure a subcontractor to advance the Geoprobe® borings. A URS Geologist would supervise the subcontractor and be responsible for the collection of soil samples for analyses if MGP-impacted soils are encountered.

The twelve Geoprobe® borings would be advanced using an all-terrain Geoprobe® unit capable of operating in a limited access area. Soil samples would be collected using four-foot-long Macro-Core samplers. Discrete samplers would be used to advance the borings until refusal or a confining layer is encountered. Once a four-foot sample has been retrieved from the subsurface, the sample tube would be cut along its length and screened both visually and with a PID for the presence of contamination then logged by a URS Geologist. Appropriate soil will then be placed in sample jars for potential analysis. Following the completion of each boring, the boring would be backfilled to the surface with cement-bentonite grout or bentonite pellets. Soil cuttings and Geoprobe® liners would be containerized in NYSEG-approved containers and staged at NYSEG's property on Route 11 adjacent to the former MGP site.

Two soil samples may be collected from each of the twelve Geoprobe® borings (for a potential of 24 samples). One soil sample would be collected from each boring from the interval exhibiting the highest level of contamination based on visual inspection and/or PID readings. The second soil sample would be collected from below the area of contamination to define the vertical limit of contamination. Soil samples collected from the Geoprobe® borings would be analyzed for the parameters listed in Table 2. Sample volume requirements are provided in Table 3. Soil sampling procedures are provided in Appendix A-1 and sample handling and custody procedures are provided in Appendix A-4.

After each sample is collected, the Macro-Core samplers would be decontaminated before the next sample is collected and prior to leaving the site. A non-phosphate detergent and potable water with a potable water rinse would be used to decontaminate the Macro-Core samplers and the drill rods (Appendix A-5). Decontamination fluids would be containerized in

NYSEG-approved containers and staged at NYSEG' property on Route 11 adjacent to the former MGP site.

Fieldwork associated with the Geoprobe® borings would be performed using the PPE requirements and the air monitoring action levels provided in the HASP, which may be found in Appendix A-7.

2.4 Task 4 - Monitoring Well Installation

Based on the test pit and Geoprobe® boring information, and if MGP-impacted soils are identified, NYSEG/URS will then install up to six overburden-monitoring wells to determine the presence and/or extent of potentially impacted groundwater. The location of the monitoring wells would be determined based on the analytical data obtained from the test pit excavations, Geoprobe® soil borings, and the location of buried utilities. If monitoring wells are determined to be necessary, URS would procure a subcontractor to advance the monitoring wells. For initial planning purposes, URS assumes that three pairs of monitoring wells would be installed; each pair would consist of a shallow well to monitor the groundwater table (approximately 20 feet bgs) and a deep well terminating at a confining layer, which is estimated to be approximately 30 to 50 feet bgs. The monitoring well pairs would be used to determine the horizontal and vertical extent of MGP-impacted groundwater. A URS Geologist would supervise the subcontractor during the installation of the monitoring wells.

The monitoring wells would be drilled by advancing hollow-stem augers (HSAs) using a truck-mounted drill rig. Continuous split-spoon samples would be collected at the deep monitoring well location of each well pair to the top of the confining layer. Each split-spoon sample would be logged by a URS Geologist and screened both visually and with a PID for the presence of contamination. The depth of the shallow monitoring well would be determined from the location of the groundwater table found during the sampling of the deep monitoring well. Soil cuttings would be containerized in NYSEG-approved containers and staged at NYSEG's property on Route 11 adjacent to the former MGP site.

Two soil samples may be collected from each of the deep monitoring well borings. One of the soil samples would be collected from the interval at the top of the water table. The second soil sample would be collected from the area exhibiting the highest level of contamination based

on visual inspection and/or PID readings or at the top of the confining layer if no contamination is encountered. Soil samples collected from the deep monitoring well borings would be analyzed for the parameters listed in Table 2. Sample volume requirements are provided in Table 3. Soil sampling procedures are provided in Appendix A-1 and sample handling and custody procedures are provided in Appendix A-4.

The monitoring wells would be constructed of 2-inch-diameter, Schedule 40 polyvinyl chloride (PVC) riser and screen, which would be installed through the HSAs. The shallow monitoring well would consist of a 5- to- 10-foot screen (depending on the depth to confining layer) and straddle the top of the water table. The deep monitoring well would consist of a 10-foot long screen, which would have its bottom placed one foot into the confining layer. If a non-aqueous phase liquid (NAPL) is detected, a two-foot-long riser with a bottom cap would be installed below the screen to serve as a sump for NAPL recovery. The sump would be sealed to the borehole, using bentonite, to prevent any NAPL accumulation outside the sump. A sand pack would be installed around the well screen to a depth extending two to three feet above the top of the screen. During installation of the sand pack, the augers would be withdrawn in small increments to avoid disturbing the sand pack. A 24-inch thick (minimum) seal of bentonite pellets would be placed over the sand pack and hydrated using potable water. Monitoring well construction procedures are provided in Appendix A-2.

Fieldwork associated with the monitoring well installations would be performed using the PPE requirements and the air monitoring action levels provided in the HASP, which may be found in Appendix A-7.

2.4.1 Well Development

Upon completion, the monitoring wells would be developed using surging and pumping methods to remove fine-grained sediments from the sand pack and to improve the hydraulic communication between the well screen and the surrounding aquifer. Development would continue until the water is visibly free of suspended sediments (Appendix A-2). Development water generated would containerized in NYSEG-approved containers and staged at NYSEG's property on Route 11 adjacent to the former MGP site.

Following the development of each monitoring well, the equipment would be decontaminated prior to the development of the next monitoring well. A non-phosphate detergent and potable water with a potable water rinse would be used to decontaminate the equipment. Decontamination fluids would be containerized in NYSEG approved container and staged at NYSEG's property on Route 11 adjacent to the former MGP site.

Fieldwork associated with the monitoring well development would be performed using the PPE requirements and the air monitoring action levels provided in the HASP, which may be found in Appendix A-7.

2.5 Task 5 - Groundwater Sampling

A submersible pump would be used to purge the wells using low-flow sampling techniques prior to collecting samples. Field parameters, which include temperature, pH, specific conductivity, dissolved oxygen (DO), oxidation-reduction potential (ORP) and turbidity of the samples would be recorded during purging. At a minimum one well volume would need to be purged and the field parameters would need to stabilize for three consecutive readings prior to sample collection. Water samples would be collected directly from the pump effluent after the low-flow cell has been removed. Purge water generated would be containerized in NYSEG-approved containers and staged at NYSEG's property on Route 11 adjacent to the former MGP site.

Groundwater samples will be collected from each of the monitoring wells and would be analyzed for the parameters listed in Table 2. Sample volume requirements are provided in Table 3. Groundwater sampling procedures are provided in Appendix A-3 and sample handling and custody procedures are provided in Appendix A-4.

Following purging of each monitoring well, the equipment would be decontaminated prior to the purging of the next monitoring well. A non-phosphate detergent and potable water with a potable water rinse would be used to decontaminate the equipment. Decontamination fluids will be containerized in NYSEG-approved containers and staged at NYSEG's property on Route 11 adjacent to the former MGP site.

Fieldwork associated with the groundwater sampling would be performed using the PPE requirements and the air monitoring action levels provided in the HASP, which may be found in Appendix A-7.

2.6 Task 6 - Soil Vapor/Indoor Air Sampling

If impacted soils or groundwater are identified, NYSEG/URS may propose to collect indoor air samples and sub-slab soil vapor samples in the homes adjacent to and surrounding the impacted area. For initial planning purposes, URS assumes that two homes may be sampled in vicinity of the former gasholder to assess the impacts of MGP-contaminated soils and/or groundwater. The samples would be collected in general accordance with the New York State Department of Health (NYSDOH) public comment draft *Guidance for Evaluating Soil Vapor Intrusion in the State of New York*, dated February 2005. URS will procure a NYSDOH-certified laboratory to supply Summa canisters and to perform the analyses. URS personnel would perform the pre-sampling inventory of household products and the actual indoor air, sub-slab and soil vapor sample collection.

Soil vapor and indoor air samples would be collected from each of the homes and analyzed for the parameters listed in Table 2. Sample volume requirements are provided in Table 3.

Specific soil vapor and indoor air sampling procedures will be described in a separate letter to the Department prior to performing the fieldwork and only if this task is deemed necessary.

2.7 Task 7 - Site Survey

A survey will be conducted to locate the geophysical survey grid, test pit locations, Geoprobe® soil boring locations, monitoring well locations, soil vapor/indoor air sample locations and key site features. Vertical control will be referenced to the New York State Plane Coordinates, North American Vertical Datum of 1988 (NAVD 1988) and horizontal control will be referenced to the New York State Plane West, 1983 North American Datum (NAD 1983).

The site survey will be conducted at the completion of the field activities.

3.0 ANALYZE DATA AND PREPARE REPORT

At the end of each phase of the investigation, NYSEG and URS will discuss the findings with the Department, which will be documented in a brief letter write-up. The results of each phase will determine the need for and scope modifications to any of the subsequent phases of fieldwork. Following the completion of all fieldwork, a report will be prepared summarizing and interpreting all data collected. This report will be submitted to the Department for review and approval.

TABLES

TABLE 1
TASK DESCRIPTION AND RATIONALE
FORMER OFF-SITE GASHOLDER
CITY OF CORTLAND, NEW YORK

TASK	ACTIVITY	RATIONALE	COMMENTS
Task1	Geophysical Survey	Determine presence of physical remnants of former gas holder.	A survey grid will be established with 10 foot grid line spacing prior to survey.
Task 2	Test Pit Excavation	Confirm/ delineate subsurface anomalies found during geophysical survey.	Up to 5 test pits may be excavated. Assume two analytical samples to be taken per test pit.
Task 3	Geoprobe Soil Borings	Delineate the horizontal and vertical extent of MGP impacted soils.	Contingent on the findings of the geophysical survey and test pit excavations. Up to 12 geoprobe borings have been estimated for planning purposes. Assume two analytical samples to be taken per geoprobe boring.
Task 4	Monitoring Well Installation	Delineate the horizontal and vertical extent of MGP impacted groundwater. Assess and evaluate groundwater flow direction and vertical hydraulic gradients.	Contingent on the findings of the geophysical survey, test pit excavations, and geoprobe broings. Three monitoring well pairs have been planned. Shallow wells will monitor water table (approximately 20 feet bgs), deep wells will monitor groundwater at top of confining layer (approximately 30 to 50 feet bgs). Assume two soil samples will be collected from each deep monitoring well for analysis.
Task 5	Ground Water Sampling	Assess and evaluate possible dissolved groundwater plume and delineate the horizontal and vertical extent of MGP impacted groundwater.	Contingent on the findings of the geophysical survey, test pit excavations, and geoprobe broings. Monitoring wells will be sampled using low-flow sampling methods.
Task 6	Soil Vapor and Indoor Air Sampling	Determine the presence of soil vapor and indoor air impacts resulting from presence of MGP impacted soils and/ or groundwater.	Contingent on the findings of the test pit excavations, geoprobe borings, and groundwater analytical data. Sampling of 2 houses has been estimated for planning purposes. In each house, a sub-slab, basement/ crawlspace and 1st floor sample will be collected. A duplicate sample will be collected for each area sampled (sub-slab, basement/ crawlspace and 1st floor. Outdoor ambient air samples will be collected during sampling.

