REMEDIAL INVESTIGATION – WORK PLAN

8264 Ridge Road West
Town of Clarkson
Monroe County, New York

Prepared for:

Town of Clarkson
P.O. Box 858
Clarkson, New York 14430

Prepared by:

LU ENGINEERS
Civil and Environmental
2230 Penfield Road
Penfield, NY 14526

January 20, 2009

Environmental Restoration Program
Former Service Station Site (#E828143)
8264 Ridge Road West
Town of Clarkson
Monroe County, New York

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1.0 Introduction

Lu Engineers has prepared this Remedial Investigation (RI) Work Plan for the Town of Clarkson (the "Town") for submission to the New York State Department of Environmental Conservation (NYSDEC) Region 8 Division of Environmental Remediation (DER) in accordance with DER-10, "Technical Guidance for Site Investigation and Remediation."

The Town has received a State Assistance Contract (SAC) from the NYSDEC under the Environmental Restoration Program (ERP) to further inventory, characterize, and assess the property known as the Former Service Station (the "Site") in the Town of Clarkson. The Town will use these funds to complete assessment work described in this Work Plan.

The work described herein is intended to delineate the nature and extent of contamination at the Site. The data generated by sampling and testing at the Site will be used to define the horizontal and vertical extent and concentration of contaminants in the soil and groundwater. Hydrogeologic and soils data will provide a means of determining how contaminants attained their present distribution in the environment, and what changes in contaminant distribution may be likely to occur due to groundwater flow and other processes.

Once the extent of contamination and hydrogeologic information have been analyzed, potential environmental exposure pathways will be examined. The identification of significant Site characteristics, extent of contamination, and exposure pathways (if completed exposure pathways are indicated) will be used in the development of remedial alternatives.

A project-specific Quality Assurance Project Plan (QAPP), Health and Safety Plan (HASP), and Community Air Monitoring Plan (CAMP) have also been prepared as required by DER-10. These documents are included as appendices to this Work Plan. An Interim Remedial Measures (IRM) Work Plan and a Citizen Participation Plan (CPP) have also been prepared and will be submitted under a separate cover.

2.0 Site History and Description

Lu Engineers has conducted a Phase I Environmental Site Assessment (ESA) of the Former Service Station Site including a site visit on January 9, 2007. We have reviewed records pertaining to the Site from local government offices, environmental databases, and conducted interviews with a former owner and local officials regarding historical use of the property. This information was used to prepare this Work Plan and is summarized below.

2.1 Site Location

The Former Service Station Site is located at 8264 Ridge Road West (NYS Route 104) in the Town of Clarkson, Monroe County, New York (Figure 1). The Site is an approximate 0.71-acre parcel (Tax Account # 054.14-1-21) and contains a body shop/garage, an office/storage building, and two storage trailers. The southern portion of the Site consists of a paved parking lot and the northern portion of the Site is wooded. The Site is located on the north side of Ridge Road West, just east of the Hamlet of Clarkson.

2.2 Site History

The Site was used as an automotive service station for at least 50 years. Based on review of property deed records and aerial photographs, the Site was used as a retail gasoline station from approximately 1930 until the early 1970s. The body shop/garage was constructed in the 1930s or 1940s and was used for vehicle maintenance operations until the late 1990s.

It was reported that Webaco Oil Company, Inc. owned the Site from 1953 to 1974. The Site was purchased by Charles C. Thomas in 1974 and the current office/storage building was constructed. Mr. Thomas reportedly leased the Site to several tenants including 104 Enterprises, 104 Communications, 104 Collision, Spurr Auto Dealership; and it was used for vehicle repair and associated commercial sales until the late 1990s.

The Site was purchased by Commercial Property Holdings, LLC in 2002 and has been unoccupied since. Monroe County foreclosed on the property and sold it to the Town of Clarkson, the current owner.

2.3 Previous Field Investigations

A Phase I ESA (February 2, 2007) was performed by Lu Engineers for the Town of Clarkson. The ESA identified a number of environmental concerns including:

- past use as a gasoline and service station for over 50 years with no records of waste disposal;

- the presence of an abandoned unregistered underground storage tank (UST) of unknown size and age (at least 30 years) containing between 1,500 and 3,000 gallons of degraded gasoline and water near the southwest corner of the Site;
- the presence of an abandoned 275-gallon aboveground storage tank (AST) with approximately 20 gallons of residual fuel oil located on the west side of the body shop/garage;
- the presence of an abandoned 55-gallon drum containing unknown fluid, located adjacent to the southwest corner of the body shop/garage and other miscellaneous hazardous materials containers;
- an apparent vent pipe located on the northeast corner of the office/storage building and two vent pipes observed on the north side of the body shop/garage, which may indicate additional USTs on the property;
- the presence of an in-ground hydraulic lift system (i.e., oil reservoir, piping) that likely contains hydraulic oil and is assumed to be at least 30 years old;
- the likely presence of a septic system on the property and potential discharge of petroleum products or other vehicle fluids from the body shop/garage;
- a 4-inch polyvinyl chloride (PVC) pipe outfall in a creek, west of the property, possible associated with the on-Site septic system; and
- old tires, scrap metal and drums located on the northern portion of the Site.

Based on these findings, Lu Engineers recommended further investigation to determine:

- whether soil and/or groundwater has been impacted by past and current existence of USTs and ASTs at the Site;
- whether soil and/or groundwater has been impacted by other past operations of the service station, such as operation of hydraulic lifts, solvent/waste oil management, or fuel management;
- whether the soil and/or groundwater has been impacted due to possible discharge of petroleum related products into the on-Site septic system;
- whether other USTs associated with the former service station exist at the Site;
- the location of all underground tanks, contents, and soil and groundwater conditions at the Site; and
- the presence of hazardous materials within the building structures.

Lu Engineers re-inspected the property on July 28, 2008 and did not observe any additional concerns at the Site. Lu Engineers visually inspected the interior of the buildings and observed at least one hydraulic lift in the body/shop garage. It is suspected that at least one more hydraulic lift exists in this building; however, two automobiles and several paper files stored in the building prevented a complete inspection of the building floor.

2.4 Physical Setting

The Former Service Station Site is located in the Town of Clarkson, north of the Village of Brockport in western Monroe County.

Topography
The elevation of the property is approximately 426 feet above mean sea level. The local area is generally flat, sloping gradually to the north towards Lake Ontario.

Surface Water
A creek is located along the western edge of the Site. This creek flows north and is a tributary to Brockport Creek, which is located, approximately ¼ mile to the north. Stormwater runoff from Ridge Road West flows into a storm drain located on the southwest corner of the Site. This storm drain discharges into the creek below. Stormwater from the paved portion of the Site flows north into the wooded area and eventually into the drainage creek located on the western edge of the Site.

Groundwater
The direction of groundwater flow is anticipated to be to the north, based on topography.

Geology
The surficial geology consists of till, as depicted on the Surficial Geology Map of New York, Niagara Sheet (1988). It generally consists of poorly sorted diamict deposits with typically low permeability. The bedrock underlying the Site consists of Queenston Shale of the Medina Group and Queenston Shale Formation, approximately 800 feet thick (Fisher, 1970). The depth to bedrock is likely in excess of 100 feet. The United States Department of Agriculture (USDA) Soil Conservation Service Soil Survey Geographic Database (SSURGO) indicates that the soil classification at the Site is composed of Cazenovia gravelly loam and Lairdsville silt loam. Soils on the southern portion of the Site are classified as well drained with moderately coarse textures, and soils on the northern portion are classified as moderately well-drained with a high water table and low hydraulic conductivity.

Depth to bedrock at the Site is unknown.

Land Use/Sensitive Receptors
The area surrounding the Site is mainly residential with a few commercial properties along Route 104. A garage, reportedly utilized as a limousine service, is located west of the Site, and a residence is located to the east. There are no schools, daycares, or medical facilities within a half-mile radius of the Site.

2.5 Current Site Conditions

The `Site is currently unoccupied. One UST exists on the southwest corner of the property. The size and age of this tank is unknown, although it is suspected to be at least 30 years old and appears to contain between 1,500 and 3,000 gallons of degraded gasoline and water. This tank does not appear to be registered with the NYSDEC. One AST is located on the west side of the body shop/garage and contains approximately 20 gallons of residual fuel oil. In addition, vent pipes indicating the possible presence of additional USTs, were observed on the northeast corner of the office/storage building and on the north side of the body shop/garage.

Two buildings remain on-Site: the body shop/garage and office/storage building, both of which are planned for demolition. The office/storage building is in poor condition with roof leaks and extensive water damage. The body shop/garage building appears to be in fair condition and contains office furniture and two automobiles.

2.6 Conceptual Site Model

Potential Site contamination is related to at least 50 years of petroleum storage and vehicle maintenance activities. A conceptual Site model for the project is outlined in the following table, which identifies environmental conditions on the subject Site that will be evaluated during the remedial investigation.

Table 2.1 Conceptual Site Model

Media	Suspected Source of Contamination	Type of Compounds (General)	Contaminants of Potential Concern (Specific)	Primary or Secondary Source Release Mechanism	Migration Pathways	Potential Receptors
Soil	1) Petroleum storage tanks 2) Hydraulic oil (from hydraulic lift) 3) unknown contents of 55-gallon drum and misc. containers 4) septic system	Fuels, oils, solvents, PCBs	BTEX, Napthalene, Lead	Leaks and spills	Infiltration / percolation	Human: direct contact if excavation occurs in contaminated areas
Groundwater	1) Petroleum storage tanks 2) Contaminated Soil (secondary source) 3)NAPLS	Fuels, oils, solvents	BTEX, Napthalene, Lead	Leaking tanks; Infiltration or percolation from soils	Groundwater flow	Human or ecological receptors are not expected to be exposed
Air/Soil Vapor	1) Leaking tanks 2) Contaminated soil or groundwater	Fuels, solvents	BTEX	Volatilization of gasoline contaminated groundwater, and/or soil	Migration into buildings	Human: Inhalation during investigation and cleanup; Nearby residence (if off-site migration);
Building	1) Fluorescent light capacitors 2) Building materials	PCBs, Asbestos	PCBs, Asbestos	Leaks/Spills, disturbance of building materials	Dispersion by human activity	Human: direct contact with site workers/visitors, inhalation

The surrounding area is served by public water and sewer service. The Town of Clarkson sanitary sewer system was reportedly installed in the late 1960s/early 1970s. The Site was in operation prior to that time and appears to be connected to a private septic system. A white PVC pipe outfall was observed along the creek, behind the buildings. The purpose of the pipe is unknown, but it may be associated with a sanitary (septic) system connected to the bathroom in the garage. The location of the septic system at the Site is unknown.

3.0 Scope of Work

A geophysical survey, sediment samples, soil borings and subsurface soil samples, groundwater samples, aquifer testing, and soil vapor samples will be used to evaluate the Site conditions. The investigation will include the following primary tasks:

- Conduct a geophysical survey of accessible areas of the property to identify USTs.
- Conduct an asbestos survey of the two buildings on the property to identify asbestos containing materials, which will require removal prior to building demolition.
- Removal of the existing UST, AST, and other hazardous materials as an interim remedial measure (IRM).
- Building demolition and inspection of subsurface concerns (i.e., hydraulic lift) during demolition and slab removal.
- Complete twenty five (25) grid-based direct-push soil borings on the Site and collect fourteen (14) soil samples.
- Excavate at least three (3) test pits.
- Collect four (4) sediment samples from the creek on the western portion of the Site.
- Collect six (6) surface soil samples.
- Install four (4) groundwater-monitoring wells.
- Obtain depth to water and hydraulic conductivity measurements from the wells.
- Obtain groundwater samples from the newly installed wells, including temporary wells.
- Obtain soil vapor samples from the Site, as necessary.

The subsurface soil, sediment, and groundwater samples will be analyzed for the following parameters:

- Volatile Organic Compounds (VOCs) - EPA Method 8260C target compound list (TCL)+30 tentatively identified compounds (TICs)
- Semi-Volatile Organics (SVOCs) + TICs - EPA Method 8270C
- Polychlorinated Biphenyls (PCBs) - EPA Method 8082
- Resource Conservation and Recovery Act (RCRA) target analyte list (TAL) Metals - EPA Method 200.7/6010B
- Pesticides- EPA Method 8081A (selected samples only)

Soil vapor samples will be analyzed for VOCs by EPA Method TO-15.

An ASP "Category B" package will be prepared by the laboratory for the samples obtained. Proposed sample locations are indicated on Figure 2. Plans may be modified as necessary based on field observations and Site conditions.

All field activities will be documented in a Site-specific log book. Photographic documentation of all project field activities will also be provided.

3.1 Field Screening and Health and Safety Monitoring

Monitoring of the work area and screening of soil and groundwater will be conducted throughout the duration of field activities to assure the safety of on-Site workers. A copy of the Site-specific HASP is provided as Appendix B.

Air monitoring of the work areas will be conducted using the following (or equivalent) instrumentation:

- An aerosol particulate meter
- An explosimeter
- A PID equipped with a 10.2 eV lamp (or equivalent)

Air monitoring at the Site will be continuous during intrusive activities and during the demolition of contaminated or potentially contaminated structures. Air monitoring will be periodic during all non-intrusive activities. Daily recorded perimeter real-time air monitoring readings for VOCs, as required by the CAMP during investigative and remedial activities, will be submitted (as practicable) to the NYSDEC and the New York State Department of Health (NYSDOH) via email each day that the monitoring is implemented.

A CAMP for the Site work is attached as Appendix C.

Prior to beginning subsurface sampling and testing, the Underground Facilities Protective Organization (UFPO) will be contacted to determine the locations of underground utilities within the study area. It may be necessary to alter the proposed locations of the soil borings due to underground utilities. Any such modifications will be made at the discretion of the Field Team Leader in consultation with the Town of Clarkson and NYSDEC staff, as appropriate.

3.2 Geophysical Survey

To verify the existence and location of known and unknown USTs, a geophysical survey will be conducted of the accessible areas of the property. A Geonics, Incorporated EM-61 magnetometer (or equivalent) will be used to conduct the survey. This piece of equipment is reliable, cost effective and readily available for use.

The data stored in the equipment will be downloaded to a computer for contouring and interpretation. A geophysical map of the property will be created which will identify significant buried ferro-metallic features.

Areas of concern include the northeast corner of the office/storage building and the north side of the body shop/garage where vent pipes were observed that may be indicative of USTs.

The results of the geophysical survey will be provided to the NYSDEC for review prior to the implementation of subsequent investigations.

3.3 Test Pit Investigation

It is anticipated that at least three (3) test pit excavations will be completed to investigate anomalies identified by the geophysical survey. The number of test pits may be modified based on the results of the geophysical survey and consultation with the NYSDEC. A conventional backhoe or excavator will be used to excavate in areas of concern. Test pit depth will vary depending on location, intent, and characteristics observed, with at least one attempted to be completed to bedrock. The soil borings discussed in Section 3.7 may be replaced by test pit excavations if soil conditions or access problems significantly hinder soil coring efforts.

Soils will be screened for VOCs with a photoionization detector (PID) and recorded on test pit logs. Soil samples will be collected from the test pits if elevated PID readings and/or visual evidence of contamination is encountered. Samples will be analyzed as described in Section 3.8.1 below.

Excavated material will be backfilled after field screening and sampling is complete, unless grossly contaminated soils are encountered. Hazardous wastes and grossly contaminated soils shall be staged on-site on 6-mil plastic sheeting and covered to protect it from the elements until it can be removed to a disposal facility. The on-Site staging area will be determined at the discretion of the Field Team Leader. Waste characterization samples will be collected, as necessary, based on disposal requirements.