Note: See Table 2 for analytical program.

TABLE 2
SUMMARY OF SAMPLING AND ANALYSIS PROGRAM
FORMER OFF-SITE GASHOLDER
CITY OF CORTLAND, NEW YORK

Analytical Method[1]	Matrix[2]	No. of Field Samples	Equipment Blanks[3]	Trip Blanks[4]	MS/MSD (Pairs)[3]	Total No. of Samples
Task 2: Test Pit Excavation						
TCL VOCs (USEPA Method 8260B)	Soil	10	1	0	1	13
TCL SVOCs (USEPA Method 8270C)	Soil	10	1	0	1	13
Total Phenols (USEPA Method 9065)	Soil	10	1	0	1	13
TAL Metals (USEPA Method 6010B/7471A)	Soil	10	1	0	1	13
Cyanide (total & free) (USEPA Method 9012A)	Soil	10	1	0	1	13
Total Organic Carbon (TOC)(Lloyd Kahn)	Soil	1	1	0	1	4
Natural Oxidant Demand (NOD) (SM 2350)	Soil	1	1	0	1	4
Reactivity (SW-846 Ch. 7, Section 3)	Soil	1	1	0	1	4
Total Sulfur (ASTM D129-64)	Soil	1	1	0	1	4
Task 3: Geoprobe Soil Broings						
TCL VOCs (USEPA Method 8260B)	Soil	24	2	0	2	30
TCL SVOCs (USEPA Method 8270C)	Soil	24	2	0	2	30
Total Phenols (USEPA Method 9065)	Soil	24	2	0	2	30
TAL Metals (USEPA Method 6010B/7471A)	Soil	24	2	0	2	30
Cyanide (total & free) (USEPA Method 9012A)	Soil	24	2	0	2	30
TOC (Lloyd Kahn)	Soil	1	1	0	1	4
NOD (SM 2350)	Soil	1	1	0	1	4
Reactivity (SW-846 Ch. 7, Section 3)	Soil	1	1	0	1	4
Total Sulfur (ASTM D129-64)	Soil	1	1	0	1	4
Task 4: Monitoring Well Installation						
TCL VOCs (USEPA Method 8260B)	Soil	6	1	0	1	9
TCL SVOCs (USEPA Method 8270C)	Soil	6	1	0	1	9
Total Phenols (USEPA Method 9065)	Soil	6	1	0	1	9
TAL Metals (USEPA Method 6010B/7471A)	Soil	6	1	0	1	9
Cyanide (total & free) (USEPA Method 9012A)	Soil	6	1	0	1	9
TOC (Lloyd Kahn)	Soil	1	1	0	1	4
NOD (SM 2350)	Soil	1	1	0	1	4
Reactivity (SW-846 Ch. 7, Section 3)	Soil	1	1	0	1	4
Total Sulfur (ASTM D129-64)	Soil	1	1	0	1	4

TABLE 2
SUMMARY OF SAMPLING AND ANALYSIS PROGRAM
FORMER OFF-SITE GASHOLDER
CITY OF CORTLAND, NEW YORK

Analytical Method[1]	Matrix[2]	No. of Field Samples	Equipment Blanks[3]	Trip Blanks[4]	MS/MSD (Pairs)[3]	Total No. of Samples
Task 5: Ground Water Sampling						
TCL VOCs (USEPA Method 8260B)	GW	6	1	1	1	10
TCL SVOCs (USEPA Method 8270C)	GW	6	1	1	1	10
Total Phenols (USEPA Method 9065)	GW	6	1	1	1	10
TAL Metals (USEPA Method 6010B/7470A)	GW	6	1	1	1	10
Dissolved Iron (USEPA Method 6010B) - Field Filtered	GW	6	1	1	1	10
Cyanide (total & free) (USEPA Method 9012A)	GW	6	1	1	1	10
Task 6: Soil Vapor and Indoor Air Sampling						
TCL VOCs (USEPA Method TO-15) plus TICs and n-alkanes[5]	SV/IA	9[6]	1[7]	0	0	10

Notes:

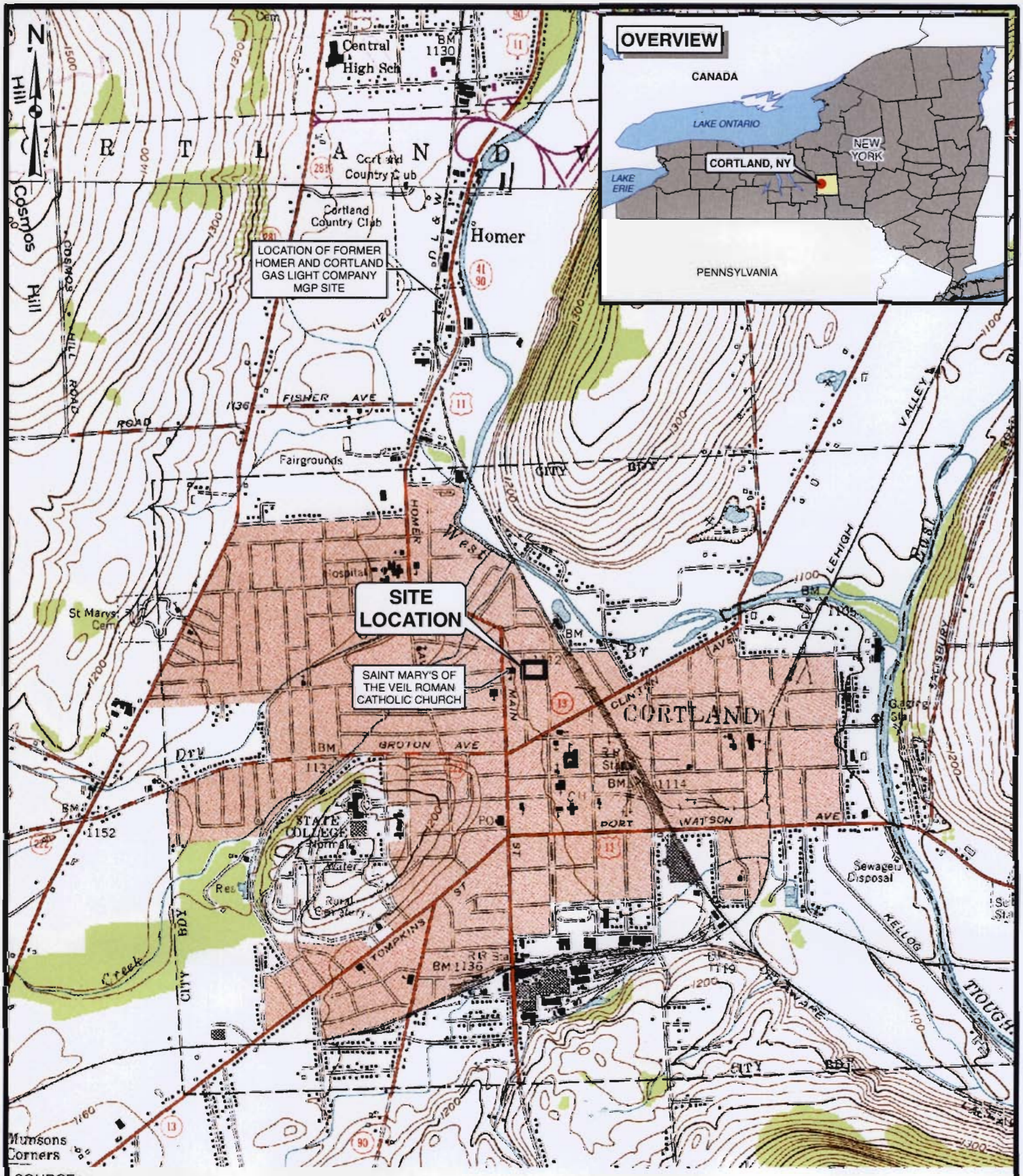
1. New York State Department of Environmental Conservation Analytical Services Protocol (NYSDEC ASP) Category B data deliveralbles for all parameters.
   TCL and TAL - Target Compound List and Target Analyte List as specified in NYSDEC ASP Exhibit C, Section I Superfund-CLP Organics and Section II Superfund-CLP Inorganics, respectively.
2. GW - groundwater, SV - Soil Vapor, IA - Indoor Air
3. Assumes a 5% frequency (one per 20 field samples).
4. Approximate - Assumes one per day of field sampling for water samples only.
5. Includes : Alkanes (n-Alkane, n-Heptane, n-Hexane, n-Octane, Pentane, n-Decane, n-Dodecane, n-Undecane, Nonane, and n-Butane) and TICs (Butylcyclohexane, Indane, Indene, Isopentane, 1,2,3-Trimethylbenzene, 2,2, 4-Trimethylpentane, 2,3-Dimethylheptane, and 2,3-Dimethylpentane).
6. Includes sub-slab, basement/ crawlspace and 1st floor samples for each house plus duplicate sample for each area sampled (sub-slab, basement/ crawlspace and 1st floor).
7. For indoor air/soil vapor sampling, ambient air samples will be collected at the rate of one per sample day in lieu of equipment blanks.