3.4 Building Survey and Sampling

Lu Engineers will perform an asbestos survey and hazardous material survey of the on-Site structures prior to commencement of IRMs. The asbestos survey shall be conducted in accordance with New York State Department of Labor (NYSDOL) Industrial Code Rule 56, Section 5.1, Asbestos Survey. Suspect asbestos containing materials will be identified and sampled by a Lu Engineers' NYSDOL-certified Asbestos Inspector in accordance with applicable regulations.

The information derived from the building survey will be incorporated into the IRM plans and specifications. If the presence of asbestos is indicated, the materials must be removed prior to building demolition.

3.5 Interim Remedial Measures (IRMs)

Asbestos removal, building demolition, tank and drum removals are proposed to be completed as IRMs to facilitate investigation below the building slab. Demolition will include the removal of Site buildings, slabs, underground drainage systems, hydraulic lifts and associated piping. The work will be completed as outlined in the IRM Work Plan, which will be submitted under a separate cover. Prior to the building demolition, the Town of Clarkson will be responsible for removing any items located within the buildings (i.e., vehicles, files, etc.).

3.6 Sediment Sampling

A total of four (4) sediment samples will be collected from the creek on the western portion of the Site. Sediment soil sampling locations are shown on Figure 2. Samples will be collected from 0 to 2 inches below grade or vegetative cover. Sediment samples will be collected using a dedicated pre-cleaned, stainless steel spoon or trowel to transfer the soil into the appropriate sample containers.

Samples will be analyzed for the presence of SVOCs, VOCs, PCBS, metals, and pesticides. Two of the four (4) sediment samples will be analyzed for pesticides. In the event that a suspected background contaminant is found in excess of the applicable standards, criteria, and guidance (SCG) for surface soils at the Site, Section 3.6 of DER-10 will be followed to determine if detected contaminant concentrations are due to background levels.

3.7 Surface Soil Sampling

Grid-based surface soil samples will be collected to assess potential exposure to contaminants in surface soils and assist in determining future property use options. It is proposed that six (6) surface soil samples be collected from vegetated areas of the Site. Samples will be collected from 0 to 2 inches below vegetation cover with a stainless steel trowel or spoon and transferred into glass sample jars for laboratory analysis by the methods listed above, including three (3) surface soil samples which will be analyzed for pesticides.

In the event that a suspected background contaminant is found in excess of the applicable standards, criteria, and guidance (SCG) for surface soils at the Site, Section 3.6 of DER-10 will be followed to determine if detected contaminant concentrations are due to background levels.

3.8 Soil Borings and Monitoring Well Installation

The installation of twenty five (25) direct-push soil probe points is proposed for this Site. Subsurface sampling locations may also be determined at the discretion of the Field Team Leader, with approval of the NYSDEC. Additional sampling and testing may be necessary in areas with a reasonable expectation of contamination such as former fuel storage locations.

Continuous soil samples will be collected at each boring. The samples will be collected using a direct-push (Geoprobe®) unit with disposable polyethylene sample sleeves. All soil samples will be screened with a PID, characterized, and logged with the subsurface lithology encountered. The depth to groundwater and depth to bedrock will be considered when determining the depth of the soil borings. A boring log will be prepared for each boring location.

Boring spoils and water generated during drilling will be handled in accordance will all applicable protocols. Investigation-derived wastes exhibiting evidence of contamination (i.e., elevated PID readings, sheen, odor) will be containerized and staged on-Site.

Final disposal of soils and water will be dependent on the results of the soil and groundwater analyses to be conducted during this investigation.

The direct-push equipment in contact with soils will be appropriately decontaminated prior to each use. Decontamination will involve these steps:

1. Removal of gross debris;
2. Scrubbing equipment with brushes in Alconox solution;
3. Rinsing equipment with distilled water;
4. Triple-rinsing equipment with distilled water; and
5. Allowing equipment to air dry.

A drill rig will be mobilized to the Site for the installation of four (4) groundwater monitoring wells (MW-1 thru MW-4) at the Site to obtain groundwater samples and hydrogeological data (i.e., flow direction, hydraulic conductivity). Monitoring wells will be located in areas of known former petroleum storage and handing and areas of concern identified during the soil borings. The monitoring wells will be installed in borings advanced using 4.25 inch ID hollow-stem augers. Continuous split spoon samples will be collected and screened using a PID. The borings will be advanced approximately 5 feet into groundwater. It is assumed that bedrock drilling will not be necessary at this Site, and that the depth to groundwater is less than 25 feet.

All permanent groundwater monitoring wells will be constructed according to the following specifications: 10 feet of 2 inch Schedule 40 PVC machine-slotted screen (0.010-inch slot) installed 5 feet into groundwater followed by 2 inch ID schedule 40 PVC riser casing. A sand filter pack composed of chemically inert, coarse-grained sand

will be placed from the bottom of the boring to 1 to 2 feet above the top of the screen. A 2 foot thick bentonite seal will be placed above the sand, followed by Portland cement/5% bentonite grout to surface.

The on-Site wells will be completed 2 feet above ground surface with locking, protective steel casings set in concrete drainage pads. On-Site wells, located on the southern portion of the Site and any off-Site wells will be installed flush mounted. Vented PVC well caps will be placed on each well upon completion. No glue will be used for completion of wells.

The drill rig and associated tooling will be decontaminated using steam-cleaning methods at a designated location. Decontamination residues will be collected in a decontamination pool lined with 6-mil polyethylene sheeting. Prior to completion of the project, decontamination wastes will be transferred into drums or a Site holding tank for appropriate staging and disposal as previously described.

Soil boring and well construction logs will be completed for all borings and monitoring well installations.

3.8.1 Monitoring Well Development

After completion of the well, but not sooner than 48 hours after grouting is completed, development will be accomplished by pumping or bailing. No dispersing agents, acids, disinfectants, or other additives will be used during development nor be introduced into the well at any other time. During development, water will be removed throughout the entire water column by periodically lowering and raising the pump intake (or bailer stopping point).

The wells will be developed until turbidity of the discharge is 50 nephelometric turbidity units (NTU) or less. All field instrument measurements made during development will be recorded. The wells will initially be surged in order to draw sediments out of the sand pack and into the well for removal. If after 2 hours the proposed goal of 50 NTU cannot be achieved, the well will be considered as developed and the NYSDEC project manager will be consulted to determine if field-filtering of groundwater samples will be necessary for metals analysis. All water generated from the development activities will be containerized until analysis of the water has been obtained.

3.9 Private Well Survey

As part of the groundwater investigation, a private well survey will be performed to locate any private/public water supply wells within ½-mile of the Site. This will be done by contacting the local health department and Town of Clarkson for information.

3.10 Sample Collection

All samples will be obtained, handled and characterized in accordance with NYSDEC Analytical Services Protocol (ASP) methods. Sample bottles will be labeled prior to sampling to ensure reliable identification. Samples will be relinquished to an accredited NYSDOH Environmental Laboratory Approval Plan (ELAP) Contract Laboratory Protocol (CLP) certified laboratory for analysis. All chain of custody requirements will be strictly adhered to for designated analyses.

The NYSDEC Division of Environmental Remediation *Guidance for the Development of Quality Assurance Plans and Data Usability Summary Reports* will be followed. Lu Engineers' Quality Assurance Officer for this project will be Steven Campbell, CHMM. Greg Andrus, CHMM will be the Project Manager and Laura Smith will be the Field Team Leader for this project. Category B deliverables will be required for all analytical reporting in order to provide the necessary documentation to be reviewed to evaluate the usability of the data and to provide calibration data needed to verify results, as necessary.

One duplicate sample will be obtained for each sample type. Also, one matrix spike (MS) and matrix spike duplicate (MSD) will be collected for samples of each media. One groundwater trip blank will be relinquished to the contract laboratory for the designated analyses. Therefore, a total of eighteen (18) subsurface soil samples, eight (8) sediment samples, eleven (11) surface soil samples, five (5) tank closure samples, two (2) soil vapor samples, and nine (9) groundwater samples will be obtained and analyzed during this investigation. Samples duplicated will be selected at the discretion of the Field Team Leader.

Table 3.10 identifies all samples and laboratory analytical procedures required to complete this project, including tank pit closure samples that will be collected as part of the IRM, which will be submitted under a separate cover.

Table 3.10 Summary of Sampling and Laboratory Analyses

Sample Type	Sample Location	Analytical Parameter	# Field Samples	Field Duplicates	Blanks			MS/ MSD	Total
					Field	Trip	Equipment		
Sediment Soils	4 on-site	VOCs + 30 TICS SVOCs + 30 TICS, RCRA TAL Metals PCBs Pesticides	**4** **(2)**	**1**	**1**			**1/1**	**8**
Surface Soils	6 on-site	VOCs + 30 TICS SVOCs + 30 TICS, RCRA TAL Metals PCBs Pesticides	**6** **(3)**	**1**	**1**		**1**	**1/1**	**11**
Subsurface Soils	21 borings	VOC+ 30 TICs SVOC+ 30 TICs RCRA TAL Metals PCBs Pesticides	**14** **(5)**	**1**	**1**			**1/1**	**18**

Sample Type	Sample Location	Analytical Parameter	# Field Samples	Field Duplicates	Blanks			MS/ MSD	Total
					Field	Trip	Equipment		
Subsurface Soils continued	Tank Pit Closure	VOC+MTBE SVOC Lead	**5**	-	-	-	-	-	**5**
Soil Vapor	2 on the property/ 2 ambient air	VOC	**4**	-	-	-	-	-	**4**
Groundwater	Monitoring Wells 4	VOC + 30 TICs SVOC + 30 TICs Metals PCBs **Pesticides**	**4** **(2)**	**1**	**1**	**1**		**1/1**	**9**

3.10.1 Subsurface Soil Sampling

Soil samples obtained with direct push equipment will be collected in disposable polyethylene soil sampling sleeves. During well installations, continuous split spoon samples will be collected at each well boring. Soil samples will be collected continuously from the top of ground surface to refusal or desired depth. Soils will be screened using a PID. Soils will be described using the Unified or Burmister Soil Classification System and recorded on boring logs.

Determinations as to which specific samples will be submitted for laboratory analysis will be based on PID screening results, visual observations, odor, sample location relative to other samples and significant site features, and the judgment of the Field Team Leader.

If no elevated PID readings or other evidence of contamination is observed, a soil sample shall be collected from the soil-groundwater interface at each boring location and submitted for laboratory analysis. Once obtained, samples will be immediately labeled and stored on ice in a cooler.

All subsurface soil samples will be analyzed for SVOCs +30 TICS, TCL VOCs + 30 TICS, PCBs, and RCRA TAL Metals in accordance with ASP 2000 (CLP). Five subsurface soil samples will also be analyzed for pesticides.

3.10.2 Groundwater Sampling

Prior to sampling, the water level at each well will be measured with reference to the casing elevation and recorded. The static volume of water will be determined for each location. At a minimum, three (3) well volumes will be bailed (purged) from each well. Groundwater sampling will be conducted using Low Flow-Minimal Drawdown sampling techniques. Variable-speed peristaltic pumps (i.e., Geopump) with ¼-inch ID polyethylene tubing will be utilized for the collection of water samples. Field parameters including turbidity, pH, conductivity, and temperature will be measured Low-Flow Sampling Field Record prior to collecting the samples. Once these parameters have stabilized, the well will be sampled, as described in Section 4.4.6 of the QAPP (Appendix A).

If turbidity is greater than 50 NTU, low flow sampling methods may be utilized to sample the wells for heavy metals. Once obtained, all samples will be immediately labeled and placed on ice in a cooler in preparation for delivery to the contract laboratory.

All groundwater samples will be analyzed for SVOCs +30 TICS, TCL VOCs + 30 TICS, PCBs, and RCRA TAL Metals in accordance with ASP 2000 (CLP). Two groundwater samples will also be analyzed for pesticides.

3.11 Aquifer Testing

Upon completion of the monitoring well installation, development and sampling, aquifer testing will be performed on the wells. The test will consist of the addition and withdrawal of a slug to determine the hydraulic conductivity and transmissivity of the soils in the immediate vicinity of each well screen. The tests will be performed using the methodology described below:

- Measure and record static water level in well;
- Insert the pre-decontaminated pressure transducer below the surface of the water table to a point that will allow clearance for the solid slug to be inserted. Attach the transducer to a laptop computer with data logging program;
- Insert the solid slug or bailer in the well and allow the well to equilibrate to the initial static level; and
- Rapidly remove the slug or bailer and begin recording the rising head using the laptop computer as soon as the slug is completely out of the eater column within the well. Record the rising head until it has returned to at least 90% of its initial static level or no significant change in head is recorded within one hour.

Groundwater depths will be used to prepare a contour map showing the hydraulic gradient and direction of flow at the Site.

3.12 Soil Vapor Sampling

An evaluation of potential soil vapor impacts to off-Site receptors will be addressed as part of this investigation. This Section addresses the use of soil vapor sampling at the perimeter of the Site. The results of the other actions identified in this Work Plan will be used to determine if on-Site soil vapor sampling is the appropriate action, or if the application of soil vapor intrusion sampling of adjacent properties is warranted. The project has budgeted to conduct on-Site soil vapor sampling in the estimated project fee. If on-Site soil vapor sampling is necessary, Lu Engineers will follow the procedures listed below. If it is determined that soil vapor intrusion sampling on adjacent properties is the appropriate action, an amended work plan and project budget will be submitted to NYSDEC for approval. The NYSDOH *Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006* will be followed in either situation.

If soil vapor sampling will be conducted at the Site to investigate the potential for on-Site or off-Site exposures to VOCs via soil vapor, it is estimated that two (2) soil vapor samples will be collected from the boundaries of the Site. The proposed locations for the soil vapor sampling are indicated on Figure 2.

A direct-push Geoprobe® unit and Post Run Tubing (PRT) System or equivalent sampling tools including point holders, adapters, and polyethylene tubing will be utilized by a subcontracted firm for the installation of semi-permanent soil vapor probe points.

Subsurface soil vapor samples will be obtained using the following procedures:

- A clean drive point adaptor and new expendable point will be driven to a depth of approximately 10 feet below grade. The expendable drive point will be sacrificed at each soil gas sampling location.
- After the drive point has reached the desired depth, the stainless steel probe rod will be retracted approximately 2 inches to create a void, which will allow the migration of soil vapor into the bottom of the drive point adaptor.
- A clean, unused piece of ¼ inch Teflon-lined polyethylene tubing (or size as needed to connect) will then be attached to the stainless steel adaptor. The tubing is inserted into the probe rod and extended to the bottom of the probe rod. Using a counter-clockwise circular motion, the tubing is threaded to the drive point adaptor and tightened to compress the "O" ring seal.
- Porous, inert backfill material (glass beads or course sand) will be used to create a sampling zone 1 to 2 feet in length. The probe will be sealed to a minimum of 3 inches above the sampling zone with a bentonite slurry to prevent outdoor air infiltration.
- To ensure the integrity of the PRT and tubing connections, a vacuum check will performed on the system prior to purging and collecting the sample.
- After connecting the tubing to the "down-hole" drive point adaptor, the line is purged by drawing a measured volume (one implant volume) of soil gas/vapor through the tubing. The purge rate shall not exceed 0.2 liters per minute.
- Apply tracer gas test on the installed probe to verify the integrity of the seal, as appropriate. The tracer gas set-up is detailed in the QAPP (Appendix A).

For preparation of the SUMMA® canister and collection of the sample, the following procedure is to be followed:

- Soil vapor samples must be collected in SUMMA® canisters for lab analysis. Each cleaned SUMMA® canister will have a certification check performed by the laboratory with the flow controller in place. If a canister is determined to be contaminated, then it will be re-cleaned and re-certified.
- The sample is to be collected over a one-hour period to ensure a flow rate of <0.2 liters per minute. The sampling rate of the canister will be controlled by the use of a calibrated orifice within the flow controller. The calibrated orifice of each flow controller will be preset at the laboratory.

- A canister with less than 25 inches of mercury (Hg) showing on the vacuum gauge prior to sampling will not be used. The check will be performed in the field and noted on the sample log sheet.
- A slight vacuum will be left in the canister at the end of sampling. The final vacuum will be noted on the sample log sheet. The laboratory must also check the vacuum in order to so that it may be documented that the canister did not leak during transit.

All sample collection logs will be completed with the appropriate information and logged on the chain-of-custody form. All sampling tools will be decontaminated with Alconox and water between probe holes and all tubing will be discarded after use.

The Summa® canisters will be submitted to the subcontracted analytical laboratory for analysis for VOCs via EPA Method TO-15. A compound list (including method detection limits) is included in the QAPP.

3.13 Site Survey

A survey of the Site will be performed by a NYS Licensed Surveyor to identify property boundaries and existing features including all onsite structures and monitoring wells. A base map of the Site will be produced using the NAD 83 UTM Zone 18 (NYTM) coordinate system to show locations of all sample points. After the installation of monitoring wells, an instrument survey will be performed and the top of the inner casing determined to 0.010 foot accuracy to mean sea level by a NYS Licensed Surveyor and at least one other permanent object (i.e., property corner markers, corners of buildings, bridges, etc.) in the vicinity of the wells. All other sample locations will be mapped using a using a Trimble hand-held global positioning system (GPS) unit capable of achieving sub-metes accuracy.

4.0 Project Personnel

The following personnel are anticipated to be working on this project:

Robert Hutteman, P.E.	Project Director
Gregory L. Andrus, CHMM	Project Manager
Steven Campbell	Quality Assurance Officer
Laura Smith	Field Team Leader
Janet M. Bissi	Site Safety Officer
Eric Detweiler	Geologist

Subcontractors

To be determined	Analytical Laboratory
To be determined	Soil Boring & Monitoring Well Installation
To be determined	Data Validation (as necessary)

Qualifications for Lu Engineers personnel are included in Appendix D.

5.0 Report

Upon receipt and review of all necessary data, a Remedial Investigation/Alternatives Analysis Report (RI/AA) will be prepared in accordance with the format illustrated in Attachment 3 of the Municipal Assistance for Environmental Restoration Projects Procedures Handbook (July 2004). The Report will be signed by a Professional Engineer (PE) and describe the extent and distribution of contaminants at the Site, describe hydrogeologic factors and groundwater conditions, and discuss the potential for contaminants to impact future tenants or off-site receptors.

The Report will also include a detailed evaluation of possible remedial alternatives, their effectiveness, and estimated cleanup costs. In addition to the Report, Lu Engineers will provide technical support during the NYSDEC PRAP/ROD process.

The Report will carefully document all investigative activities and analytical results and will be supplemented with photographic documentation, subsurface soil logs and cross sections, study area plans that indicate groundwater flow direction, and sub aerial contaminant distribution. Future use of the Site will be considered in remedies selected for evaluation.

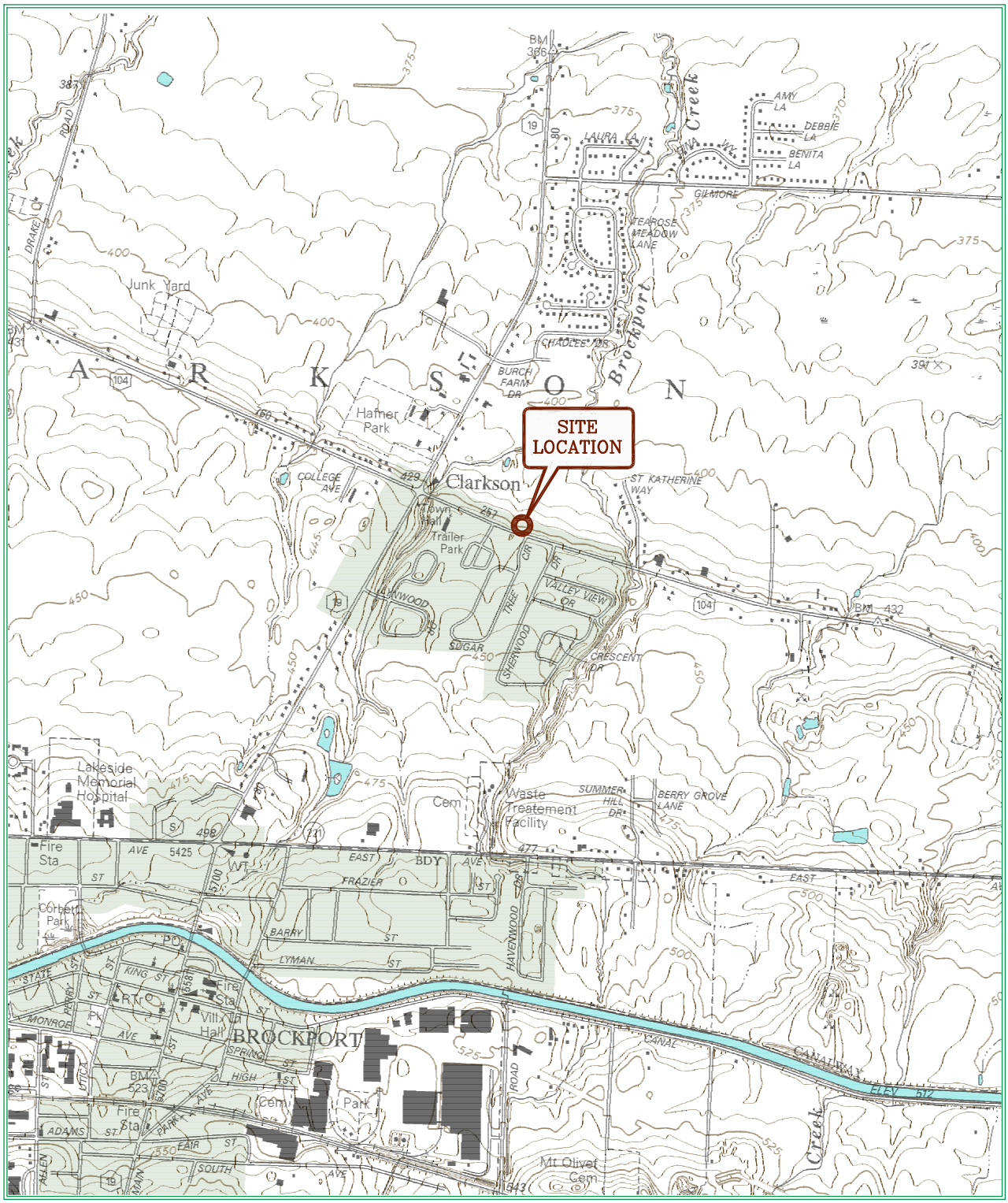
6.0 Schedule

A detailed project schedule, including all anticipated fieldwork and report submission, is included in Appendix E. From the time of project start-up, it is our professional estimate that the project will take approximately one year to complete. This takes program components of the ERP and associated NYSDEC review into consideration.

7.0 Citizen Participation

A Citizen Participation Plan is provided under separate cover. This Plan serves to encourage communication among all parties involved, or affected by, contaminant investigation and cleanup activities at the Former Service Station Site in Clarkson, New York. A major goal of citizen participation is to provide opportunities for gathering public knowledge and input needed to make informed decisions about remedial actions. This will help to create a Site restoration plan with strong support from local residents and community groups.

Figures



SCALE: 1" = 2000'

Lu Engineers
ENVIRONMENTAL • TRANSPORTATION • CIVIL

FIGURE 1. SITE LOCATION MAP

TOWN OF CLARKSON (FORMER SERVICE STATION)
8264 RIDGE ROAD WEST
BROCKPORT, NEW YORK 14420

DATE:	JULY 2010
SCALE:	1:24,000
DRAWN BY:	DLS

MAP SOURCE: NYS DOT RASTER QUADRANGLE
BROCKPORT / MONROE COUNTY
DOT EDITION DATE: 1997 / USGS CONTOUR DATA: 1971

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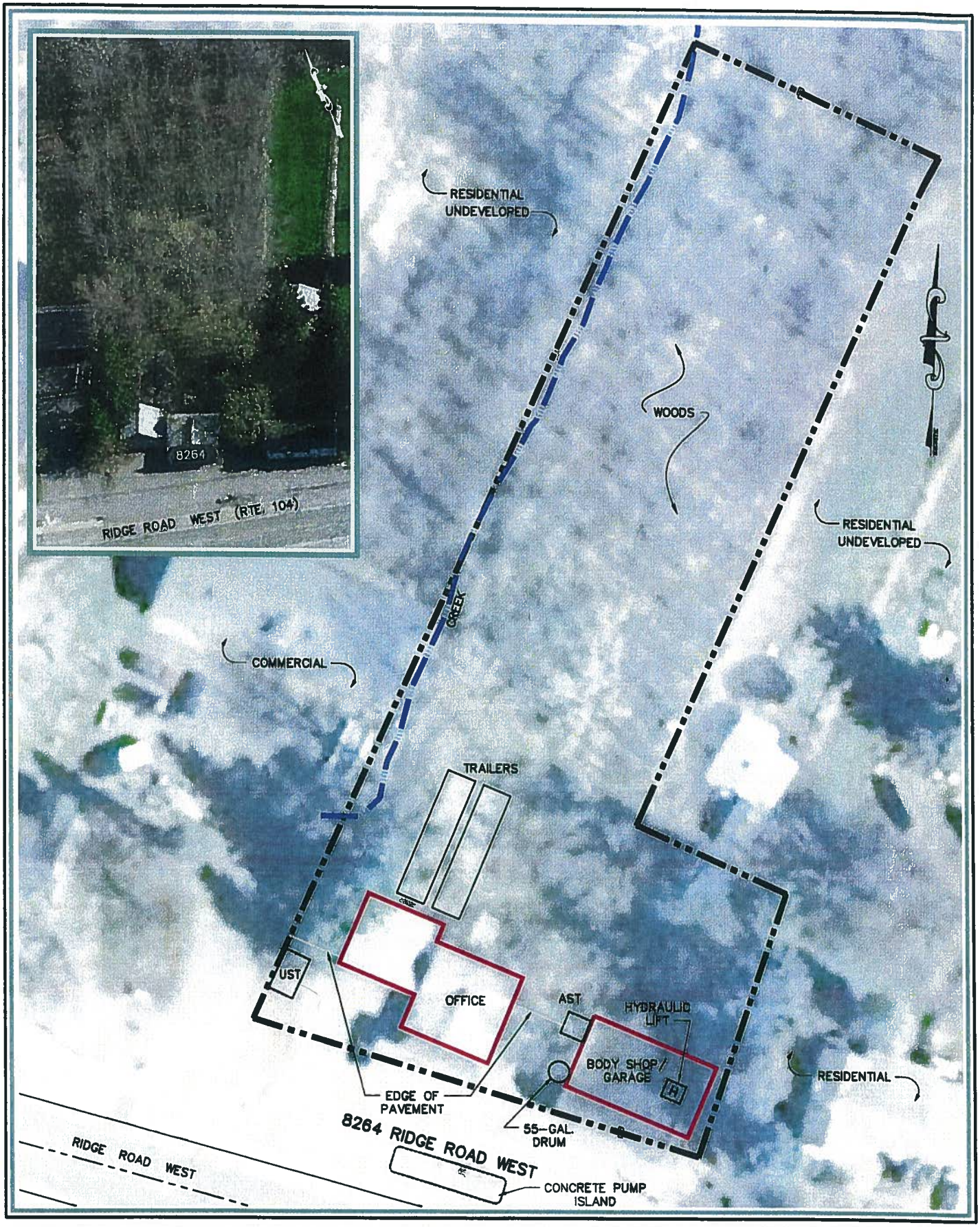

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FIG. 2
SITE PLAN
8264 RIDGE ROAD WEST
TOWN OF CLARKSON NEW YORK

DATE:	SEPTEMBER 2008
SCALE:	±1" = 40'
DESIGNED/DRAWN/CHECKED	JB/DS/GA
P.N.	40503

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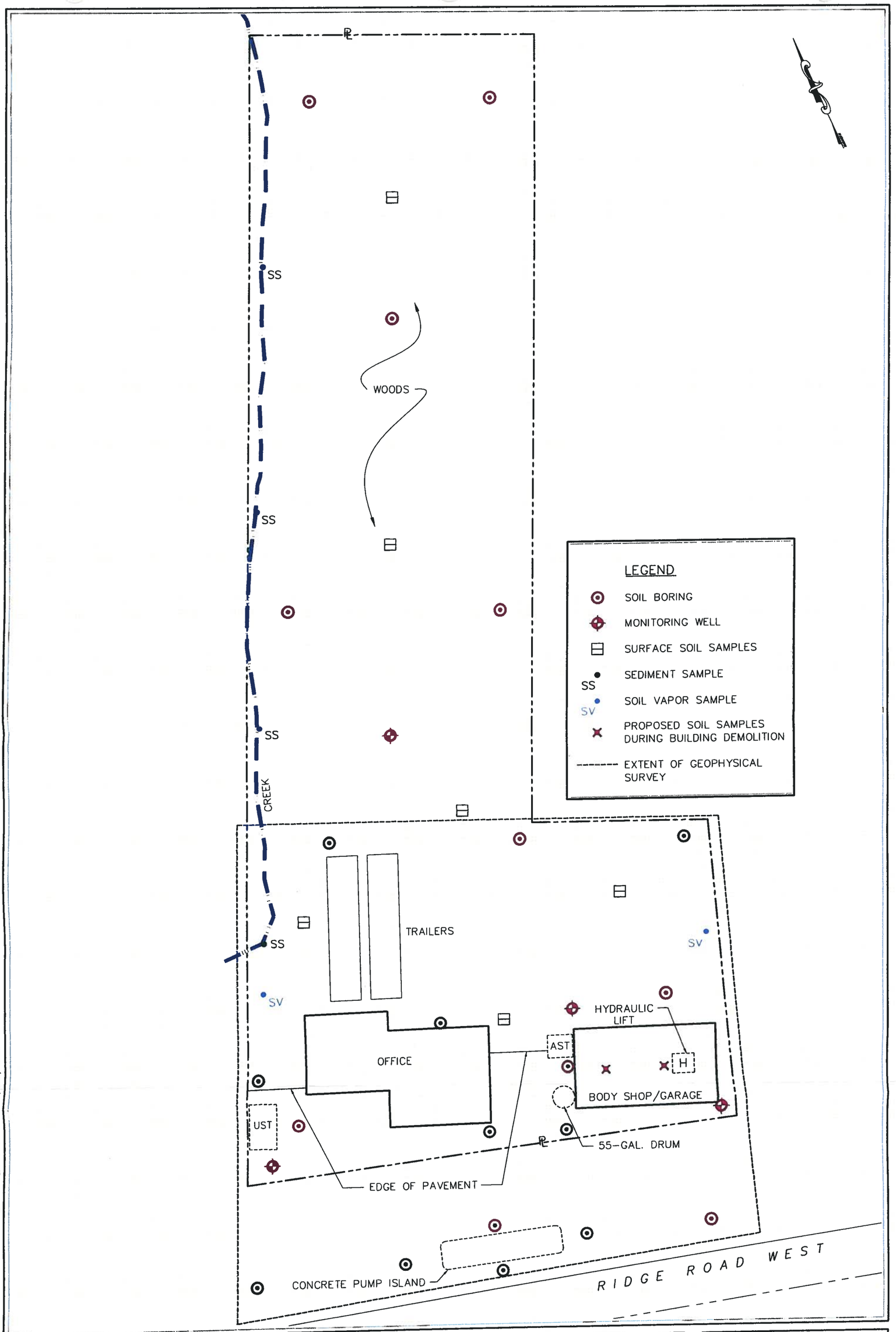

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FIG. 3
SAMPLE LOCATION PLAN
8264 RIDGE ROAD WEST
TOWN OF CLARKSON NEW YORK

DATE: OCTOBER 2008
SCALE: ±1" = 25'
DESIGNED/DRAWN/CHECKED JB/DS/GA
P.N. 40503

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Appendix A – Quality Assurance Project Plan

Environmental Restoration Program
Former Service Station Site (#E828143)
8264 Ridge Road West
Town of Clarkson
Monroe County, New York

Remedial Investigation

Quality Assurance Project Plan

Prepared For:

Town of Clarkson
P.O. Box 858
Clarkson, New York 14430

Prepared By:

LU ENGINEERS
Civil and Environmental
2230 Penfield Road
Penfield, New York 14526

Project No. 40503

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1.0 Introduction

This Quality Assurance Project Plan (QAPP) was prepared as an integral part of the Remedial Investigation (RI) Work Plan for the Former Service Station Site in the Town of Clarkson, and is subject to the review and approval by the New York State Department of Environmental Conservation (NYSDEC). The project work will be performed by Lu Engineers, or conducted under their discretion by NYSDEC-approved contractors. Project-specific descriptions can be found in the RI Work Plan.