TABLE 3
SAMPLE CONTAINER, PRESERVATION, and HOLDING TIME REQUIREMENTS
FORMER OFF-SITE GASHOLDER
CITY OF CORTLAND, NEW YORK

Test Type	Container	Preservation	Holding time
NON-AQUEOUS SAMPLES			
Lab Measurements			
VOCs (USEPA Method 8260B)	2 x 4 oz. Glass jar, Teflon cap	Cool 4 °C	Analyze within 14 days.
SVOCs (USEPA Method 8270C)	1-8oz. Glass jar, Teflon cap	Cool 4 °C	Extract within 14 days; analyze within 40 days.
Metals (USEPA Method 6010B/7471A)	1-8oz. Glass jar, Teflon cap	Cool 4 °C	Analyze within 6 months/28 days for mercury.
Cyanide, Total/Free (USEPA 9012A)	1-8oz. Glass jar, Teflon cap	Cool 4 °C	Analyze within 14 days.
Total Phenols (USEPA Method 9065)	1-8oz. Glass jar, Teflon cap	Cool 4 °C	Analyze within 28 days.
TOC (Lloyd Kahn)	1-8oz. Glass jar, Teflon cap	Cool 4 °C	Analyze within 14 days.
Total Sulfur (ASTM D129-64)	1-8oz. Glass jar, Teflon cap	Cool 4 °C	Analyze within 28 days.
NOD (SM 2350)	1-8oz. Glass jar, Teflon cap	Cool 4 ° C	Analyze immediately.
Reactivity (SW-846, Ch. 7, Sec. 3)	1-8oz. Glass jar, Teflon cap	Cool 4 ° C	Analyze immediately.
AQUEOUS SAMPLES			
Field Measurements			
Field pH Field temperature Field conductance	4 oz. wide-mouth glass and/or flow-thru cell.	N/A	Immediate
Ferrous Iron	8 oz., Plastic	Cool 4 °C	Immediate
Lab Measurements			
VOCs (USEPA Method 8260B)	2 x 40 ml septa vials, Glass	HCl to pH < 2, Cool 4 °C	Analyze within 14 days.
SVOCs (USEPA Method 8270)	2 x 1 Liter Glass	Cool 4 °C	Extract within seven days; analyze within 40 days
Metals (USEPA Method 6010B/7470A)	32 oz., Plastic	HNO_3 to pH < 2	Analyze within 6 months/28 days for mercury.
Dissolved Iron (USEPA 6010B)	8 oz., Plastic	HNO3 to pH < 2	Field filter immediately, then preserve, analyze within 6 months.
Cyanide, Total/Free (USEPA 9012A)	8 oz., Plastic	NaOH to pH > 12, 0.6g ascorbic acid, Cool 4 °C	Analyze within 14 days.
Total Phenols (USEPA Method 9065)	500 ml, Glass	H2SO4 to pH < 2, Cool 4 °C	Analyze within 28 days.
SOIL VAPOR/INDDOR AIR SAMPLES			
VOCs (USEPA Method TO-15)	6 L Summa Canister, 24 hour flow controller	None	Analyze for polar compounds within 7 days of receipt at the laboratory, all other compounds within 14 days of receipt.

Notes:
VOCs - Volatile Organic Compounds
SVOCs - Semivolatile Organic Compounds
PCBs - polychlorinated biphenyls
NOD - Natural Oxygen Demand
TOC - Total Organic Carbon

FIGURES



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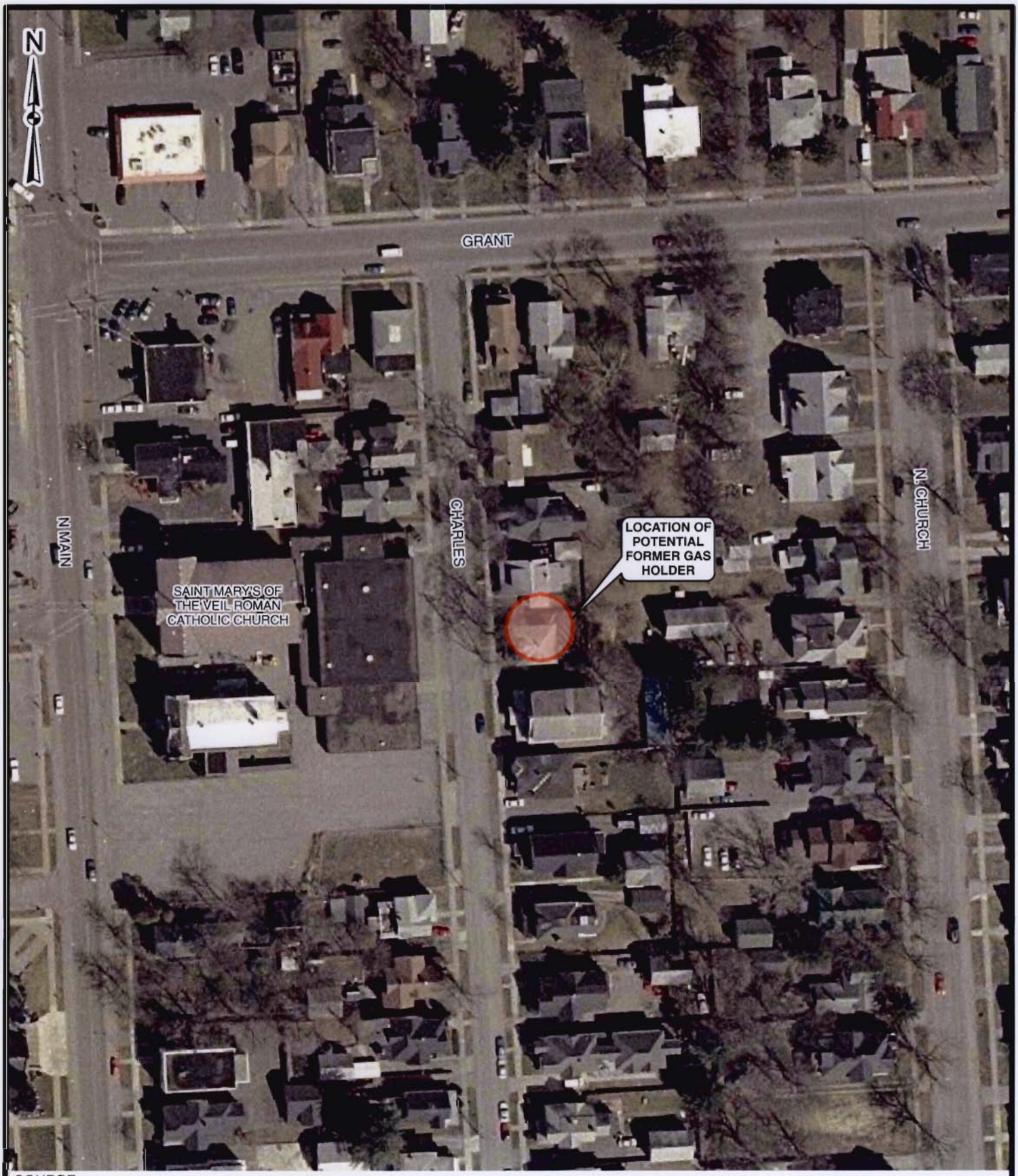
CORTLAND, NEW YORK
SITE LOCATION MAP

FIGURE 1

N:\11174305.00000\DBG\SIS\SITE LOCATION.mxd
09/09/05



SOURCE:
- NYS GIS Clearinghouse High Resolution Orthoimagery
  One Foot Natural Color Central Zone - April 2003