This QAPP presents the policies, organization, objectives, functional activities, and specific quality assurance (QA) and quality control (QC) activities that will be implemented by Lu Engineers for this project. This QAPP is designed to ensure that all technical data generated by Lu Engineers is accurate, representative, and will ultimately withstand judicial scrutiny.

All QA/QC procedures are implemented in accordance with applicable professional technical standards, NYSDEC and Environmental Protection Agency (EPA) requirements, government regulations and guidelines, and specific project goals and requirements. This QAPP is prepared in accordance with all NYSDEC and EPA QAPP guidance documents.

This QAPP incorporates the following activities:

- Sample management and chain of custody;
- Document control;
- Laboratory quality control; and
- Review of project deliverables.

Analytical samples will be collected in the field utilizing standard operating procedures (SOPs) and sent to the contracted New York State Department of Health (NYSDOH) Environmental Laboratory Approval Plan (ELAP) Contract Laboratory Protocol (CLP) certified laboratory for analysis. Field data compilation, tabulation, and analysis will be checked for accuracy. Calculations and other post-field tasks will be reviewed by field personnel and the project manager.

Equipment used to take field measurements will be maintained and calibrated in accordance with established procedures. Records of calibration and maintenance will be kept by assigned personnel. Field testing and data acquisition will be performed in standard fashion following strict guidelines.

Document control procedures will be used to coordinate the distribution, coding, storage, retrieval, and review of all data collected during all sampling tasks. These include, but are not limited to, the sampling of soil/sediment, groundwater, and wastes. In addition, the laboratory has developed SOPs for individual analytical methods and internal QC procedures. These documents are an important aspect of their QA program and are available for review upon request.

2.0 Project Objectives

The intent of this project is to delineate the nature and extent of contamination at the Former Service Station Site in the Town of Clarkson. Sampling of soil, sediment, and groundwater will be used to identify potential exposure pathways and evaluate the Site for future use. The identification of significant Site characteristics, extent of contamination, and exposure pathways (if completed exposure pathways are indicated) will provide the basis for developing remedial alternatives. The scope of work is described in Section 3.0 of the RI Work Plan and in the Interim Remedial Measures (IRM) Work Plan submitted under a separate cover.

A complete project description, including Site history and background information, is given in Section 2.0 of the RI Work Plan.

3.0 Project Organization and Responsibility

In accordance with Lu Engineers' quality assurance (QA) program, experienced senior technical staff will be assigned to the project QA/QC functions. The management structure provides for direct and constant operational responsibility, clear lines of authority, and the integration of QA activities. The various QA functions are explained below.

QA contacts include Lu Engineers' Project Manager and Quality Assurance Officer. Qualifications of key personnel are included in Appendix D of the RI Work Plan.

A NYSDOH ELAP-CLP certified laboratory will provide analytical services for the project. A list of their certifications and accreditations will be provided when the laboratory is selected.

Project Director
The project director for this project will be Robert Hutteman, P.E.. As project director, Mr. Hutteman will have overall responsibility for ensuring that the project meets client objectives and Lu Engineers quality standards. In addition, the project director will be responsible for technical quality control and project oversight and will provide the project manager with access to upper management.

Project Manager
The project manager for this project will be Gregory L. Andrus, CHMM. As project manager, he will be responsible for implementing the project and will have the authority to commit the resources necessary to meet project objectives and requirements. The project manager's primary function is to ensure that technical, financial, and scheduling objectives are achieved. The project manager will provide the major point of contact and control for matters concerning the project. The project manager will:

- Work directly with the NYSDEC Regional Office to complete and implement a work plan for the project;
- Define project objectives and schedule;

- Establish project policy and procedures to address the specific needs of the project as a whole, as well as the objectives of each task;
- Acquire and apply technical managerial resources as needed to ensure performance within budget and schedule constraints;
- Orient all staff concerning the project's special considerations;
- Develop and meet ongoing project and/or task staffing requirements, including mechanisms to review and evaluate each task product;
- Review the work performed on each task to ensure its quality, responsiveness, and timeliness;
- Review and analyze overall task performance with respect to planned requirements and authorizations;
- Approve all external reports (deliverables) before their submission to the client;
- Ultimately be responsible for the preparation and quality of interim and final reports; and
- Represent the project team at meetings.

Quality Assurance Officer (QAO)
The QA officer is Steven Campbell, CHMM. He will be responsible for maintaining QA for a specific program and the projects within that program. Specific functions and duties include:

- Providing an external and, thereby, independent QA function to the project;
- Responsibility for field and sampling audits conducted by qualified QA personnel;
- Coordinating with client personnel, Lu Engineers' project manager, laboratory management, and staff to ensure that QA objectives appropriate to the project are set and that personnel are aware of these objectives;
- Coordinating with project management and personnel to ensure that QC procedures appropriate to demonstrating data validity sufficient to meet QA objectives are developed and in place;
- Interfacing with the data validator (if necessary) and development of a project specific data usability report;
- Coordinating with QA personnel to ensure that QC procedures are followed and documented;
- Requiring and/or reviewing corrective actions taken in the event of QC failures;
- Reporting non-conformance with QC criteria or QA objectives, including an assessment of the impact on data quality or project objectives, to the project manager.

Technical Staff
The technical staff (team members) for this project will be drawn from Lu Engineers pool of resources. The technical team staff will be utilized to gather and analyze data and to prepare various task reports and support materials. All of the designated technical team members are experienced professionals who possess the degree of specialization, training and technical competence required to effectively and efficiently perform the required work.

Data Validation & QA Staff
The data validation and QA staff will include data validation chemists, QA auditors, and other technical specialists who remain independent of the laboratory and project management. The staff will independently validate analytical data to assess and summarize their accuracy, precision, and reliability and determine their usability. The staff will also perform audits and document the historical record of project activities, including any factors affecting data usability, such as data discrepancies and deviations from standard practices. The staff will act under the direction of the QA officer and project manager in accordance with specific project requirements.

Third party data validation will be performed by an appropriately qualified subcontracted firm. Resumes of the data validation staff will be obtained and available upon request.

4.0 Sampling Procedures

4.1 Sampling Design

The sampling design for this project is focused on the identified areas of concern. A total of twenty five (25) soil borings are planned to be taken in and around suspected areas of impact, such as former fuel storage locations. A total of fourteen (14) subsurface samples will be collected, including three (3) samples from the area around the known underground storage tank (UST). A total of four (4) sediment soil samples will be collected from the creek on the western portion of the Site. Also, six (6) surface soil samples will be collected from the Site. In addition, five (5) soil samples will also be collected as part of the tank closure, described in the IRM Work Plan, which will be submitted under a separate cover.

Groundwater samples will be taken from four (4) newly installed permanent monitoring wells. Soil and groundwater samples will be analyzed for semi-volatile organic compounds (SVOCs) + 30 tentatively identified compounds (TICs), target compound list (TCL) volatile organic compounds (VOCs) + 30 TICs, and Resource Conservation and Recovery Act (RCRA) target analyte list (TAL) Metals and polychlorinated biphenyls (PCBs) following Analytical Services Protocols (ASP) 2000 CLP. In addition, two (2) sediment, three (3) surface soil, five (5) subsurface, and two (2) of the groundwater samples will also be analyzed for pesticides.

Soil vapor sampling will take place at the Site to investigate the potential for vapor from soil and groundwater contamination to migrate to indoor air.

Waste characterization and tank closure samples will also be collected during the investigation and interim remedial measure (IRM) activities.

A Sample Location Plan is provided as Figure 3 of the RI Work Plan.

4.2 QC Samples

Various types of field QC samples are used to check the cleanliness and effectiveness of field handling methods. They are analyzed in the laboratory as samples, and their purpose is to assess the sampling and transport procedures as possible sources of sample contamination and document overall sampling and analytical precision. Rigorous documentation of all field QC samples in the Site logbooks is mandatory.

- **Trip Blanks** are similar to field blanks with the exception that they are not exposed to field conditions. Their analytical results give the overall level of contamination from everything except ambient field conditions. Trip blanks are prepared at the lab prior to the sampling event and shipped with the sample bottles. Trip blanks are prepared by adding organic-free water to a 40-milliliter (ml) volatile organic analysis (VOA) vial. One trip blank will be used with every batch of water samples shipped for volatile organic analysis.

Each trip blank will be transported to the sampling location, handled like a sample, and returned to the laboratory for analysis without being opened in the field.

- **Field Equipment/Rinsate Blanks** are blank samples designed to demonstrate that sampling equipment has been properly prepared and cleaned before field use and that cleaning procedures between samples are sufficient to minimize cross-contamination. Rinsate blanks are prepared by passing analyte-free water over sampling equipment and analyzing the samples for all applicable parameters. If a sampling team is familiar with a particular site, its members may be able to predict which areas or samples are likely to have the highest concentration of contaminants. Unless other constraints apply, these samples should be taken last to avoid excessive contamination of sampling equipment.

- **Field Duplicates** consist of a set of two (2) samples collected independently at a sampling location during a single sampling event. Field duplicates can be sent to the laboratory so that they are indistinguishable from other analytical samples and personnel performing the analysis are not able to determine which of the samples are field duplicates. Field duplicates are designed to assess the consistency of the overall sampling and analytical system.

Field QC samples and the frequency of analysis for this project are summarized in Table 4.1.

4.3 Decontamination Procedures

All decontamination will be performed in accordance with NYSDEC-approved procedures. Sampling methods and equipment have been chosen to minimize decontamination requirements and prevent the possibility of cross-contamination. All drilling equipment will be decontaminated prior to drilling, after drilling each boring/monitoring well, and after the completion of all drilling. Special attention will be given to the drilling assembly, augers, split-spoons, and polyethylene casing. Split-spoons will be decontaminated prior to and following each use.

Split-spoons and other non-disposable sampling equipment, including bailers and stainless steel spoons will be decontaminated using the following procedure:

- Initially cleaning equipment of all foreign matter;
- Scrubbing equipment with brushes in Alconox solution;
- Rinsing equipment with distilled water;
- Triple-rinsing equipment with distilled water; and
- Allowing equipment to air dry.

A temporary decontamination pool will be established in a secure area on site using 6-ml polyethylene sheeting. Fluids generated during decontamination will be collected in the plastic-lined pool. Prior to completion of the project, all decontamination wastes will be transferred into drums for appropriate staging and disposal.

Table 4.1
Sampling and Analysis Summary

Sample Type	Sample Location	Analytical Parameter	Analytical Method	Reporting Level	# Field Samples	Field Duplicates	Blanks			MS/ MSD	Total
							Field	Trip	Equipment		
Sediment Soils	4 on-site	VOCs + 30 TICS SVOCs + 30 TICS, RCRA TAL Metals PCBs Pesticides	8260 8270 6010B 8082 8081A	Category B (Level III)	**4** **(2)**	**1**	**1**			**1/1**	**8**
Surface Soils	6 on-site	VOCs + 30 TICS SVOCs + 30 TICS, RCRA TAL Metals PCBs Pesticides	8260 8270 6010B 8082 8081A		**6** **(3)**	**1**	**1**		**1**	**1/1**	**11**
Subsurface Soils	21 borings	VOC+ 30 TICs SVOC+ 30 TICs RCRA TAL Metals PCBs Pesticides	8260 8270 6010B 8082 8081A		**14** **(5)**	**1**	**1**			**1/1**	**18**
	Tank Pit Closure	VOC+MTBE SVOC Lead	8021 8270 6010		**5**	**-**	**-**	**-**	**-**	**-**	**5**
Soil Vapor	2 on the property/ 2 ambient air	VOC	TO-15		**2**	**-**	**-**	**-**	**-**	**-**	**2**
Groundwater	Monitoring Wells 4	VOC + 30 TICs SVOC + 30 TICs Metals PCBs Pesticides	8260 8270 6010B 8082 8081A		**4** **(2)**	**1**	**1**	**1**		**1/1**	**9**

4.4 Sampling Methods

This section describes the sampling procedures to be utilized for each environmental medium that will be collected and analyzed in accordance with the RI Work Plan and Tables 4.1 and 5.1 of this Plan. All sampling procedures described are consistent with USEPA sampling procedures as described in SW-846, third edition and the NYSDEC ASP, or equivalent.

4.4.1 Sediment Soil Samples

Sediment soil samples will be collected from the creek on the western portion of the Site as indicated on the Sample Location Plan (Figure 3) of the RI Work Plan. Samples will be taken from 0 to 2 inches below grade with a stainless steel hand auger or trowel and transferred to the appropriate clean glass containers. Sufficient sample volume (as specified by the laboratory) will be collected to fill the sample bottles. All tools to be used will be decontaminated according to procedures outlined in Section 4.3 prior to use.

Any observable physical characteristics of the soil as it is being sampled (i.e., color, odor, physical state) will be recorded. Samples will be screened using a PID as they are collected.

4.4.2 Surface Soil Sampling

Surface soil samples will be collected from grid-based sample locations across the property as indicated on the Sample Location Plan (Figure 3). Samples will be taken from 0 to 2 inches below vegetative cover with a stainless steel hand auger, trowel, or spoon and transferred to the appropriate clean glass containers. Sufficient sample volume (as specified by the laboratory) will be collected to fill the sample bottles. All tools to be used will be decontaminated according to procedures outlined in Section 4.3 prior to and between usages. A rinsate/equipment blank will be collected after the final decontamination of the sampling equipment has been performed.

Any observable physical characteristics of the soil as it is being sampled (e.g., color, odor, physical state) will be recorded on Surface Soil Sample Logs.

4.4.3 Subsurface Soil Samples

Soil borings will be advanced using direct push (Geoprobe®) equipment. Samples will be collected in disposable sampling tubes in continuous 4-foot intervals. Non-disposable sampling equipment will be decontaminated between sampling locations.

Decontamination will be accomplished by washing the parts in an Alconox solution to remove debris, and rinsing with distilled water. Each soil sample will be described at the time it is retrieved, and a subsurface log will be produced by an on-Site geologist based upon visual examination and other field observations. Soil descriptions will be based on either the Unified or Burmister Soil Classification System.

All soil samples will be screened for the presence of VOCs with a PID. VOC measurements will be entered on the boring log.

The field geologist will also evaluate soil samples for the presence of staining or other unusual observations. Samples noted to have these characteristics may require analysis even though no PID readings may have been observed.