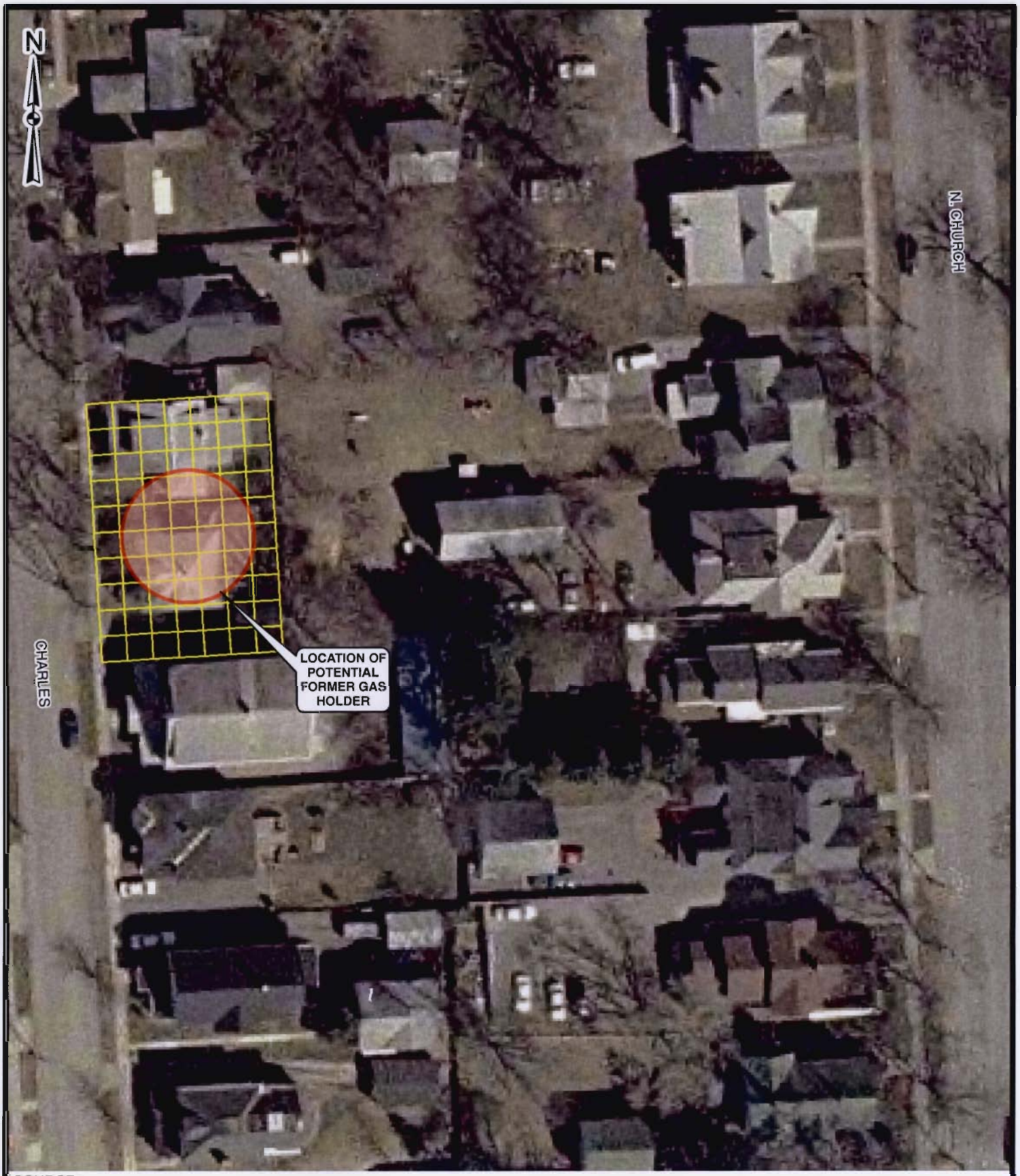
100 0 100
Feet

URS

CORTLAND, NEW YORK
POTENTIAL FORMER GAS HOLDER LOCATION

FIGURE 2

N:\11174305.00000\DB\GIS\FORMER GAS HOLDER.mxd
02/02/06

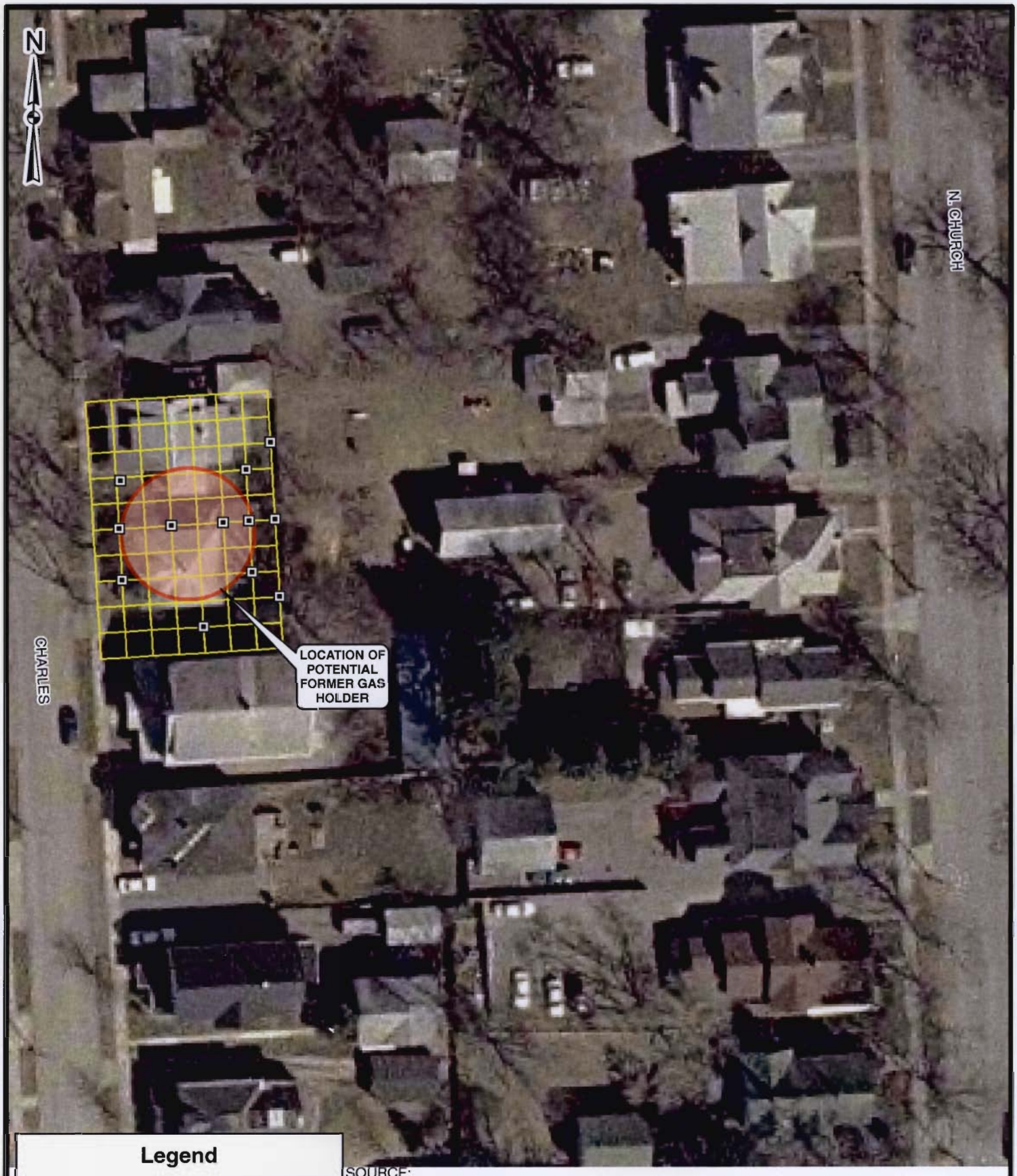


SOURCE:
- NYS GIS Clearinghouse High Resolution Orthoimagery
  One Foot Natural Color Central Zone - April 2003

50 0 50
Feet

URS	CORTLAND, NEW YORK PROPOSED GEOPHYSICAL SURVEY GRID	FIGURE 3

N:\11174305.00000\DB\GIS\SAMPLNIG GRID.mxd
09/09/05



Legend

▣ Proposed Geoprobe Boring

SOURCE:
- NYS GIS Clearinghouse High Resolution Orthoimagery
  One Foot Natural Color Central Zone
  April 2003

50 0 50 Feet

URS

CORTLAND, NEW YORK
PROPOSED GEOPROBE SOIL BORING LOCATIONS

FIGURE 4

09/09/05

APPENDIX A-1

SUBSURFACE SOIL SAMPLING PROCEDURES

SUBSURFACE SOIL SAMPLING PROCEDURES

Soil borings will be advanced and overburden soil samples will be obtained continuously to verify the geologic profile and assure proper placement of the well screens. Subsurface soil samples may be collected using Macro-Core discrete samplers with a direct push drill rig, or using split-spoon samplers during drilling with a conventional drill rig.

Field Equipment

Some or all of the following equipment will be used during soil sampling:

- Field boring log sheet and field notebook;
- Photo-ionization detector (PID);
- Stainless-steel knife, trowels, spoons, scoops, and bowls;
- Personal protective equipment (PPE);
- Disposable gloves;
- Distilled/deionized water;
- Cleaning detergents and decontamination chemicals;
- Five-gallon pails for decontamination;
- Brushes;
- Sample bottles;
- Cooler;
- Sufficient ice or freezer packs to maintain the samples at four degrees Celsius; and
- Chain of Custody (COC) forms.

Soil Sampling Using Direct Push Drilling Equipment

Discrete samplers will be used to collect samples obtained with a direct push (Geoprobe®) drill rig. These samplers have an open tube design and measure approximately two-inches in diameter (outer) by 44-inches long. The samplers will be fitted with a removable cutting shoe. The sampler will be advanced to the desired depth. Each of the samplers will be

fitted with a new acetate liner prior to collection of a sample. The acetate liner will be split open to collect the soil. The soil samples from the zero to four foot below ground surface (bgs) interval will be collected using Macro-Core open samplers. Soil samples collected deeper than four feet bgs will be collected using the Macro-Core equipped with a discrete sampling device. This device prevents any collapsed material from entering the sampler.

The length of sample recovery, percent recovery, and soil description, including odors, will be recorded on the boring log. A copy of a field boring log sheet is provided in Appendix A-6.

Immediately upon retrieval of the sampler, an aliquot of soil will be transferred to the VOC sample containers. The VOC sample containers will be completely filled in order to minimize headspace in the containers. The filled VOC sample container will be placed in a cooler with sufficient ice to maintain a temperature of 4 degrees Celsius.

A second aliquot of soil from the sampler will be retained for headspace analysis using a PID. Headspace analysis procedures are described below. The rationale behind this sequence of procedures (i.e., collecting a sample first, and then screening) is to minimize the loss of VOCs from samples that will be sent to a laboratory for analysis.

The remaining soil will be placed in a clean stainless-steel bowl. After removal of any stones, large twigs, or other vegetation, the sample will be thoroughly homogenized by mixing the sample in the bowl with a stainless-steel spoon. The sample will then be quartered in the bowl and each quarter will be mixed separately, before finally mixing the entire sample again and placing it in containers for non-volatile constituent analysis.

Field personnel will wear disposable nitrile gloves for the collection and handling of all samples and the disposable gloves will be changed between each sample. A stainless-steel scoop or trowel may be used to fill the sample containers.

The samples will be packed into sample coolers containing sufficient bags of ice or freezer packs to maintain the samples at 4 degrees Celsius.

All acetate liners will be discarded after use. Upon completion of sampling at each location, all sampling equipment will be decontaminated in accordance with the procedures described in Appendix A-5. Quality assurance samples, including duplicate samples and

equipment rinseate blanks will be collected as necessary in accordance with Table 2. The sample custody procedures are described in Appendix A-4.

Soil Sampling Using Split-Spoons

Soil samples will be collected using two-inch diameter by two-foot long split-spoons in accordance with ASTM D-1586-84: *Standard for Penetration Test and Split-Barrel Sampling of Soils*. The split-spoons will be driven into the overburden materials using a 140-pound hammer-drop system until the desired depth of the boring is reached. The blow counts for each six-inch increment of penetration will be recorded on the boring log. The hollow stem augers (HSAs) will be advanced two feet after each split spoon is collected to avoid borehole cave-in. Furthermore, a plug inside of the HSAs will be advanced during drilling. The soil samples obtained from the split-spoon samplers will be collected and handled in a similar manner as the soil samples obtained from Macro-Core samplers, described above.

The length of sample recovery, percent recovery, and soil description, including odors, will be recorded on the boring log. A copy of a field boring log sheet is provided in Appendix A-6.

Upon completion of sampling at each location, all sampling equipment will be decontaminated in accordance with the procedures described in Appendix A-5. Quality assurance samples, including duplicate samples and equipment rinseate blanks will be collected as necessary in accordance with Table 2. The sample custody procedures are described in Appendix A-4.

Headspace Analysis Procedures

Field screening of collected soil samples will be completed using headspace analysis using a PID equipped with a 10.6 electron volt (eV) lamp to detect the presence of VOCs.

Immediately upon retrieval of a soil sample, two aliquots of soil will be collected. One aliquot will be used to completely fill the VOC sample containers and the second aliquot will be used for headspace analysis using a PID. The rationale behind this sequence of procedures (i.e., collecting a sample first, and then screening) is to minimize the loss of VOCs from samples that will be sent to a laboratory for analysis.

The soil to be used for headspace analysis will be placed in new sealable polyethylene bags. Each bag will be labeled with the location, depth interval, and date of the soil sample. The soil will be allowed to warm to ambient temperature to allow the vapors in the soil to equilibrate with the air in the bag. If ambient temperature is less than 68° Fahrenheit (i.e., room temperature) the samples may be placed indoors to allow the soil to warm to room temperature. A measurement will be collected by inserting the probe of the PID through an opened corner of the bag. Care will be taken to avoid uptake of water droplets and soil particles. The highest meter response will be recorded as the headspace concentration. Each PID measurement will be recorded on the appropriate soil-boring log or in a field notebook.

APPENDIX A-2

MONITORING WELL INSTALLATION PROCEDURES

MONITORING WELL INSTALLATION PROCEDURES

This section describes the procedures that will be used to install monitoring wells using a drill rig. The procedures described in this section will provide monitoring wells that will:

- Provide reliable stratigraphic information about penetrated soils and bedrock;
- Provide representative samples of groundwater for analysis;
- Permit collection of representative water level data; and
- Effectively isolate the separate hydrogeologic strata penetrated during drilling.