4.4.4 Soil Vapor Sampling

Soil vapor sampling will be conducted for VOC analysis at soil vapor extraction points. Subsurface soil vapor probe points will be installed using the following procedure:

- A clean drive point adaptor and new expendable point will be driven to the approximate depth of nearby building foundations. The expendable drive point will be sacrificed at each soil gas sampling location.
- After the drive point has reached the desired depth, the stainless steel probe rod will be retracted approximately 2 inches to create a void, which will allow the migration of soil vapor into the bottom of the drive point adaptor.
- A clean, unused piece of ¼ inch Teflon-lined polyethylene tubing (or size as needed to connect) will then be attached to the stainless steel adaptor. The tubing is inserted into the probe rod and extended to the bottom of the probe rod. Using a counter-clockwise circular motion, the tubing is threaded to the drive point adaptor and tightened to compress the "O" ring seal.
- Porous, inert backfill material (glass beads or course sand) will be used to create a sampling zone 1 to 2 feet in length. The probe will be sealed to a minimum of 3 inches above the sampling zone with a bentonite slurry to prevent outdoor air infiltration.
- To ensure the integrity of the PRT and tubing connections, a vacuum check will performed on the system prior to purging and collecting the sample.
- After connecting the tubing to the "down-hole" drive point adaptor, the line is purged by drawing a measured volume (1-3 implant volumes) of soil gas/vapor through the tubing. The purge rate shall not exceed 0.2 liters per minute.
- Apply tracer gas test on the installed probe to verify the integrity of the seal, as appropriate.

Tracer Gas

A tracer gas test shall be performed on the probe installation to verify the integrity of the seal. Helium gas will be applied as a tracer using the method described below.

- Using an inverted 5-gallon pail with inlet and outlet ports, enrich the air surrounding the probe to least 75% helium. If necessary, seal the pail at the ground surface with a bentonite slurry to prevent leakage.
- Purge one to three tubing volumes from the sample port using a purge pump calibrated at a flow rate $\leq$0.2 liters per minute, while the tracer gas is applied.
- Using a portable helium detector (Mark9821, GasCheck 3000, or equivalent) screen for the presence of helium from the probe point. If less than 10% helium is detected in the sample point, then sampling may be performed.
- If >10% helium is detected within the sample probe, remove the tracer gas set-up and improve the surface seal. Re-test with the tracer gas to verify the seal.

If initial tracer gas tests do not indicate infiltration of outdoor air, continued use of the tracer gas set-up may not be necessary at each probe location. The number of tracer gas tests will be determined by the NYSDOH or NYSDEC project monitor and Lu Engineers' Project Manager.

Preparation of Summa Canisters

- Soil vapor samples will be collected in a SUMMA-type canister for lab analysis. Each canister will be pre-cleaned and have a batch certification check performed by the laboratory.
- Sampling duration will vary depending on the sample size required for analysis. Sampling rate is controlled by a flow controller that is calibrated and preset by the laboratory.
- The canister and control valve assembly will be kept out of direct sunlight during sampling by using a cloth or plastic drape or an enclosure. This is to prevent undue heating of the flow controller.
- The cycle time of the canisters shall not exceed thirty days. The cycle time is defined as the time from shipment from the laboratory, through the return shipping and analysis at the laboratory.
- Canisters will be pressure checked in the field prior to sampling. A canister with less than 25 inches of mercury (Hg) showing on the vacuum gauge will not be used.
- A slight vacuum will be left in each canister at the end of sampling. The laboratory will check the vacuum in order to document no leaks occurred during shipping.
- All sampling tools will be decontaminated between probe holes and tubing will be discarded after use.

The sampling team will keep a soil vapor sample log sheet with the following information:

- Sample ID and Canister ID or serial numbers,
- Date and time of sampling,
- Purge volume,
- Sample start and end time,
- Start and finish vacuum readings, and
- Identity of samplers.

In addition, the following information will be recorded in the field logbook:

- Weather conditions during sampling and for the past 24 hours;
- Background PID readings;
- Nearby sources of volatile chemicals in use;
- Sampling method and equipment used;
- Sample depth;
- Moisture content of the sampling zone; and
- Results of tracer gas set-up.

During sampling no activities will be permitted in the immediate area that involve using materials containing VOCs. The area will be inspected prior to sampling and any containers of oil, gasoline and any other hydrocarbons are to be removed from the area. Sampling personnel will use caution and avoid activities that can influence the sample results, such as pumping gas prior to sampling, using marking pens with the sampling devices, or wearing freshly dry-cleaned clothing while sampling. The sampling point will be monitored during sample collection to insure that the gas implant, the tubing and valves, and the canister remain intact and undisturbed.

Samples will be shipped to Air Toxics, Ltd. for analysis of VOCs via USEPA Modified Method TO-15 using selective ion monitoring (SIM) quantification (low detection limit).

4.4.5 Groundwater Investigation

The groundwater sampling plan outlined in this subsection has been prepared in general accordance with RCRA Groundwater Monitoring Technical Enforcement Guidance Document 9950.1 (September 1986), Office of Solid Waste and Emergency Response as modified by NYSDEC-specific request.

Well Installation

Prior to initiating drilling activities, the drilling rig, augers, rods, split spoons, pertinent equipment, well pipe and screens will be steam cleaned. These activities will be performed prior to arrival at the Site. Throughout and after the cleaning processes, direct contact between the equipment and the ground surface will be avoided. The drilling rig and all equipment will be steam cleaned upon completion of the investigation and prior to leaving the Site.

Test borings will be advanced with 4.25 inch ID hollow stem augers through overburden, driven by truck-, track-, or trailer-mounted drilling equipment. Alternative methods of drilling or equipment may be allowed or requested for site-specific criteria, but must be approved by NYSDEC. Drilling fluids, other than water from a NYSDEC-approved source, will not be allowed without special consideration and agreement from NYSDEC. The use of lubricants is also not allowed unless approved by the NYSDEC representative. During the drilling, a portable VOC monitor (i.e., PID), and an O_2/explosimeter will be used to monitor the gases exiting the hole.

Well Casing (Riser)

The well riser shall consist of 2-inch diameter, threaded flush-joint polyvinyl chloride (PVC) pipe. All well risers will conform to the requirements of ASTM-D 1785 Schedule 40 pipe, and shall bear markings that will identify the material as that which is specified. All materials used to construct the wells will be NSF International (a division of American National Standards Institute (ANSI)/American Society of Testing and Materials (ASTM)) approved.

Well Screen
Generally, wells will be constructed with 10-foot machine-slotted screens, unless otherwise specified in the RI Work Plan or dictated by field conditions (e.g., screens of less than 10 feet in length may be used, depending on the characteristics of the well).

Screen and riser sections shall be joined by flush-threaded coupling to form watertight unions that retain 100% of the strength of the casing. Solvent PVC glues shall not be used at any time in the construction of the wells. The bottom of the screen shall be sealed with a treated cap or plug. No lead shot or lead wool is to be employed in sealing the bottom of the well or for sealant at any point in the well.

All risers and screens shall be set round, plumb, and true to line.

Artificial Sand Pack
Granular backfill will be chemically and texturally clean inert, siliceous, and of appropriate grain size for the screen slot size and the host environment. The well screen and riser casing will be installed, and the sand pack placed around the screen and casing to a depth approximately 2 feet above the top of the well screen.

Bentonite Seal
A minimum 2-foot thick seal of bentonite pellets/chips and water slurry will be placed directly on top of the sand pack, and care will be taken to avoid bridging. The seal will be measured immediately after placement, without allowance for swelling.

Grout Mixture
Upon completion of the bentonite seal, the well will be grouted with a non-shrinking cement grout mix to be placed from the top of the bentonite seal to the ground surface. The cement grout shall consist of a mixture of Portland cement (ASTM C 150) and water, in the proportion of not more than 7 gallons of clean water per bag of cement (1 cubic foot or 94 pounds). Additionally, 3% by weight of bentonite powder shall be added, if permitted.

Surface Protection
At all times during the progress of the work, precautions shall be used to prevent tampering with or the entrance of foreign material into the well. Upon completion of the well, a suitable vented cap shall be installed to prevent material from entering the well. For on-Site wells, the PVC well riser shall be surrounded by a steel casing rising 24 to 36 inches above ground level and set into a concrete pad. A concrete pad, sloped away from the well, shall be constructed around the well casing. The ground immediately around the top of the well shall be sloped away from the well. There shall be an opening in the protective casing wall at the top of the cement pad to allow for internal drainage. On-Site wells, located on the southern portion of the Site and any off-Site wells will be installed flush mounted.

Any well that is to be temporarily removed from service or left incomplete due to delay in construction, shall be capped with a watertight cap and equipped with a “vandal-proof” cover, satisfying applicable NYSDEC regulations or recommendations.

Surveying
Coordinates and elevations will be established by a New York State licensed land surveyor for each monitoring well location. A map of each Site will be prepared for inclusion into the final report for each Site.

Elevations (0.010 foot) will be established for the ground surface at each monitoring well, the top of each monitoring well inner casing (TOC), and at least one other permanent object (i.e., property corner markers, corners of buildings, bridges, etc.) in the vicinity of the wells. Elevations will be provided using the NAD 83 UTM Zone 18 (NYTM) coordinate system. Soil borings and other sample locations will be established using a Trimble hand-held global positioning system (GPS) unit capable of achieving sub-metes accuracy.

Unsurveyed data, (i.e., approximate site and property boundaries), developed through the use of current tax maps and initial Site visits, also will be shown on the survey map. The location and extent of filled areas, buried tanks and drums, other items pertinent to Site usage will be indicated on the survey maps based on the best available data.

Well Development
After completion of the well, but not sooner than 48 hours after grouting is completed, development will be accomplished by pumping or bailing. No dispersing agents, acids, disinfectants, or other additives will be used during development nor be introduced into the well at any other time. During development, water will be removed throughout the entire water column by periodically lowering and raising the pump intake (or bailer stopping point).

Well development will include washing the entire well cap and the interior of the well casing above the water table, using only water from the well itself. As a result of the operation, the well casing will be free of extraneous materials (grout, bentonite, and sand) inside the riser, well cap, and blank casing between top of the well casing and water table. This washing will be conducted before and/or during development; not after development. Development water will be discharged on Site as determined by the Site-specific work plans and/or consultation with the NYSDEC representatives on Site.

The development process will continue until a stabilization of pH, specific conductance, temperature, and clarity (goal of <50 NTUs) of the discharge is achieved or for a maximum of two hours. If, after two hours, substantial improvement has been noted through the development process but the goal of 50 NTUs has not been met, an additional one to two hours may be authorized by the NYSDEC on-Site representative to achieve the 50 NTU goal. Prior to the commencement of this additional development, entries will be made detailing the request in the Site project logbook and countersigned by both NYSDEC's on-Site representative and Lu Engineers' Field Team Leader.

Geologic Logging and Sampling
At each well location, the boring will be advanced through overburden using a drill rig and hollow-stem auger, and soils will be visually inspected for stains and monitored with a PID. Soil samples will be collected continuously over the entire depth of the well. The sampling device will be decontaminated according to procedures outlined in Section 4.3.

The split-spoon sampler will be driven into the soil using a 140-pound safety hammer and allowed to free-fall 30 inches, in accordance with ASTM-D 1586-84 specifications. The number of blows required to drive the sampler each 6 inches of penetration will be recorded. Soil samples will be screened in the field for volatile organic vapors using a PID, and will be classified in accordance with Unified or Burmeister Soil Classification System specifications, and logged. Samples will be stored in glass jars until they are needed for testing or the project is complete.

Information regarding analytical requirements for soil borings can be found the RI Work Plan.

Monitoring well borings will be installed to a depth determined through the examination of boring logs and water levels encountered as well as on-Site discussions and agreement between the NYSDEC representative and Lu Engineers' Field Team Leader. All significant discrepancies between the prepared Work Plan and actual Site conditions will be noted and countersigned by both parties in the project's on-Site logbook.

If hydrogeologic conditions are favorable for well installation at a depth less than design, the well will be installed at the boring or coring termination depth. In the event that maximum design depth is reached and hydrogeologic conditions are not suitable for well installation, the maximum drilling depth will be revised. Hydrogeologic suitability for well emplacement will be determined by the supervising geologist in consultation with NYSDEC, based on thickness and estimated hydraulic conductivity to the saturated zone encountered. If necessary, the borehole will be advanced to water or abandoned.

Drilling logs will be prepared by an experienced geologist who will be present during all drilling operations. One copy of each field boring log, well construction log, and groundwater data will be submitted as part of the report. Information provided in the logs shall include, but not be limited to, the following:

- Date, test hole identification, and project identification;
- Name of individual developing the log;
- Name of driller and assistant(s);
- Drill, make and model, auger size;
- Identification of alternative drilling methods used and justification thereof (i.e., rotary drilling with a specific bit type to remove material from within the hollow stem augers);
- Standard penetration test (ASTM D-1586) blow counts;
- Field diagram of each monitoring well installed with the depth to bottom of screen, top of screen, and pack, bentonite seal, etc.;
- Reference elevation for all depth measurements;

- Depth of each change of stratum;
- Thickness of each stratum;
- Identification of the material of which each stratum is composed, according to the USCS system or standard rock nomenclature, as appropriate;
- Depth interval from which each sample was taken;
- Depth at which hole diameters (bit sizes) change;
- Depth at which groundwater is encountered;
- Depth to static water level;
- Total depth of completed well;
- Depth or location of any loss of tools or equipment;
- Location of any fractures, joints, faults, cavities, or weathered zones;
- Depth of any grouting or sealing;
- Nominal hole diameters;
- Amount of cement used for grouting or sealing;
- Depth and type of well casing;
- Description of well screen (to include depth, length, location, diameter, slot sizes, material, and manufacturer);
- Any sealing-off of water-bearing strata;
- Static water level upon completion of the well and after development;
- Drilling date or dates;
- Construction details of well; and
- An explanation of any variations from the RI Work Plan.

Groundwater Sampling Procedures

Static water levels will be measured to within 0.01 foot prior to purging and sampling. Purging and sampling of each well will be accomplished using precleaned dedicated polyethylene bailers on new polypropylene line. All wells will be purged a minimum of three (3) volumes of water standing in the casing or to dryness. Temperature, pH, conductivity, and turbidity will be measured and recorded during purging.

After purging, the turbidity of each well will be measured. If the well water exhibits turbidity above the 50 NTU limit, sampling of the well water for metals only will be delayed for 24 hours. Sample volumes for all other parameters will be collected immediately following purging, with the volatile sample collected first. Upon returning to the well, the turbidity will be remeasured and recorded. No additional purging will be performed.

Groundwater samples will be collected according to the following procedures.

- Water clarity will be quantified during sampling with a turbidity meter;
- When transferring water from the bailer to sample containers, care will be taken to avoid agitating the sample, since agitation promotes the loss of volatile constituents;
- Any observable physical characteristics of the groundwater (i.e., color, sheen, odor, turbidity) at the time of sampling will be recorded; and
- Weather conditions (i.e., air temperature, sky condition, recent heavy rainfall, drought conditions) at the time of sampling will be recorded.

All groundwater samples and their accompanying QA/QC samples will be analyzed as specified in the RI Work Plan.

4.5 Sample Documentation

4.5.1 Logbooks

All field activities will be documented in a field logbook. This logbook will provide a record of activities conducted at the Site. All entries will be signed and dated at the end of each day of fieldwork. The field logbook will include the following: date and time of all entries; names of all personnel on Site; weather conditions (temperature, precipitation, etc.); location of activity; and description of activity.

In addition, Lu Engineers will complete the following standard field forms as necessary:

- Test boring/probing log
- Groundwater sampling logs and well development records
- Field sampling record
- Chain of custody for all analytical laboratory sampling

As with any data logbooks, no pages will be removed for any reason. If corrections are necessary, these must be made by drawing a single line through the original entry (so that the original entry can still be read) and writing the corrected entry alongside it. The correction must be initialed and dated.

4.5.2 Sample Identification

All containers of samples collected by Lu Engineers from the project will be identified using a format identified in the field on a label affixed to the sample container (labels are to be covered with Mylar tape). Sample bottles will be labeled prior to sampling to ensure reliable identification. Generally, the format will include the following.

- Two letters identifying the Site (CS- Clarkson Site);
- Two letters identifying the type of sample:

  GP- geoprobe soil sample
  TP- tank pit sample
  MW- groundwater sample
  WB- well boring soil sample
  SV- soil vapor sample
  SD- sediment soil sample
- Two numbers identifying a sample location (01-99);
- Two numbers identifying a sample depth (in feet). Note: if the sample is taken as a composite for an interval, the bottom depth should be used for the sample ID.
- Additional letters identifying special parameters, if applicable.

  D – Field Duplicate
  MS – Matrix Spike
  MD- Matrix Spike Duplicate

Example: CS-GP-05-06D a duplicate soil sample collected from a depth of six (6) feet below ground surface (bgs) at GP-05.

Each sample will be labeled and sealed immediately after collection. The sample label will be filled out using waterproof ink and will be firmly affixed to the sample containers and protected with Mylar tape. The sample label will give the sample number, the date of the collection, analysis required, and pH and preservation, if appropriate.

The laboratory sample number will appear on a barcode label affixed to each sample, extract, or digestate.

4.6 Field Instrumentation

All instruments and equipment used during sampling and analysis will be operated, calibrated and maintained according to manufacturer's guidelines and recommendations. Operation, calibration, and maintenance will be performed by personnel properly trained in these procedures. Documentation of calibration information will be maintained in the appropriate logbook or reference file and will be available upon request. Instruments will be calibrated before each use.

5.0 Sample Handling and Custody

This section describes procedures for sample handling and chain-of-custody to be followed by Lu Engineers sampling personnel and the analytical laboratory. The purpose of these procedures is to ensure that the integrity of the samples is maintained during their collection, transportation, storage, and analysis. All chain-of-custody requirements comply with SOPs indicated in EPA sample-handling protocol.

Sample identification documents will be carefully prepared so that sample identification and chain-of-custody can be maintained and sample disposition controlled. Sample identification documents include field notebooks, sample labels, custody seals, chain-of-custody records, and laboratory sample log-in and tracking forms.

The primary objective of the chain-of-custody procedures is to provide an accurate written record that can be used to trace the possession and handling of a sample from the moment of its collection through it analyses. A sample is in custody if it is:

- In someone's physical possession;
- In someone's view;
- Locked up; or
- Kept in a secured area that is restricted to authorized personnel.

5.1 Sample Containers and Preservation

For sampling performed by Lu Engineers, prewashed sample containers obtained from a reliable supplier will be provided by the analytical laboratory. All containers provided by the laboratory are precleaned (Level 1), with certificates of analysis available for each bottle type. Certifications of Analysis provided by the vendor are kept on file by the laboratory.

All samples will be stored on ice pending delivery to the laboratory. In addition, all water samples for volatile analysis will be preserved with hydrochloric acid (HCl) to a pH of less than 2.0. All water samples for metals analysis will be preserved with nitric acid until the sample pH is lowered to 2.0 standard units or less. Sample pH will be checked in the field using indicator paper. A list of preservatives and holding times for each type of analysis is included in the following Table.

Table 5.1 Sample Preservation and Holding Times

Parameter	Method Number	Container Type and Size	Preservation	Holding Time*
Soil and Sediment Samples				
TCL VOCs + 30 TICs	8260C	2 x 4 oz. glass jar	Cool to 4°C; minimize headspace	14 days
SVOCs + 30 TICs	8270C	2 x 4 oz. glass jar	Cool to 4°C	12 days to extract; analyze 40 days from extraction
TAL Metals	200.7/ 6010B	2 x 4 oz. glass jar	None required (cool to 4°C preferred)	6 months
PCBs	8082	2 x 4 oz. glass jar	Cool to 4°C	12 days to extract; analyze 40 days from extraction
Pesticides	8081A	2 x 4 oz. glass jar	Cool to 4°C	12 days to extract; analyze 40 days from extraction
Groundwater				
TCL VOCs + 30 TICs	8260C	3 x 40-ml. VOA	Cool to 4°C; minimize headspace; HCl to pH<2	5 days unpreserved / 12 days preserved
SVOCs + 30 TICs	8270C	2 x ½ L. amber bottles	Cool to 4°C	5 days to extract; analyze 40 days from extraction
TAL Metals	200.7/ 6010B	1 x 250 ml. glass or poly bottles	HNO_3 to a pH <2	6 months
PCBs	8082	1 x ½ L. amber bottles	Cool to 4°C	5 days to extract; analyze 40 days from extraction
Pesticides	8081A	1 x ½ L. amber bottles	Cool to 4°C	5 days to extract; analyze 40 days from extraction
Soil Vapor				
VOCs	TO-15	6-L. Summa canister	None	10 days

* Holding times are based on verified time of sample receipt (VTSR) at the laboratory

Sample preservation will be verified at the lab just prior to extraction, digestion, and/or analysis and the pH will be recorded in the extraction/digestion logbook. The pH may be checked upon arrival, if desired.

If the samples are improperly preserved, a QA/QC discrepancy form will be submitted to the lab manager and QA coordinator for appropriate follow-up action (i.e., evaluation of the data during the data validation process and, if necessary, additional instruction of personnel regarding proper procedures).

5.2 Field Custody Procedures

- Sample bottles must be obtained precleaned from the laboratory or directly from an approved retail source. All containers will be prepared in a manner consistent with the NYSDEC ASP 1991 bottle-washing procedures. Coolers or boxes containing cleaned bottles should be sealed with a custody tape seal during transport to the field or while in storage prior to use.
- All containers will have assigned lot numbers to ensure traceability through the supplier.
- As few persons as possible should handle samples.
- The sample collector is personally responsible for the care and custody of samples collected until the samples are transferred to another person or dispatched properly under chain-of-custody rules.
- The sample collector will record sample data in the field notebook.
- The project manager will determine whether proper custody procedures were followed during the fieldwork and decide if additional samples are required.

5.2.1 Custody Seals

Custody seals are preprinted adhesive-backed seals with security slots designed to break if the seals are disturbed. A custody seal is placed over the cap of individual sample bottles by the sampling technician. Sample shipping containers (coolers, cardboard boxed, etc., as appropriate) are sealed in as many places as necessary to ensure security. Seals must be signed and dated before use. Strapping tape should be placed around the lid to ensure that seals are not accidentally broken during shipment and in a manner that allows easy removal by laboratory personnel. On receipt at the laboratory, the custodian must check (and certify, by completing logbook entries) that seals on boxes and bottles are intact.

5.2.2 Chain-of-Custody Record

The chain-of-custody record must be fully completed in duplicate, using black carbon paper where possible, by the field technician who has been designated by the project manager as responsible for sample shipment to the appropriate laboratory for analysis. In addition, if samples are known to require rapid turnaround in the laboratory because of project time constraints or analytical concerns (i.e., extraction time or sample retention period limitations, etc.), the person completing the chain-of-custody record should note these constraints in the "Remarks" section of the custody record.

5.3 Sample Handling, Packaging, and Shipping

The transportation and handling of samples must be accomplished in a manner that not only protects the integrity of the sample but also prevents any detrimental effects due to the possible hazardous nature of samples. Regulations for packaging, marking, labeling, and shipping hazardous materials are promulgated by the United States Department of Transportation (DOT) in the Code of Federal Regulations (CFR), 49 CFR 171 through 177.

5.3.1 Sample Packaging

Samples must be packaged carefully to avoid breakage or contamination and must be shipped to the laboratory at proper temperatures. The following sample packaging requirements will be followed:

- Sample bottle lids must never be mixed. All sample lids must stay with the original containers.
- The sample bottle should never be completely filled except for VOA bottles. At a minimum, a 10% void space should be left in the bottle to allow for expansion. The sample volume level should be marked with a grease pencil or by placing the top of the label at the appropriate sample height.
- All sample bottles must be sealed around the neck or the jar lid with clear tape. Any custody seals should be affixed prior to sealing the bottle.
- All sample bottles shall be placed in plastic zip-lock bags to minimize contact with inert packing material, unless foam inserts are used.
- Foam inserts should be used as inert packing material when shipping low hazard water samples via a common carrier to the laboratory.
- Low-hazard environmental samples are to be cooled. "Blue ice" or some other artificial icing material, or ice placed in plastic bags, may be used. Ice will not be used as a substitute for packing material.
- A duplicate custody record must be placed in a plastic bag and taped to the inside of the cooler lid. Custody seals are affixed to the sample cooler.
- The cooler will be labeled as containing a hazardous material if it contains medium or high-hazard samples. Labeling requirements differ depending on the type of material being shipped; the majority of soil samples may be shipped as a class "9" hazardous material with the proper shipping name "OTHER REGULATED SUBSTANCES (ENVIRONMENTAL SAMPLES)."
- A hazardous material shipping manifest will be completed for each cooler of medium to high-hazard samples and affixed to the lid of the cooler.
- Low-hazard environmental samples do not require a hazardous materials shipping manifest. The words "LABORATORY SAMPLES" should be printed on the top of the cooler for low-hazard samples.
- Samples packaged and shipped as limited-quantity radioactive material must comply with DOT and shipper regulations for package contamination limits, surface exposure rate, and airbill completion.

5.3.2 Shipping Containers

Environmental samples will be properly packaged and labeled for transport and dispatched for analysis to the appropriate subcontracted laboratory for geotechnical analyses. A separate chain-of-custody record must be prepared for each container. The following requirements for marking and labeling of shipping containers will be observed:

- Use abbreviations only where specified;
- The words "This End Up" or "This Side Up" must be clearly printed on the top of the outer package. Upward-pointing arrows should be placed on the sides of the package. The words "Laboratory Samples" should also be printed on the top of the package; and
- After a container has been closed, two custody seals are placed on the container—one on the front and one on the back. The seals are protected from accidental damage by placing strapping tape over them.

Field personnel will make timely arrangements for transportation of samples to the laboratory. When custody is relinquished to a shipper, field personnel will telephone the laboratory custodian to inform him of the expected time of arrival of the sample shipment and to advise him of any time constraints on sample analysis.

5.3.3 Shipping Procedures

- The coolers in which the samples are packed must be accompanied by a chain-of-custody record. When transferring samples, the individuals relinquishing and receiving them must sign, date, and note the time on the record. This record documents sample custody transfer.
- Samples must be dispatched to the laboratory for analysis with a separate chain-of-custody record accompanying each shipment. Shipping containers must be sealed with custody seals for shipment to the laboratory. The method of shipment, name of courier, and other pertinent information are entered in the "Remarks" section of the chain-of-custody record.
- All shipments must be accompanied by the chain-of-custody record identifying their contents. The original record accompanies the shipment, and the yellow copy is retained by the Field Team Leader.
- If sent by mail, the package is registered with return receipt requested. If sent by common carrier, a bill of lading is used. Freight bills, Postal Service receipts, and bills of lading are retained as part of the permanent documentation.
- Samples must be shipped to the analytical laboratory within 24 to 48 hours from the time of collection.

5.4 Laboratory Custody Procedures

The designated sample custodian at the laboratory will be responsible for maintaining the chain-of-custody for samples received at the lab. Among other things, the custodian must adhere to the following basic requirements:

- When the sample arrives at the lab, the custodian will complete a Cooler Receipt & Preservation Form for each cooler/package container.
- Upon receipt, the coolers are examined for the presence and condition of custody seals, locks, shipping papers, etc. Shipping labels are removed and placed on scrap paper and added to the receiving paper work. The custodian then completes the chain-of-custody record by signing and recording the date and time the package is opened.
- Acceptance criteria for cooler temperature is 0-6^{o}C. If a cooler exhibits a temperature outside this range, the anomalies are noted on the Cooler Receipt & Preservation Form.
- The custodian will then unload the samples from the cooler(s)/container(s), assign an identification number to each sample container, and affix a barcode label to each sample container for logging in and out of the laboratory information management system (LIMS) system.

Adherence to this procedure will ensure that all samples can be referenced in the computer tracking system. All sample control and chain-of-custody procedures applicable to the analytical laboratory are presented in laboratory SOPs available for review.

6.0 Analytical Methods

All laboratory analyses will be performed by an accredited and appropriately (NYSDEC ELAP CLP) certified analytical laboratory. Inorganic, general analytical, and organic methods to be performed by the laboratory for this project are listed in Table 1 in Appendix A of this QAPP.

6.1 Analytical Capabilities

The analytical laboratory is fully equipped for analysis of all types of water, air, and soil samples for chemical contaminants, bacteriological quality, and general characterization. Proven and approved analytical techniques are used, backed up by a rigorous system of QC and QA checks to ensure reliable and defensible data. All laboratory work is performed in accordance with guidelines established by EPA, the NYSDOH, and the National Institute of Occupational Safety and Health (NIOSH).

Organic analysis is accomplished by gas chromatography (GC), high performance liquid chromatography (HPLC), and or GC/mass spectrometry (MS). Liquid, soil, and air samples are analyzed routinely for pesticides, PCBs, volatile organics, extractable organics, and other groups of compounds, as necessary. The laboratory uses two types of instruments for analysis of metals in various matrices: atomic absorption spectrophotometry (AAS) and inductively coupled plasma (ICP).

Laboratory procedures to be utilized for sample preparation and analysis are referenced in the NYSDEC ASP.

Method Detection Limits
Method detection limits are determined according to procedures outlined in 40 CFR Part 136, Appendix B or EPA CLP. General analytical detection limits are usually determined by the lowest point on the curve. Detection limits are determined at least annually for all appropriate analytical methods. A listing of the laboratory's method detection limits is available upon request.

6.2 Quality Control Samples

Laboratory QC consists of analysis of laboratory blanks, duplicates, spikes, standards, and QC check samples as appropriate to the methodology. These laboratory QC samples are described below.

6.2.1 Laboratory Blanks

Three types of laboratory blanks, one or more of which will be utilized depending on the analysis, are described below:

- Method blanks consist of analyte-free water and are subjected to every step of the analytical procedure to determine possible contamination.
- Reagent blanks are similar to method blanks but incorporate only one of the preparation reagents in the analysis. When a method blank indicates significant contamination, one or more reagent blanks are analyzed to determine the source.
- Calibration blanks consist of pure reagent matrix and are used to zero an instrument's response, thus establishing the baseline.

6.2.2 Calibration Standards

A calibration standard may be prepared in the laboratory by dissolving a known amount of a pure compound in an appropriate matrix. The final concentration calculated from the known quantities is the true value of the standard. The results obtained from these standards are used to generate a standard curve and thereby quantitate the compound in the environmental sample. A minimum of three calibration standards will be used to generate a standard curve for all analyses.

6.2.3 Reference Standard

A reference standard is prepared in the same manner as a calibration standard but from a different source. Reference standards may be obtained from the EPA. The final concentration calculated from the known quantities is the "true" value of the standard. The important difference in a reference standard is that it is not carried through the same process used for the environmental samples, but is analyzed without digestion or extraction. A reference standard result is used to validate an existing concentration calibration standard file or calibration curve.

6.2.4 Spike Sample

A sample spike is prepared by adding to an environmental sample (before extraction or digestion) a known amount of pure compound of the same type that is to be assayed for in the environmental sample.

Spikes are added at one to 10 times the expected sample concentration or approximately 10 times the method detection limit. These spikes simulate the background and interferences found in the actual samples, and the calculated percent recovery of the spike is taken as a measure of the accuracy of the total analytical method.

A blank spike is the same as a spike sample except the spike is added to analyte-free water. The blank spike is used to determine whether the sample preparation and analysis are under control.

6.2.5 Surrogate Standard

A surrogate is prepared by adding a known amount of pure compound to the environmental sample; the compound selected is not one expected to be found in the sample, but is similar in nature to the compound of interest. Surrogate compounds are added to the sample prior to extraction or digestion. Surrogate spike concentrations indicate the percent recovery of the analytes and, therefore, the efficiency of the methodology.

6.2.6 Internal Standard

Internal standards are similar to surrogate standards in chemical composition but are used to quantify the concentration of analytes sampled based on the relative response factor. Internal standards are added to the environmental sample just prior to instrumental analysis.