Some or all of the following equipment will be used during monitoring well installations:

- Drilling rig, drilling tools, and support truck with water tanks;
- Sheet of plywood, or mud box;
- Steam cleaner;
- Tremie pipe;
- Threaded polyvinyl chloride (PVC) well risers and screens with a minimum wall thickness of Schedule 40 and screen slot sizes of 0.010-inch and 0.020-inch;
- PVC or steel well caps and bottom plugs;
- Washed Morie No. 0 or equivalent quartz sand for filter pack with 0.010-inch slot screen;
- Washed Morie No. 1 or equivalent quartz sand for filter pack with 0.020-inch slot screen;
- Portland cement, Type I or II;
- Bentonite pellets;
- Powdered bentonite;
- Protective casings and/or roadboxes and padlocks;
- Concrete mix for surface completions;

- Polyethylene sheeting; and
- Field notebook, soil boring logs, and well construction logs.

Drilling, Borehole Logging, Well Installation, and Construction

All necessary drilling/well permits (if applicable) and utility clearances for NYSEG and non-NYSEG utilities will be obtained prior to the start of drilling operations. All drill rigs will use necessary tools, supplies, and equipment, which will be supplied by the drilling subcontractor. The drill crew will consist of a NYS-licensed and experienced driller and one or more driller's assistants. Appropriate URS personnel will be onsite to supervise the drill crew and for logging the soils and sampling. Drilling subcontractor personnel will transport water to the rigs, clean tools, assist in the installation of security and marker pipes, construct the concrete aprons, and may develop the wells.

The supervising field geologist will properly log all soil boring and well construction details (Appendix A-6). All notes will be entered on a standard boring log sheet or field book. The following information will be recorded on the boring log sheet: project name and number, boring or well number and location, drilling contractor, drilling method and equipment, sampling method and equipment, start and finish time and date, and name of the supervising field geologist.

Supplies and equipment will be transported to the lay-down area designated onsite. Before moving onto the first well location, all reusable drilling equipment and tools will be steam-cleaned at a designated onsite decontamination station using a portable steam cleaner. Decontamination procedures are provided in Appendix A-5.

During the advancement of the soil boring standard penetration tests will be performed in accordance with ASTM D-1586-84: *Standard for Penetration Test and Split-Barrel Sampling of Soils*. Soil sampling procedures, including field screening of the soil samples using headspace analysis are described in Appendix A-1.

At each boring location, drilling will be conducted through a mud box or at a minimum a sheet of plywood with a hole cut through the center to contain the drill cuttings. Hollow stem augers (HSA) will be used to drill through the overburden materials. A plug will be lowered to the bottom of the HSA drill string (inside of the HSAs) and advanced with the HSAs during drilling and this plug will be removed during soil sample collection.

Overburden Monitoring Well Installation Procedures

Following soil sampling and augering to the desired depth (Appendix A-1), two-inch schedule 40 polyvinylchloride (PVC) (0.010-inch slot) well screen and riser will be installed to desired depth. If a non-aqueous phase liquid (NAPL) is detected, a two-foot long riser with a bottom cap will be installed below the screen to serve as a sump for NAPL recovery. The sump will be sealed to the borehole by bentonite, to prevent any NAPL accumulation outside the sump. Number 0 Morie sand or equivalent will be installed to at least two foot above the screen interval, the augers will be raised and removed slowly as the filter sand accumulates at the bottom, to insure fully filling the borehole cavity. A two-foot bentonite seal will then be added and hydrated prior to grouting the remaining riser length to grade.

In areas specified by the client, the new monitoring wells will be completed with protective stickup risers or flush-mount road boxes. For stickup wells, a six-inch by five-foot steel outer protective riser with a hinged, lockable cover will be installed in the grout to a depth of 2.5 feet and equipped with a padlock. For flush-mount wells, an eight-inch steel protective cover with watertight seal will be installed in the grout. The integrity of the well will be protected with a new, lockable, sealing, vented well cap with an expandable O-ring, which forms an airtight seal. All locks will be keyed alike. A well construction detail will be completed for each monitoring well installed. Well construction details may be found in Appendix A-6.

For stickup wells, the drilling subcontractor will construct a (2 feet x 2 feet x 0.5 foot) concrete apron around each well. Concrete aprons will be sloped to promote runoff away from the well. Concrete pads may be constructed within three days after wells have been installed. Four-inch diameter steel guard posts or ballards may be installed around the pads, if required by the client. The posts will have a minimum stickup of 2.5 feet above ground surface. For the flush-mount wells, the space around the flush-mount road box will be filled with concrete and sloped to promote runoff away from the well.

Well Development

This section describes the groundwater well development procedures and quality control requirements.

EQUIPMENT:

- Centrifugal Submersible or Waterra inertial pump;
- High density polyethylene (HDPE) tubing;
- Foot valves;
- Generator and extension cords;
- ASTM Type II or analyte-free distilled water;
- Water level indicator;
- Five-gallon bucket;
- Polyethylene sheeting; and
- Well development record and field notebook.

Well development will begin no sooner than 48 hours after grout placement and will be accomplished through a combination of surging and high volume pumping using a submersible, centrifugal or Waterra pump. The position of the pump intake will be raised and lowered across the screened interval or open hole to remove sediment and drilling fluids from the sand pack and or bedrock.

Development will continue until a minimum of three well volumes have been removed and the discharged water contains no visible particles or turbidity, or until the well is pumped dry. Well development procedures will be documented in the field notebook or on a well development record. A copy of a well development record is provided in Appendix A-6.

APPENDIX A-3

GROUNDWATER SAMPLING PROCEDURES

GROUNDWATER SAMPLING PROCEDURES

Upon completion of well development all new wells will be sampled. The upgradient and background wells will be purged and sampled before downgradient wells.

Well purging and groundwater sampling procedures that will be followed at the site to obtain representative groundwater samples from the existing wells, and proposed monitoring wells are described below. Some or all of the following equipment will be used to collect groundwater samples:

- Sampling and purging logs;
- Submersible pump;
- Pre-cleaned submersible pump with controls (bedrock well sampling);
- New or dedicated polyethylene tubing;
- New or dedicated foot-valve;
- Personal protective equipment (PPE);
- Disposable gloves;
- Distilled/deionized water;
- Cleaning detergents for decontamination;
- Five-gallon pails for decontamination;
- Brushes;
- Laboratory-supplied sample bottles;
- Coolers;
- Sufficient ice or freezer packs to maintain the samples at four degrees Celsius; and
- Chain of Custody (COC) forms.

Well Purging and Stabilization

The static groundwater level will be measured at each well prior to purging or sample collection. An electronic water level indicator will be used to measure the depth to water surface from the well measuring point to the nearest 0.01-foot.

Purging procedures have a great influence on the reliability of groundwater samples, and inconsistent purging can be a source of variability among groundwater analyses. Therefore, purging procedures will be standardized as much as possible as described below. Once a specific purging procedure has been used and found suitable for a well, the same procedure will be used in subsequent purging events, when possible. We anticipate the use of submersible pumping equipment for purging and sampling.

Upgradient wells, background wells, and other wells that are considered to be relatively uncontaminated, based on available data, will be purged and sampled first, whenever feasible. This practice is intended to minimize the potential for cross-contamination from more contaminated wells.

All wells will be purged before sampling. Water will be purged and sampled from each well using USEPA-approved low flow sampling guidelines. The pump will be operated at a discharge rate of less than one liter per minute. The purging rate will be maintained at a rate sufficient to prevent drawdown in excess of ten percent of the standing water column. If drawdown cannot be maintained at less than ten percent of the standing water column, then the condition will be noted. The intake of the pump or tubing will be set at the midpoint of the well screen.

During purging, field personnel will monitor temperature, pH, specific conductivity, dissolved oxygen (DO), oxidation-reduction potential (ORP), and turbidity using a multi-parameter meter connected to an in-line flow-though cell. A water level reading will also be collected in conjunction with water quality parameters. Water quality parameters will be recorded at 3 to 5 minute intervals during purging. Samples will be collected following a minimum of one well volume must be purged and once parameters have stabilized over three recording intervals. The following criteria will dictate parameter stabilization:

- pH within 0.10 SU

- Specific Conductivity within 10%
- DO within 10%
- Turbidity within 10%
- ORP within 10 mV

In addition, field personnel will obtain a ferrous iron measurement at each monitoring well using an approved field ferrous iron test kit. The aliquot to be analyzed for ferrous iron will be collected after the physiochemical parameters have stabilized. Ferrous iron measurements will be recorded on the groundwater sampling data sheet.

All water quality instruments will be calibrated according to manufactures specifications on a daily basis.

Groundwater Sampling Procedures

This procedure describes steps involved in collecting groundwater samples using dedicated tubing and a submersible or peristaltic pump. The objectives of the activities covered by this procedure are to:

- Obtain groundwater samples for laboratory and field analysis;
- Ensure that the groundwater samples will be representative of actual groundwater quality;
- Ensure quality control and consistency during sampling; and
- Serve as a means to allow traceability of error(s) in sampling and data recording.

At wells that are not purged dry, groundwater sampling will commence immediately after purging without turning the pump off. The discharge hose will be disconnected or cut off from the flow-through cell prior to sampling to minimize cross-contamination.

Containers used for VOC analysis will be filled first by filling the vials from the bottom, which reduces air bubbles and minimizes agitation so as to prevent aeration. After the VOC vials are filled, then the remaining sampling containers will be filled in the following order: SVOCs, phenols, cyanide, and metals. At well locations where turbidity is greater than 50 NTUs then the groundwater samples for metals analysis will be field-filtered using a 0.45-micron (µm) in-line

disposable filter. The aliquot for metals analysis will be preserved by adding a sufficient amount of concentrated nitric acid to maintain the sample at a pH of less than 2 standard units (SU).

The sample containers will be wiped dry and each sample container will be labeled. The sample number, date, time, location, depth, type of analysis, preservative, and sample collector's name will be recorded on the sample label. This information will also be recorded on the groundwater sampling data sheet along with a description of the physical appearance of the sample including color, clarity, suspended solids, and odor.

The samples will be placed in coolers with sufficient bagged ice or ice packs to maintain a temperature of 4 degrees Celsius during shipment. Sample vials for VOC analyses will be placed in resealable plastic bags prior to placement in the coolers. Quality assurance samples, including duplicates, equipment rinseate blanks, and trip blanks will be collected as necessary in accordance with the procedures described in Table 2. The sample custody procedures for the groundwater samples are described in Appendix A-5.

APPENDIX A-4

SAMPLE HANDLING AND CUSTODY

SAMPLE HANDLING AND CUSTODY

All samples will be collected and handled in a manner such that sample agitation, cross-contamination, and contact with the atmosphere is reduced or kept to minimum. Field personnel will wear new disposable gloves when collecting and handling samples, and will change gloves between sampling locations.

Sample chain of custody will be initiated by the laboratory with the selection and preparation of the sample containers. To reduce the chance for error, the number of personnel assuming custody of the sample and sample containers will be held to a minimum. Personnel involved in the chain of custody and transfer of samples will be briefed on the procedures and their purposes prior to the initiation of sampling.

Field Sample Custody

A Chain of Custody (COC) form (Appendix A-6) will accompany the sample from initial sample container selection and preparation commencing at the laboratory, to the field for sample containment and preservation, through its return to the laboratory.

The Project Manager will notify the laboratory of upcoming field sampling activities and the subsequent transfer of samples to the laboratory. This notification will include information concerning the number and type of samples to be shipped as well as the anticipated date of arrival. Sample shipping containers (coolers or "shuttles") will be provided by the laboratory. The shipping containers will be insulated. All sample bottles within each shipping container will be individually labeled for identification.

The labels will include the following information:

- Site name;
- Sample number;
- Name of collector;
- Date and time of collection;
- Place of collection;
- Type of sample;

- Sample volume;
- Analyses required; and
- Preservative (if used).

If a sample-shipping container has been assigned a unique identification number by the laboratory, then this number will be recorded on the COC.

Personnel receiving the sample containers will check each cooler for the integrity of the seals. Coolers or shuttles with broken seals will be returned to the laboratory, and the sample containers will not be used. The receiving personnel will break the seal, inspect the contents for breakage, and record and sign on the COC form that the sample containers have been received. A temporary seal will be affixed to each cooler until the sample containers are filled.

Sample Location Designation

Each test pit advanced will be designated by a "TP," Followed by a number

Each soil boring advanced will be designated by a "GB," Followed by a number

Sample identifications will be designated using NYSEG's sample identification system.

Sample Designation

Each sample collected will be designated using NYSEG's sample identification system. NYSEG's sample identification system allows a unique code (a combination of up to 12 letters and numbers) to be established for every sample collected, even if samples are collected from different depths at the same location. By following NYSEG's sample identification system, persons familiar with the system can deduce the project location, the sample media, the depth interval of the sample, the year the well was installed or sample was collected, and the sampling location number from the sample name. NYSEG's sample identification system is described below.

For each subsurface soil sample collected from a test pit or soil boring location will be identified using the following code TP (or SB) XXYY05ZZ where:

TP = Test Pit

SB = soil boring;

XX = the starting depth (feet) of the interval from which the sample was collected;

YY = the end depth (feet) of the interval from which the sample was collected;

05 = year boring installed (2005); and

ZZ = the test pit or boring location number.

For example, a subsurface soil sample collected from 8-10 feet from soil boring SB-03 at in 2005 would be coded SB08100503.

Groundwater samples will be identified by using the following code G##05ZZ where,

G = groundwater sample;

= the depth of the well. S is for a shallow overburden wells, and D is for a shallow overburden wells;

05 = year well was installed (2005); and

ZZ = well location number.

For example, groundwater samples to be collected from the proposed well MW-02S in 2005 will be coded GS0502S.

QC samples can be coded using this same system and simply adding a MS or MSD (for matrix spike, or matrix spike duplicate) to the end of the code. Blind duplicates can be coded using this system with a fictitious location number. The locations of each blind duplicate will be recorded in its respective the field sampling sheet.

Once the sample containers are filled, the samples will be immediately preserved, as required and stored at 4 degrees Celsius until delivered to the laboratory. Preservation requirements are provided in Table 3. The samples will be kept cool at 4 degrees Celsius using insulated containers containing sufficient ice or ice packs. If ice is used, the ice will be double-bagged at a minimum. VOC sample jars will be placed in resealable plastic bags prior to placement in coolers. The field sampler will indicate sample designation/location number in the

spaces provided on the appropriate COC for each sample of water or soil. The COC will be signed and placed in the cooler. The cooler will be sealed. The samples will be delivered to the laboratory no later than 24 hours after sample collection.

If samples are split and sent to different laboratories, a copy of the COC will accompany the replicate sample. The original COC will accompany the sample for the primary laboratory. The "remarks" column of the COC will be used to record specific considerations associated with sample acquisition such as: sample type, container type, sample preservation methods, and analyses to be performed. The laboratory will maintain on file the completed original forms. Copies will be submitted as a part of the final analytical report.

Samples will be hand-delivered or shipped in coolers with sufficient packing material and ice to insure that samples arrive at the laboratory intact, below 4 degrees Celsius, and within 18 hours of shipping.

APPENDIX A-5

SAMPLE EQUIPMENT DECONTAMINATION PROCEDURES

SAMPLING EQUIPMENT DECONTAMINATION PROCEDURES

Sampling equipment will be decontaminated in the laboratory or the field prior to site use and between sampling locations. The sampling device and equipment decontamination method will involve a non-phosphate detergent wash, tap water rinse, distilled/deionized water rinse, air drying, and a second distilled/deionized water rinse. Due to the limited work area available and the fact that the project area is in residential yards, a decontamination pad will not be constructed on-site.

When a test pit has been approximately 90% backfilled, the excavator bucket will be decontaminated over the hole such that the decontamination fluids infiltrate the test pit. Since the remaining soil to be placed back into the test pit came from the upper 10% of the test pit (i.e. what would have been surface soil before the excavation) it is presumable clean and will not contaminate the bucket prior to moving to the next test pit.

Drilling tools will be steam cleaned between each drilling location to prevent cross-contamination. If contamination is not encountered during the installation of the monitoring well, the drilling tools will be steam cleaned on racks at NYSEG's property on Route 11 adjacent to the former MGP site. Decontamination water will be allowed to infiltrate into the ground surface. If contamination is encountered, a temporary decontamination pad will be constructed at NYSEG's property on Route 11 adjacent to the former MGP site. If steam cleaning does not remove coal tar from the drilling tools or other equipment, then a biodegradable degreaser (CitruSolv) will be sprayed onto the drill tools and a scrub brush will be used to help breakdown the coal tar. A tap water rinse will be followed by another round of steam cleaning. The decontamination fluids will be containerized for proper off-site disposal by NYSEG.

Following well development and prior to sampling, the depth to groundwater in the new and existing wells will be measured using an electronic water level meter or interface probe. To avoid cross-contamination between wells, the water level meter or interface probe will be decontaminated after each use with an Alconox/distilled water wash followed by a distilled water rinse.

APPENDIX A-6

FIELD FORMS

DAILY DRILLING RECORD

URS Corporation

PROJECT TITLE: _____ DATE: _____

CLIENT: _____ CONTRACTOR: _____

FROM	TO	PRODUCTIVE HOURS	ACTIVITIES/COMMENTS
TOTAL PRODUCTIVE HOURS			LEVEL B / LEVEL C / LEVEL D (CIRCLE ONE SELCTION)

LABOR:		MATERIALS / SUPPLIES:	
UNITS		UNITS	

WEATHER:

URS ONSITE COORDINATOR

CONTRACTOR REPRESENTATIVE

TEST PIT LOG

URS
77 Goodell Street
Buffalo, New York 14203
(716) 856-5636

PROJECT:		SHEET: OF
CLIENT:	JOB NUMBER:	
CONTRACTOR:	LOCATION:	
DATE STARTED:	GROUND ELEVATION:	
DATE COMPLETED:	OPERATOR:	
PIT NUMBER:	GEOLOGIST:	
	GROUND WATER:	

DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	DESCRIPTION
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

COMMENTS:

URS Corporation									TEST BORING LOG
									BORING NO:
PROJECT:									SHEET: 1 of 1
CLIENT:									JOB NO.:
BORING CONTRACTOR:									BORING LOCATION:
GROUNDWATER:					CAS.	SAMPLER	CORE	TUBE	GROUND ELEVATION:
DATE	TIME	LEVEL	TYPE	TYPE					DATE STARTED:
				DIA.					DATE FINISHED:
				WT.					DRILLER:
				FALL					GEOLOGIST:
				* POCKET PENETROMETER READING					REVIEWED BY:

	SAMPLE						DESCRIPTION		
DEPTH FEET	TIME	NO.	TYPE	BLOWS PER 6"		ROD%	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	REMARKS
5										
10										
15										
20										
25										
30										

COMMENTS:	PROJECT NO. BORING NO.

URS Corporation									TEST BORING LOG
									BORING NO:
PROJECT:									SHEET: 2 of 2
CLIENT:									JOB NO.:
BORING CONTRACTOR:									BORING LOCATION:
GROUNDWATER:					CAS.	SAMPLER	CORE	TUBE	GROUND ELEVATION:
DATE	TIME	LEVEL	TYPE	TYPE					DATE STARTED:
				DIA.					DATE FINISHED:
				WT.					DRILLER:
				FALL					GEOLOGIST:
				* POCKET PENETROMETER READING					REVIEWED BY:

	SAMPLE						DESCRIPTION			
DEPTH FEET	TIME	NO.	TYPE	BLOWS PER 6"		ROD%	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	REMARKS

COMMENTS:	PROJECT NO. BORING NO.