6.2.7 Laboratory Duplicate or Matrix Spike Duplicate

Laboratory duplicates are aliquots of the same sample that are split prior to analysis and treated exactly the same throughout the analytical method. Spikes and duplicates for the batch are normally aliquots of the same sample. For organics, spikes are added at approximately 10 times the method detection limit. The relative percent difference (RPD) between the values of the MS and MSD for organics or between the original and the duplicate for inorganics is taken as a measure of the precision of the analytical method.

In general, the tolerance limit for RPDs between laboratory duplicates should not exceed 20% for validation in homogeneous samples.

6.2.8 Check Standard/Samples

Inorganic and organic check standards or samples are prepared with reference standards or are available from the EPA. They are used as a means of evaluating analytical techniques of the analyst. Check standards or samples are subjected to the entire sample procedure, including extraction, digestion, etc., as appropriate for the analytical method utilized. The check standard or sample can provide information on the accuracy of the analytical method independent of various sample matrices.

6.3 Laboratory Instrumentation

Laboratory capabilities will be demonstrated initially for instrument and reagent/ standards performance as well as accuracy and precision of analytical methodology. A discussion of reagent/standard procedures and brief descriptions of calibration procedures for major instrument types follow.

All standards are obtained directly from EPA or through a reliable commercial supplier with a proven record for quality standards. All commercially supplied standards will be traceable to EPA or the National Institute of Standards and Technology (NIST) reference standards and appropriate documentation will be obtained from the supplier. In cases where documentation is not available, the laboratory will analyze the standard and compare the results to a known EPA-supplied or previous NIST-traceable standard.

All sections of the laboratory will have SOP for standard and reagent procedures to document specific standard receipt, documentation, and preparation activities. In general, the individual SOPs incorporate the following items:

- Documentation and labeling of date received, lot number, date opened, and expiration date;
- Documentation of traceability;
- Preparation, storage, and labeling of stock and working solutions; and
- Establishing and documenting expiration dates and disposal of unusable standards.

Each laboratory instrument will be labeled clearly with a unique identifier that relates to all laboratory calibration documentation. Laboratory SOPs and calibration procedures are detailed in the laboratory's Quality Assurance Manual, available upon request.

7.0 Data Reporting and Validation

7.1 Deliverables

Once the contract laboratory has provided all analytical data and hydrogeologic information has been evaluated, Lu Engineers will develop a report on the findings of the investigation and remedial measures. The report will be prepared as outlined in Section 5.0 of the RI Work Plan.

The report will carefully document all findings of the investigation and will be supplemented with photographic documentation, subsurface soil logs, cross sections, and study area plans indicating groundwater flow direction and subaerial contaminant distribution.

7.1.1 Category B Data Package

All analytical data for delineation and tank closure samples will be reported by the laboratory with NYSDEC ASP Category B deliverables. The Category B data package includes:

1. A detailed summary of the report contents and any quality control outliers or corrective actions taken.
2. Chain of Custody documentation
3. Sample Information including: date collected, date extracted, date analyzed, and analytical methods.
4. Data (including raw data) for:
   - samples
   - laboratory duplicates
   - method blanks
   - spikes and spike duplicates
   - surrogate recoveries
   - internal standard recoveries
   - calibrations
   - any other applicable QC data
5. Method detection limits and/or instrument detection limits
6. run logs, standard preparation logs, and sample preparation logs
7. percent solids (where applicable)

The backup quality control data must be retained by the laboratory for 6 years and provided to the NYSDEC Project Manager upon request.

Quality Assurance Reports

For the laboratory, a general QA report summarizing problems encountered throughout the laboratory effort, including sample custody, analyses, and reporting, is provided to Lu Engineer's project QA management by the QA coordinator. This report identifies areas of concern and possible resolutions in an effort to ensure data quality.

Upon completion of a project sampling effort, analytical and QC data will be included in a comprehensive report that summarizes the work and provides a data evaluation. A discussion of the validity of the results in the context of QA/QC procedures will be made, as well as a summation of all QA/QC activity.

Serious analytical or sampling problems will be reported to NYSDEC. Time and type of corrective action, if needed, will depend on the severity of the problem and relative overall project importance. Corrective actions may include altering procedures in the field, conducting an audit, or modifying laboratory protocol. All corrective actions will be implemented after notification and approval of NYSDEC.

In addition to the laboratory report narrative, QA data validation reports that include any contractual requirements will also be provided to NYSDEC. These QA reports will be submitted with the analytical data, on a monthly basis, or at the conclusion of the project.

7.2 Data Validation and Usability

Prior to the submission of the report to NYSDEC, all data will be evaluated for precision, accuracy, and completeness.

QA/QC requirements from both methodology and company protocols will be strictly adhered to during sampling and analytical work. All data generated will be reviewed by comparing and interpreting results from instrumental responses, retention time, determination of percent recovery of spiked samples or blanks, and reproducibility of duplicate sample results. All calculations and data manipulations are included in the appropriate methodology references. Control charts and calibration curves will be used to review the data and identify outlying results.

7.2.1 Data Validation

A third-party validator will be responsible for an independent review of all analytical work performed under the NYSDEC ASP-CLP protocol. The functions will be to assess and summarize the quality and reliability of the data for the purpose of determining its usability and to document for the historical record of each Site any factors affecting data usability, such as discrepancies, poor laboratory practices, and site locations that are difficult to analyze. The data validator will be responsible for determining completeness and compliance. Lu Engineers' QA officer will be responsible for determining data usability and overseeing the work of the data validator.

Information available to the data validator and the QA officer for performance of these functions include the NYSDEC ASP Category B data package, information from the sampling team regarding field conditions and field QA samples, chain-of-custody and shipping forms. The data package is designed to provide all necessary documentation to verify compliance with NYSDEC ASP CLP protocol and the accuracy and reliability of the reported results.

The laboratory will deliver the data package to the project QA coordinator for processing prior to submission to the data validator. The project QA coordinator will review the report for immediate problems, summarize the data for in-house use, and process the work order for the third-party data-validation subcontract within 5 working days.

In order to effectively review the data package, the data validator will obtain a general overview of each case. This includes the exact number of samples, their assigned numbers, and their matrix. The data validator will deliver the data validation report within 30 days of receipt of the data package.

If a problem arises between the data validator and the laboratory, the data validator must submit written questions to the laboratory. The laboratory will be required to respond in writing within 10 working days to correct any deficiencies. If the data validator does not receive a written response from the laboratory within the specified time period, the data in question shall be considered noncompliant.

Sampling locations will be obtained from the sampling records, such as the chain-of-custody forms. This information is necessary for preparation of the data summary, evaluation of adherence to sample holding times, discussion of matrix problems, and discussion of contaminants detected in the samples.

The following is a brief outline of the data validation process:

- Compilation of all samples with the dates of sampling, laboratory receipt, and analysis;
- Compilation of all QC samples, such as field blanks, field duplicates, MS/MSD samples, laboratory blanks, and laboratory replicates;
- Review of chain-of-custody documents for completeness and correctness;
- Review of laboratory analytical procedure and instrument performance criteria;
- Qualification of data outside acceptable QC criteria ranges;
- Preparation of a memorandum summarizing any problems encountered and the potential effects on data usability;
- Preparation of a data summary, including validated results, with sample matrix, location, and identification; and
- Tabulation of field duplicates, laboratory replicate, and blank results.

Copies of all data validation and usability reports, as well as all data summary packages, will be provided to the NYSDEC project manager. In addition, electronic copies of all analytical raw data will be provided to NYSDEC upon request.

7.2.2 Data Usability

A Data Usability Summary Report (DUSR) will be provided after review and evaluation of the analytical data package. The DUSR will contain required elements listed in Appendix 2B of *DER-10 Technical Guidance for Site Investigation and Remediation*.

The DUSR will include a description of the samples and analytical procedures used. Any data deficiencies, protocol deviations, or quality control problems will be discussed as to their effect on data results. The report will also include any suggestions for resampling or reanalysis.

Appendix B – Site Specific Health & Safety Plan

Environmental Restoration Program
Former Service Station Site (#E828143)
8264 Ridge Road West
Town of Clarkson
Monroe County, New York

Remedial Investigation

Health and Safety Plan

Prepared For:

Town of Clarkson
P.O. Box 858
Clarkson, New York 14430

Prepared By:

LU ENGINEERS
Civil and Environmental
2230 Penfield Road
Penfield, New York 14526

January 2009

Project No: 40503

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APPENDICES

Appendix A Heat Stress and Cold Exposure

Appendix B Additional Potential Physical and Chemical Hazards

Appendix C Equipment Checklist

A. General Information

Project Title: Former Service Station Site Remedial Investigation Project No. 40503

Project Manager: Gregory L. Andrus, CHMM Project Director: Robert Hutteman, P.E.

Location: 8264 Ridge Road West
Town of Clarkson, Monroe County, New York

Prepared by: Janet M. Bissi, CHMM Date Prepared: October 2008

Approved by: Gregory L. Andrus, CHMM Date Approved:

Site Safety Officer Review: Janet M. Bissi Date Reviewed:

Scope/Objective of Work: Conduct a Remedial Investigation (RI) to delineate the nature and extent of contamination at the Site. Sample subsurface soils and collect sediment, soil, and groundwater samples to satisfy New York State Department of Environmental Conservation (NYSDEC) requirements. Conduct a survey of Site features. Work tasks consist of the following:

Task 1: Geophysical Survey
Task 2: Test Pits
Task 3: Asbestos Survey and Sampling
Task 4: Interim Remedial Measures
Task 5: Sediment sampling
Task 6: Installation of soil borings and sampling of subsurface soil
Task 7: Installation of groundwater monitoring wells
Task 8: Depth to water measurements and groundwater sampling
Task 9: Soil Vapor Sampling
Task 10: Survey Site and sample locations

Interim Remedial Measures (IRM) tasks consists of tank and drum removal, asbestos removal, hydraulic lift system removal, and building demolition.

Proposed Date of Field Activities: Spring 2009

Background Information: [X] Complete [ ]

Overall Chemical Hazard: [ ] Serious [X] Moderate
[ ] Low [ ] Unknown

Overall Physical Hazard: [ ] Serious [X] Moderate
[ ]Low [ ] Unknown

B. Site/Waste Characteristics

Waste Type(s):

[X] Liquid [X] Solid [ ] Sludge [ ] Gas/Vapor

Characteristic(s):

[X] Flammable/Ignitable [X] Volatile [ ] Corrosive [ ] Acutely Toxic

[ ] Explosive (moderate) [ ] Reactive [X] Carcinogen [ ] Radioactive

Other: _____

Physical Hazards:

[X] Overhead [ ] Confined Space [ ] Below Grade [X] Trip/Fall

[ ] Puncture [ ] Burn [X] Cut [ ] Splash

[X] Noise [X] Other: Heat Stress/Cold Stress

Site History/Description and Unusual Features:

The Former Service Station Site is located at 8264 Ridge Road West (NYS Route 104) in the Town of Clarkson, Monroe County, New York (Figure 1). The Site is an approximate 0.71-acre parcel (Tax Account #054.14-1-21) and contains a body shop/garage, an office/storage building, and two storage trailers. The southern portion of the Site consists of a paved parking lot, and the northern portion of the Site consists of a wooded lot. The Site is located at the north side of the Ridge Road West, in the Hamlet of Clarkson, New York.

The Site operated as a service station from approximately the late 1930s/early 1940s to 2002 and has been unoccupied since. One underground gasoline storage tank (UST) of an unknown size is located on the southwestern corner of the Site; and one fuel oil aboveground storage tank (AST) is located west of the body shop/garage. Monroe County foreclosed on the property and sold it to the Town of Clarkson, the current owner.

A previous Phase I Environmental Site Assessment (ESA) has found areas of potential contamination due to the UST, AST, 55 gallon drums of unknown contents, the reported historical use of the Site as a service station for at least 50 years, and the possibility for additional USTs to exist on the Site. The purpose of this assessment is to investigate the Site for soil and groundwater contamination.

Locations of Chemicals/Wastes: Soil and/or groundwater.

Estimated Volume of Chemicals/Wastes: Unknown.

Site Currently in Operation: [ ] Yes [X] No [ ] Not Applicable

C. Hazard Evaluation

PHYSICAL HAZARD EVALUATION:		
TASK	**HAZARD(S)**	**HAZARD PREVENTION**
1-10	General physical hazards associated with drill rig and geoprobe operations (spinning, augers, overhead equipment, noise, and, drill rig movement). Physical hazards also associated with demolition equipment.	Hard hats, eye protection, and steel-toed boots required at all times while working around drill rig. Hearing protection required during sampling (hammering). Keep safe distance from rig and all moving parts.
	Contact with or inhalation of contaminants, potentially in high concentration in sampling media and/or fire and explosion.	To minimize exposure to chemical contaminants, a thorough review of suspected contaminants should be completed and implementation of an adequate protection program. Under-ground vaults to be ventilated during inspections.
	Back strain and muscle fatigue due to lifting, shoveling and augering techniques.	Use proper lifting techniques to prevent back strain.
	Contact with or inhalation of decontamination solutions.	Material Safety Data Sheets for all decon solutions. First aid equipment available.
	Heat stress / cold stress exposure.	Implement heat stress management techniques such as shifting work hours, increasing fluid intake, and monitoring employees.
	Slip / tripping / overhead / fall.	Observe terrain and drilling equipment while walking to minimize slips and falls. Steel-toed boots provide additional support and stability. Use adequate lighting. Wear hard hat. Inspect all lifting equipment prior to use.
	Native wildlife presents the possibility of insect bites and associated diseases.	Avoid wildlife when possible.
	Sunburn.	Apply sunscreen, wear appropriate clothing.
	Utility Lines.	Identify location(s) prior to work, maintain 25-foot minimum distance to overhead utilities.
	Weather Extremes.	Establish site-specific contingencies for severe weather situations. Discontinue work in severe weather.

Physical Hazard Evaluation: Basic health and safety protection (steel-toed boots, work clothes, and safety glasses or goggles) will be worn by all personnel at all times. Personnel should be made aware of area flora (poison ivy) and fauna. Snakes and other endemic wildlife should be avoided at all times. Any encounters that result in bites or scratches should be reported to the Site Safety Officer immediately. All allergies should be reported to the Site Safety Officer prior to the start of the project.