DRILLING SUMMARY

Geologist:

Drilling Company:

Driller:

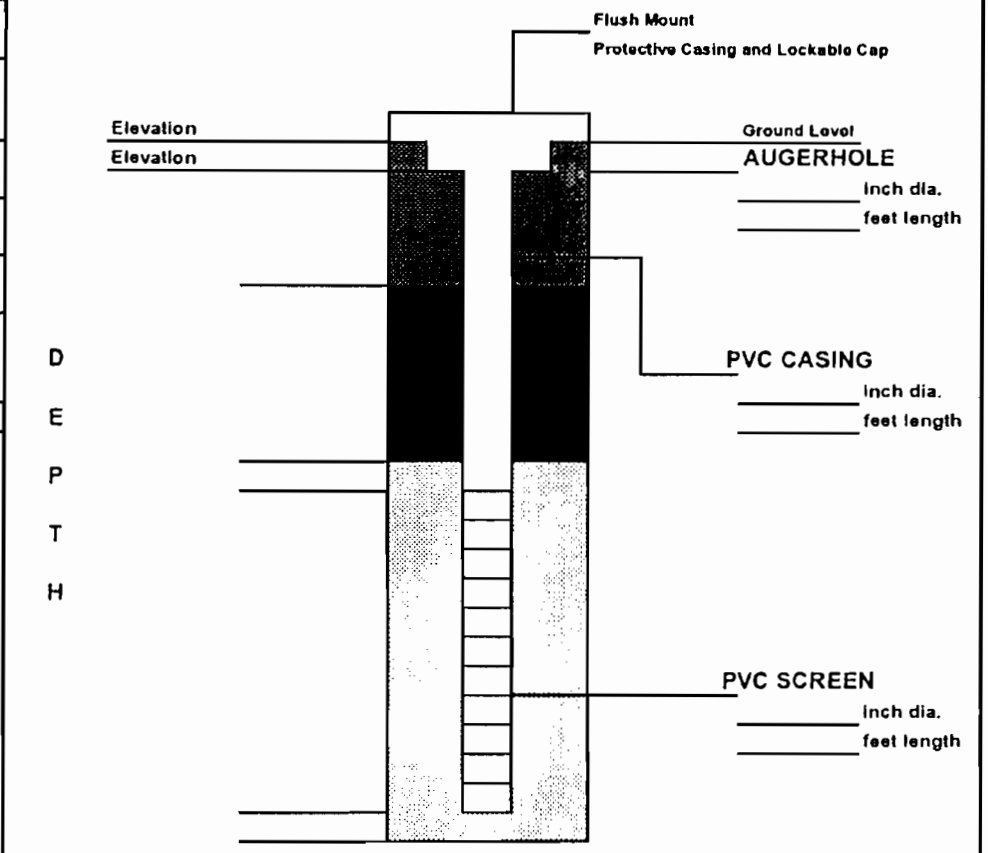
Rig Make/Model:

Date:

GEOLOGIC LOG

Depth(ft.)	Description

WELL DESIGN



CASING MATERIAL	SCREEN MATERIAL	FILTER MATERIAL
Surface: Steel grade box	Type: 4" PVC	Type: #2 Sand Setting:
Monitor: 4" PVC	Slot Size: .020"	SEAL MATERIAL Type: Bentonite Setting:

COMMENTS:

LEGEND

- Cement/Bentonite Grout
- Bentonite Seal
- Silica Sandpack

Client:	Location:	Project No.:
URS Corporation	MONITORING WELL CONSTRUCTION DETAILS	Well Number:

WELL DEVELOPMENT LOG

URS Corporation

PROJECT TITLE: _____ WELL NO.: _____

PROJECT NO.: _____

STAFF: _____

DATE(S): _____

			WELL ID.	VOL. (GAL/FT)
1. TOTAL CASING AND SCREEN LENGTH (FT.)	=		1"	0.04
2. WATER LEVEL BELOW TOP OF CASING (FT.)	=		2"	0.17
3. NUMBER OF FEET STANDING WATER (#1 - #2)	=		3"	0.38
4. VOLUME OF WATER/FOOT OF CASING (GAL.)	=		4"	0.66
5. VOLUME OF WATER IN CASING (GAL.)(#3 x #4)	=		5"	1.04
6. VOLUME OF WATER TO REMOVE (GAL.)(#5 x ___)	=		6"	1.50
7. VOLUME OF WATER ACTUALLY REMOVED (GAL.)	=		8"	2.60

OR

$V = 0.0408 \times (\text{CASING DIAMETER})^2$

PARAMETERS	ACCUMULATED VOLUME PURGED (GALLONS)										
pH											
SPEC. COND. (umhos)											
APPEARANCE											
TEMPERATURE (°C)											

COMMENTS:

LOW FLOW GROUNDWATER PURGING/SAMPLING LOG

Project: _____ Site: _____ Well I.D.: _____

Date: _____ Sampling Personnel: _____ Company: _____

Purging/ Sampling Device: _____ Tubing Type: _____ Pump/Tubing Inlet Location: _____

Measuring Point: _____ Initial Depth to Water: _____ Depth to Well Bottom: _____ Well Diameter: _____ Screen Length: _____

Casing Type: _____ Volume in 1 Well Casing (liters): _____ Estimated Purge Volume (liters): _____

Sample ID: _____ Sample Time: _____ QA/QC: _____

Sample Paramaters: _____

Other Information: _____

PURGE PARAMETERS

TIME	pH	TEMP (°C)	COND. (µmhos)	DISS. O_2 (mg/l)	TURB. (NTU)	Eh (mV)	FLOW RATE (ml/min.)	DEPTH TO WATER (btor)
Tolerance:	0.1	---	3%	10%	10%	+ or - 10	---	

Information: WATER VOLUMES--0.75 inch diameter well = 87 ml/ft; 1 inch diameter well = 154 ml/ft; 2 inch diameter well = 617 ml/ft; 4 inch diameter well = 2470 ml/ft ($vol_{cyl} = \pi r^2 h$)

M:\modler\EXCEL\Low flow purge log Blank 2 51 PM

CHAIN OF CUSTODY RECORD

TESTS

URS

PROJECT NO. | SITE NAME

SAMPLERS (PRINT/SIGNATURE)

LAB _____

COOLER _____ of _____

PAGE _____ of _____

DELIVERY SERVICE: _____ AIRBILL NO.: _____

BOTTLE TYPE AND PRESERVATIVE

LOCATION IDENTIFIER	DATE	TIME	COMP/ GRAB	SAMPLE ID	MATRIX	TOTAL NO.# OF CONTAINERS								REMARKS	SAMPLE TYPE	BEGINNING DEPTH (IN FEET)	ENDING DEPTH (IN FEET)	FIELD LOG NO.# (TERPMS)

MATRIX CODES

AA - AMBIENT AIR; SE - SEDIMENT; SH - HAZARDOUS SOLID WASTE; SL - SLUDGE; WP - DRINKING WATER; WW - WASTE WATER; WG - GROUND WATER; SO - SOIL; DC - DRILL CUTTINGS; WL - LEACHATE; GS - SOIL GAS; WC - DRILLING WATER; WO - OCEAN WATER; WS - SURFACE WATER; WQ - WATER FIELD QC; LH - HAZARDOUS LIQUID WASTE; LF - FLOATING/FREE PRODUCT ON GW TABLE

SAMPLE TYPE CODES

TB# - TRIP BLANK; SD# - MATRIX SPIKE DUPLICATE; RB# - RINSE BLANK; FR# - FIELD REPLICATE; N# - NORMAL ENVIRONMENTAL SAMPLE; MS# - MATRIX SPIKE

(# - SEQUENTIAL NUMBER (FROM 1 TO 9) TO ACCOMMODATE MULTIPLE SAMPLES IN A SINGLE DAY)

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	DATE	TIME
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED FOR LAB BY (SIGNATURE)	DATE	TIME

SPECIAL INSTRUCTIONS

Distribution: Original accompanies shipment, copy to coordinator field files

URSF-075C/1 OF 1/CoCR/GCM

APPENDIX A-7

HEALTH AND SAFETY PLAN

HEALTH AND SAFETY PLAN

NYSEG

FORMER OFF-SITE GASHOLDER

CITY OF CORTLAND, NEW YORK

1.0 PLAN-AT-A-GLANCE

HSP SUMMARY SHEET

THIS SUMMARY SHEET IS PROVIDED AS A QUICK-REFERENCE/OVERVIEW ONLY. THE REMAINDER OF THIS SITE-SPECIFIC HSP IS INTEGRAL TO THE SAFE CONDUCT OF SITE OPERATIONS AND MUST BE APPLIED IN ITS ENTIRETY.

EMERGENCY INFORMATION

Ambulance – 911
Fire – 911
Police – 911
Hospital – (607) 756-3588

Project Manager:	Michael Gutmann	(716) 856-5636
Health and Safety Representative:	Rob Murphy	(716) 856-5636
Regional Health and Safety Manager:	Steven J. Sherman	(716) 856-5636
National Response Center		(800) 424-8802

HOSPITAL DIRECTIONS:

Cortland Memorial Hospital
134 Homer Ave.
Cortland, NY 13045

To reach the hospital from the site, head north on Charles Street, turn left on Grant Street. Immediately turn right onto US-11 [SR-41]. Cortland Memorial Hospital is located on the right approximately four (4) miles. Total trip distance is 6 miles. Route to hospital map is attached.

CONSTITUENTS OF CONCERN

1. Coal Tar – BTEX and PAHs
2. Cyanides
3. Heavy Metals

PROJECT HAZARD ANALYSIS

Task	Chem. Hzds.	Heat/Cold Stress	Noise	Slip/Trip/ Fall	Lifting Hzds.	Mech'l. Hzds.	Electro-cution	Explosion	Excav-Ation
1. Geophysical Survey	low	low	n/a	low	low	n/a	n/a	n/a	n/a
2. Test Pit Excavation	med	med	med	med	low	med	n/a	n/a	med
3. Geoprobe Borings	med	med	med	low	low	med	n/a	n/a	n/a
4. Monitoring Well Installation	med	med	med	low	low	low	n/a	n/a	n/a
5. Groundwater Sampling	low	med	n/a	low	low	low	n/a	n/a	n/a
6. Soil Vapor/Indoor Air Sampling	low	low	n/a	low	low	low	n/a	n/a	n/a

High – Exposure likely more than 50% of the time
Low – Exposure likely less than 10% of the time
Med – exposure likely 10-50% of the time
n/a – Exposure not anticipated

TASK	MINIMUM PROTECTIVE CLOTHING/EQUIPMENT REQUIREMENTS
1	Steel-toed boots, hard hat, safety glasses, work gloves.
2	Steel-toed boots, hardhat, safety glasses, hearing protection, work gloves, Tyvek‡, nitrile gloves when handling potential contaminated materials, surgical nitriles for handling samples.
3	Steel-toed boots, hardhat, safety glasses, hearing protection, work gloves, Tyvek‡, nitrile gloves when handling potential contaminated materials, surgical nitriles for handling samples.
4	Steel-toed boots, hard hat, safety glasses, hearing protection, work gloves, Tyvek‡, nitrile gloves when handling potential contaminated materials, surgical nitriles for handling samples.
5	Steel-toed boots, hardhat, safety glasses, hearing protection, work gloves, Tyvek‡, nitrile gloves when handling potential contaminated materials, surgical nitriles for handling samples.
6	Steel-toed boots, hardhat, safety glasses, work gloves, surgical nitriles when handling samples.

All work tasks will include hard hats and high-visibility traffic vests.

PROTECTIVE CLOTHING (First Action Level)

Chemical Protective Clothing	
Outer Coveralls:	Kleenguard® or Tyvek®‡
Outer Gloves:	Nitrile
Inner Gloves:	Surgical Nitriles

Chemical protective steel-toed boots or chemical resistant boot covers over steel-toed boots.

‡ Substitute poly-Coated or Saranex-coated Tyvek® if there is a potential for contact with liquids (groundwater, mud, etc.)

Each person should wash daily at the end of each work shift. Workers whose clothing may have become contaminated should change into uncontaminated clothing before leaving the job site.

The HASP Preparer has conducted a Hazard Assessment for this project based upon information provided by the Project Manager, in accordance with 29 CFR 1910.132(d).

For more information on PPE and respiratory protection requirements, see the Action Levels table (Page A7-5).

ENGINEERING CONTROLS TO BE USED (as applicable)

- Water spray for dust suppression
- Natural wind forces to reduce exposure to airborne contaminants (i.e., work upwind)
- Forced air ventilation (fans) to reduce potential airborne exposures
- Light colored PPE to reduce solar load for heat stress control
- Dining canopy to provide shaded work/rest area for heat stress control

INSTRUMENTATION TO BE USED

____	HNu PID w/ eV probe
__X__	OVM PID w/ 10.6 eV lamp
____	Photovac Microtip PID w/ ___ eV lamp
__X__	Combustible Gas/O_2 Indicator
____	Foxboro OVA (FID)
__X__	Miniram Real-time Dust Monitor
__X__	Other Monitox or equivalent cyanide monitor _____

PERSONAL EXPOSURE SAMPLING

_____ Will be conducted

__X__ Will be conducted if PID readings require the use of respiratory protection as described in the Action Level Table (Page A7-6).

_____ Is not anticipated

HAZ-COM MATERIALS INVENTORY

- TSP or Alconox (decontamination)
- Isobutylene – 10ppm (calibration gas)
- Sulfuric Acid (sample preservation)
- Hydrochloric Acid (sample preservation
- Citrusolve™ (decontamination)
- Nitric Acid (sample preservation)
- Simple Green™ (decontamination)

ACTION LEVELS (for Photoionization Detector)

Analyzer Reading*	Location	Duration	Action	Personal Protective Equipment
5-<15 ppm	OBZ	>1 minute	Stop work. Monitor OBZ; don protective clothing	Minimum Site Ensemble
15-50 ppm **(2nd Action Level)**	OBZ	>1 minute	Monitor OBZ, provide respiratory protection.	Add full-face respirators with organic vapor/P100 cartridges
>50 ppm **(3rd Action Level)**	OBZ	>1 minute	Stop work; move upwind while vapors dissipate. If elevated levels remain, cover boring and cuttings, evacuate upwind and notify RHSM or PM.	As specified by RHSM.

*above ground readings
OBZ = Operator's Breathing Zone
RHSM = Regional Health and Safety Manager
‡ Substitute poly-Coated or Saranex Tyvek® if there is potential for contact with liquids (groundwater, mud, etc.)

ACTION LEVELS (for the Combustible Gas Indicator)

LEL Reading	Location	Action
<10% LEL	Point of Operations/General Work Area	Continue site operations and continue periodic monitoring
10-20% LEL	Point of Operations/General Work Area	Continue site operations and perform continuous monitoring
>20% LEL	Point of Operations/General Work Area	Shutdown operations, evaluate source, ventilate work area

LEL = Lower Explosive Limit

ACTION LEVELS (for Cyanide Monitor)

Monitor Reading	Location	Action
>5ppm over 15 minute period	OBZ/General Work Area	Discontinue work in that area, contact health and safety to assess conditions

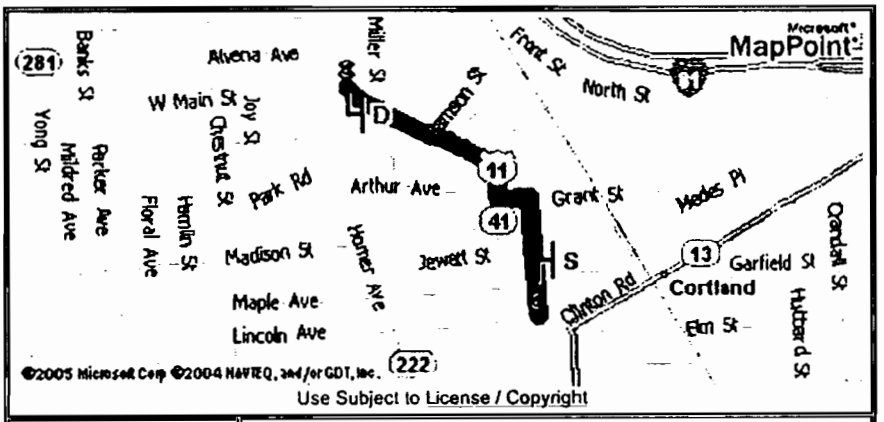
For additional information on Action Levels and their implementation, see Sections 6.0 and 7.0.

HEALTH AND SAFETY EQUIPMENT LIST

Required	As Necessary	
X		URS Safety Management Standards (relevant to project – see next page
X		OSHA "Safety on the Job" Posters
X		Hardhats
X		Safety glasses
X		Ear plugs or muffs
	X	Cotton coveralls
	X	Traffic safety vest
X		Tyvek® coveralls
	X	Polycoated Tyvek® Q-23 Coveralls
X		Steel-toed boots
X		Chemical-resistant steel-toed boots or chemical-resistant boot covers
	X	Work gloves
X		Nitrile outer gloves
X		Surgical nitrile inner gloves
X		Plastic sheeting (visqueen)
	X	55 gallon 17-H drums (for contaminated soils)
	X	55 gallon 17-E drums (for liquids)
	X	Drum liners
	X	Barricade tape and barricades
	X	Wash tubs and scrub brushes
X		Decon solution (i.e., TSP)
	X	Folding chairs
	X	5 or 10 gallon portable eyewash
	X	Respirators sanitizing equipment
X		First Aid kit
X		Infection control kit
X		Drinking water
X		Gatorade or similar drink
X		Type ABC fire extinguishers
		Half-face respirators (NIOSH approved)
	X	Full-face respirators (NIOSH approved)
X		Respirator cartridges [**organic/P100 combo**
X		Photoionization Detector (PID) w/[**10.6**] lamp and calibration kit
	X	Combustible Gas Indicator and calibration kit
	X	Garden sprayer
	X	Compressed gas horn
X		Duct tape
X		Paper towels and hand soap
	X	Spill sorbent
X		Plastic garbage bags
	X	Broom and/or shovel
X		SCBA and associated confined space entry equipment

Your directions are below.
You can also create a map or get additional driving directions.

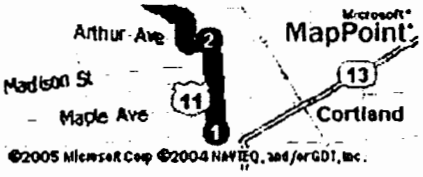
Door to Door Directions

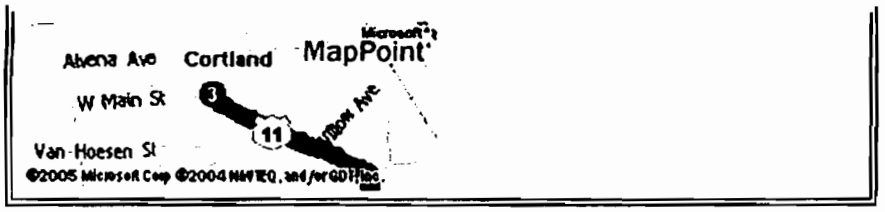


Use Subject to License / Copyright

Start	Destination
43 Charles St Cortland, NY 13045	Cortland Memorial Hospital - Occupational Health Services 134 Homer Ave Cortland, NY 13045 (607) 756-3588

Total Distance:	0.6 miles
Estimated Time:	2 minutes

Map	Directions	Distance
	**1:** Depart on Charles St (North)	0.2 miles
	**2:** Turn LEFT (West) onto Grant St, then immediately turn RIGHT (North) onto US-11 [SR-41]	0.4 miles
	3: Arrive	0.0 miles



Reverse Directions

Display Options:

C Text Only C Text with Overview Map ◉ Text with Turn-by-Turn Maps

Redisplay Results

APPENDIX A-8

COMMUNITY AIR MONITORING PLAN

COMMUNITY AIR MONITORING PLAN

Real-time air monitoring for volatile organic compounds will be conducted at the perimeter of the Exclusion Zone during the drilling program as follows:

- Volatile organic compounds and dust particulates will be monitored at the downwind perimeter of the exclusion zone on a continuous basis. If total organic vapor levels exceed 5 parts per million (ppm) above background, work activities will be halted and monitoring continued under the provisions of a Vapor Emission Response Plan. All readings will be recorded and be available for NYSDEC and NYSDOH personnel to view if requested.

- If particulate levels at the downwind station exceed particulate levels at the upwind station by more than 100 micrograms per cubic meter (mcg/m^3), work activities will be halted and appropriate dust suppression measures will be employed. All readings will be recorded and be available for NYSDEC and NYSDOH personnel to review if requested.

Vapor Emission Response Plan

If ambient air concentration of total organic vapors at the downwind perimeter of the Exclusion Zone exceed 5 ppm above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.

If the organic vapor level is above 10 ppm at the perimeter of the Exclusion Zone, activities must be shut down. When work shutdown occurs, downwind air monitoring as directed by the Site HSO will be implemented to ensure that vapor emission does not impact the nearest residential or commercial structure at levels exceeding those specified in the Major Vapor Emission Response Plan.

Major Vapor Emission Response Plan

If any organic vapor levels greater than 10 ppm over background are identified at the perimeter of the Exclusion Zone all work activities will be halted.

If, following the cessation of work activities, or as the result of an emergency, organic vapor levels persist above 10 ppm above background at the perimeter of the Exclusion Zone, then the air quality will be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20-foot zone).

If efforts to abate the emission source are unsuccessful and organic vapor levels approaching 5 ppm persist for more than 30 minutes in the 20-foot zone, then the Major Vapor Emission Response Plan shall automatically be placed into effect. Also, the Major Vapor Emission Response Plan shall be immediately placed into effect if 20-foot zone organic vapor levels are greater than 10 ppm above background.

Upon activation of the Major Vapor Emission Response Plan, the following activities will be undertaken:

- All Emergency Response authorities will immediately be contacted by the Site HSO and advised of the situation.

- Air monitoring will be conducted at 30 minute intervals within the 20-foot zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the Site HSO.

Particulate Monitoring, Response Levels and Actions

Particulate concentrations will be monitored continuously during test pit activities at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will be equipped with an audible alarm to indicate exceedances of the action level. In addition, fugitive dust migration will be visually assessed during all work activities.

If the downwind PM-10 particulate is 100 mcg/m^3 greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust

suppression techniques will be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the up wind level and provided that no visible dust is migrating from the work area.

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

All readings will be recorded and available for NYSDEC and NYSDOH personnel to review.