CHEMICAL HAZARD EVALUATION

Task Number	Compound	Exposure Limits (TWA)			Dermal Hazard (Y/N)	Route(s) of Exposure	Acute Symptoms	Odor Threshold/ Description	PID	
		PEL	REL	TLV					Corr. Factor	Ioniz. Poten. (eV)
3-4	Asbestos*	0.1 f/cc	---	---	N	Inh, Ing,	Irritation to eyes, nose, or throat	None	---	---
2,5-10	Benzene*	1 ppm	---	10 ppm	Y	Inh, Abs, Ing, Con	Irritation to eyes, skin, nose, respiratory system; headache, nausea, dizziness, drowsiness, unconsciousness, harmful, fatal if aspirated into lungs	Colorless to light yellow liquid, sweet aromatic odor	0.5	9.25
2,5-10	Ethylbenzene	100 ppm	---	100 ppm	Y	Inh, Ing, Con	Irritation to eyes, skin, mucous membranes; dermatitis, narcosis, , trouble breathing, paralysis, headache, nausea, headache, dizziness, coma	Colorless liquid, aromatic odor	0.5	8.77
2,5-10	Isopropylbenzene (syn. Cumene)	50 ppm		50 ppm	Y	Inh, Ing	Irritates the mucous membranes and upper respiratory tract. Affects the central nervous system, symptoms may include dizziness, drowsiness, slight incoordination and unconsciousness.	Colorless liquid, sharp penetrating aromatic odor		
2,5-10	Lead	0.05 mg/m^3	0.1 mg/m^3	0.05 mg/m^3	Y	Inh, Ing, Con	Poison, abdominal pain, spasms, nausea, vomiting, headache, irritation to eyes; skin, weakness, metallic taste, anorexia/loss of appetite, insomnia, facial pallor, colic, anemia, tremor, “lead line” in gums, constipation, abdominal pain, paralysis in wrists and ankles, encephalopathy (inflammation of brain)	Odorless	---	---

CHEMICAL HAZARD EVALUATION

Task Number	Compound	Exposure Limits (TWA)			Dermal Hazard (Y/N)	Route(s) of Exposure	Acute Symptoms	Odor Threshold/ Description	PID	
		PEL	REL	TLV					Corr. Factor	Ioniz. Poten. (eV)
2,5-10	n-Propylbenzene (per mfg. Recommended exposure is 100 ppm)	N/A	N/A	N/A	Y	Inh, Ing, Con	Irritation to eyes, skin, respiratory tract, mucous membranes of nose & throat, depresses CNS, vertigo, fatigue, chest constriction, may invoke aspiration if swallowed	Clear colorless liquid, mild odor	---	---
2,5-10	Toluene	200 ppm	---	50 ppm	Y	Inh, Abs, Ing, Con	Irritation to eyes, skin, nose; upper respiratory tract, fatigue, weak, confusion, dizziness, headache, drowsiness, abdominal spasms, dilated pupils, euphoria	Colorless liquid, sweet pungent, benzene like odor	0.5	8.82
2,5-10	Xylene	100 ppm	100 ppm	100 ppm	Y	Inh, Ing, Abs, Con	Irritation of eyes, nose, throat, skin; dizziness, excited, vomit	Aromatic		
2,5-10	Aroclor 1254 Polychlorinated biphenyl (PCB)*	0.5 ^{sk} mg/m^3	---	0.5 ^{sk} mg/m^3	Y	Abs, Inh, Ing	Irritation to eyes and skin; dermatitis, liver damage	Mild hydrocarbon odor	---	---
2,5-10	Aroclor 1242 Polychlorinated biphenyl (PCB)*	1.0 ^{sk} mg/m^3	---	1.0 ^{sk} mg/m^3	Y	Abs, Inh, Ing	Irritation to eyes and skin; dermatitis, liver damage	Mild hydrocarbon odor	---	---
2,5-10	Aroclor 1260 Polychlorinated biphenyl (PCB)*	0.5 ^{sk} mg/m^3	---	0.5 ^{sk} mg/m^3	Y	Abs, Inh, Ing	Irritation to eyes and skin; dermatitis, liver damage	---	---	---

KEY:
PEL = Permissible Exposure Limit
REL = Recommended Exposure Limit
--- = Information not available
TLV = Threshold Limit Value(ACGIH)
Inh = Inhalation
Ing = Ingestion
mg/m^3 = Milligrams per cubic meter
* = Chemical is a known or suspected carcinogen
Abs = Skin Absorption
Con = Skin and/or eye Contact
ppm = Parts per million

D. Site Safety Plan

Perimeter Identified?	**[Y]**	**Site Secured?**	**[N]**
Work Areas Designated?	**[Y]**	**Zone(s) of contamination identified?**	**[Y]**

Site Control: Specific work areas will be delineated relative to the location of the work activity. Designated work areas will be set up during Site work. Exclusion Zones will be established surrounding each of the soil borings, test pits, and monitoring well locations where work will be performed. The Exclusion Zone will be designated by the use of cones and warning tape, as necessary to prevent building personnel from entering the work area, especially during injections.

The work areas will be discussed and coordinated with the Town of Clarkson prior to commencement of work. Vehicles, equipment, and combustible materials will be cleared from the designated work areas by the Town of Clarkson prior to the well installations and injections.

Anticipated Level of Protection: D / D^+

Level D	Level D^+
Safety glasses	Face shield
Hard hat	Tyvek (optional)
Work clothes or coveralls	Inner gloves of latex or vinyl
Work gloves	Outer gloves of neoprene or nitrile
Steel-toe work boots	Chemical-resistant outer boots

Most site work will be performed at Level D protection unless monitoring indicates otherwise. Level D^+ will be used when handling sodium permanganate solution to provide additional protection against splashing and skin or eye contact. A copy of the MSDS is included as Attachment B-3.

Air Monitoring*:

Contaminant	Monitoring Device	Frequency
Organic Vapors	MiniRAE 2000 PID	Continuous
Ignition Sources	o2/Explosimeter	Continuous
Particulate	MiniRam	Continuous

Action Level:

PID readings of **>5 ppm to 10 ppm** above background in the breathing zone, sustained for greater than 1 minute.
Action: Hault work activities and move away from the vapor source. Consider vapor suppression actions. If PID readings drop to within 5 ppm above background, work may resume with continuous air monitoring.

PID readings of **10 ppm to <25 ppm** above background at breathing zone, sustained for greater than 1 minute.
Action: Stop work and consider upgrade to Level C protection.

PID readings of **>25 ppm** above background at breathing zone, sustained for greater than 1 minute, **Action**: Stop work.

All air monitoring results as well as wind direction and speed (estimates) will be documented in the site-specific log book.

Decontamination Solutions and Procedures for Equipment, Sampling Gear, etc.
Specified in work plan.

Personnel Decon Protocol: Soap, water, and paper towels or baby wipes will be available for all personnel and will be used before eating, drinking or leaving the site. Personnel will shower upon return to home or hotel. Disposable PPE will be rendered unusable and disposed of as stated in work plan.

Decon Solution Monitoring Procedures, if Applicable: Contractor's controlled/ decon waste container.

Special Site Equipment, Facilities or Procedures (Sanitary Facilities and Lighting Must Meet 29CFR 1910.120):
Restrooms and potable water are available for use at the nearby Town of Clarkson Town Hall located at 3710 Lake Road, Clarkson, New York. The Town Hall is located approximately 1,500 feet west of the Site at the intersection of Lake Road (Route 19) and Ridge Road West.

Site Entry Procedures and Special Considerations: Level D/D^{+} will be used based on the results of previous investigations.

Work Limitations (time of day, weather conditions, etc.) and Heat/Cold Stress Requirements:
All work will be completed during daylights hours. Heavy equipment will not be used during electrical storms.

General Spill Control, if Applicable: N/A

Investigation Derived Material (i.e., Expendables, Decon Waste, Cuttings) Disposal:
Specified in work plan.

Sampling Handling Procedures Including Protective Wear: All sample handling will be performed while wearing chemically-resistant gloves. To minimize hazards to lab personnel, sample volumes will be no larger than necessary, and the outside of all sample containers will be wiped clean prior to shipment.

Accident and Injury Reporting: Any work-related incident, accident, injury, illness, exposure, or property loss must be reported to the Lu Engineers project manager. This includes:

- Accident, injury, illness, or exposure of an employee;
- Injury of a subcontractor;
- Damage, loss, or theft of property, and/or
- Any motor vehicle accident regardless of fault, which involves a company vehicle, rental vehicle, or personal vehicle while employee is acting in the course of employment.

E. Training Requirements

All personnel conducting field activities on site are required to have completed training sessions in accordance with Occupational Safety and Health Administration (OSHA) for Parts 1926 and 1910 (Title 29 Code of Federal Regulations [CFR] Part 1926.65 and Part 1910.120 - Hazardous Waste Operations and Emergency Response- 'HazWOPER'). This training shall consist of a minimum of 40 hours of instruction off-site and three days of actual field experience under the direct supervision of a trained, experienced supervisor. Each employer will maintain documentation stating that its on-site personnel have complied with this regulation.

In addition, all personnel will have reviewed this HASP and received a site-specific health and safety briefing prior to participating in field work.

All visitors entering the work area must review the HASP and be equipped with the proper PPE. All site personnel and visitors shall sign the last page of the HASP as an acknowledgement that they have read and understand the Site health and safety requirements.

Medical Surveillance Requirements: All Lu Engineers field staff who engage in onsite activities for 30 days or more per year participate in a medical monitoring program and have completed applicable training per 29CFR 1910.120. Respiratory protection program meets requirements of 29CFR 1910.134.

F. Emergency Information

LOCAL RESOURCES

Ambulance:	911
Hospital Emergency Room:	Lakeside Memorial Hospital Suite 201, 156 West Avenue Brockport, NY 14420 (585) 637-3131
Poison Control Center:	911
Police (include local, county sheriff, state):	911
Fire Department:	911
Local Laboratory:	TBD
UPS/Federal Express:	N/A

SITE RESOURCES

Site Emergency Evaluation Alarm Method:	Sound Car Horn for 10 seconds
Water Supply Source:	Bottled Water or Drill rig
Telephone Location, Number:	None available
Cellular Phone, if Available:	TBD
Radio:	None available
Other:	TBD

EMERGENCY CONTACTS

1.	Fire/Police:	911
2.	Lu Engineers, Project Manager Gregory L. Andrus	(585) 377-1450, Ext 215 (office)
3.	Lu Engineers, Safety Director: Christine Davey	(585) 377-1450, Ext. 235 (office)

EMERGENCY ROUTES

(Note: Field team must know route(s) prior to start of work.)

Directions from the site to the hospital:
Head west of West Ridge Road (NYS Route 104); turn left at Lake Road (Route 19); turn right at West Avenue. Hospital is on the north side.

On-site Assembly Area: Southwest Corner of the Site

Off-site Assembly Area: On the south side of West Ridge Road

Emergency egress routes to get off-Site: Follow West Ridge Road, east or west

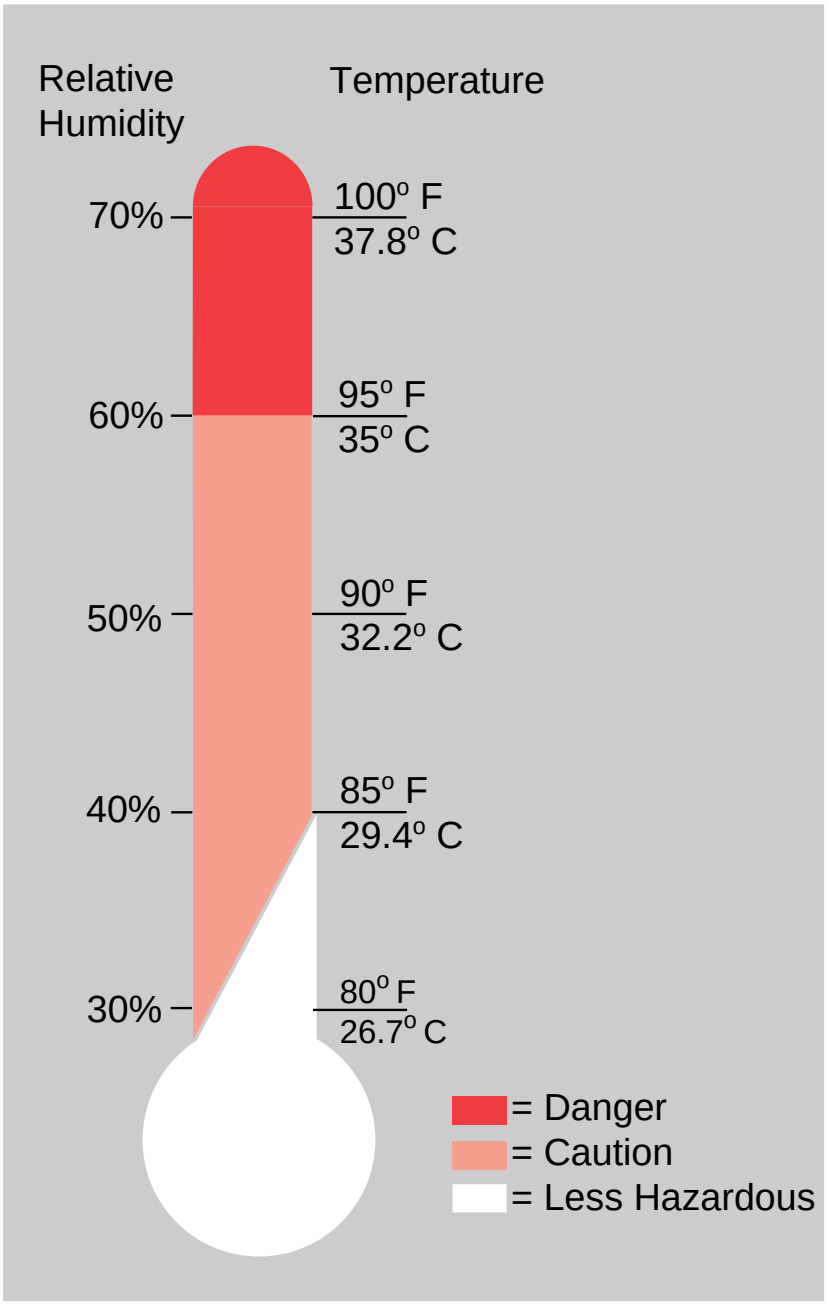
Appendix A

Heat Stress and Cold Exposure

THE HEAT EQUATION

HIGH TEMPERATURE + HIGH HUMIDITY + PHYSICAL WORK = HEAT ILLNESS

When the body is unable to cool itself through sweating, **serious** heat illnesses may occur. The most severe heat-induced illnesses are **heat exhaustion** and **heat stroke**. If actions are not taken to treat heat exhaustion, the illness could progress to heat stroke and possible **death**.



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Occupational Safety and Health Administration

OSHA 3154
1998

HEAT EXHAUSTION

What Happens to the Body:

HEADACHES, DIZZINESS/LIGHT HEADEDNESS, WEAKNESS, MOOD CHANGES (irritable, or confused/can't think straight), FEELING SICK TO YOUR STOMACH, VOMITING/THROWING UP, DECREASED and DARK COLORED URINE, FAINTING/PASSING OUT, and PALE CLAMMY SKIN.

What Should Be Done:

- Move the person to a cool shaded area to rest. Don't leave the person alone. If the person is dizzy or light headed, lay them on their back and raise their legs about 6-8 inches. If the person is sick to their stomach lay them on their side.
- Loosen and remove any heavy clothing.
- Have the person drink some cool water (a small cup every 15 minutes) if they are not feeling sick to their stomach.
- Try to cool the person by fanning them. Cool the skin with a cool spray mist of water or wet cloth.
- If the person does not feel better in a few minutes call for emergency help (Ambulance or Call 911).

(If heat exhaustion is not treated, the illness may advance to heat stroke.)

HEAT STROKE—A MEDICAL EMERGENCY

What Happens to the Body:

DRY PALE SKIN (no sweating), HOT RED SKIN (looks like a sunburn), MOOD CHANGES (irritable, confused/not making any sense), SEIZURES/FITS, and COLLAPSE/PASSED OUT (will not respond).

What Should Be Done:

- Call for emergency help (Ambulance or Call 911).
- Move the person to a cool shaded area. Don't leave the person alone. Lay them on their back and if the person is having seizures/fits remove any objects close to them so they won't strike against them. If the person is sick to their stomach lay them on their side.
- Remove any heavy and outer clothing.
- Have the person drink some cool water (a small cup every 15 minutes) if they are alert enough to drink anything and not feeling sick to their stomach.
- Try to cool the person by fanning them. Cool the skin with a cool spray mist of water, wet cloth, or wet sheet.
- If ice is available, place ice packs under the arm pits and groin area.

How to Protect Workers

- Learn the signs and symptoms of heat-induced illnesses and what to do to help the worker.
- Train the workforce about heat-induced illnesses.
- Perform the heaviest work in the coolest part of the day.
- Slowly build up tolerance to the heat and the work activity (usually takes up to 2 weeks).
- Use the buddy system (work in pairs).
- Drink plenty of cool water (one small cup every 15-20 minutes)
- Wear light, loose-fitting, breathable (like cotton) clothing.
- . Take frequent short breaks in cool shaded areas (allow your body to cool down).
- Avoid eating large meals before working in hot environments.
- Avoid caffeine and alcoholic beverages (these beverages make the body lose water and increase the risk for heat illnesses).

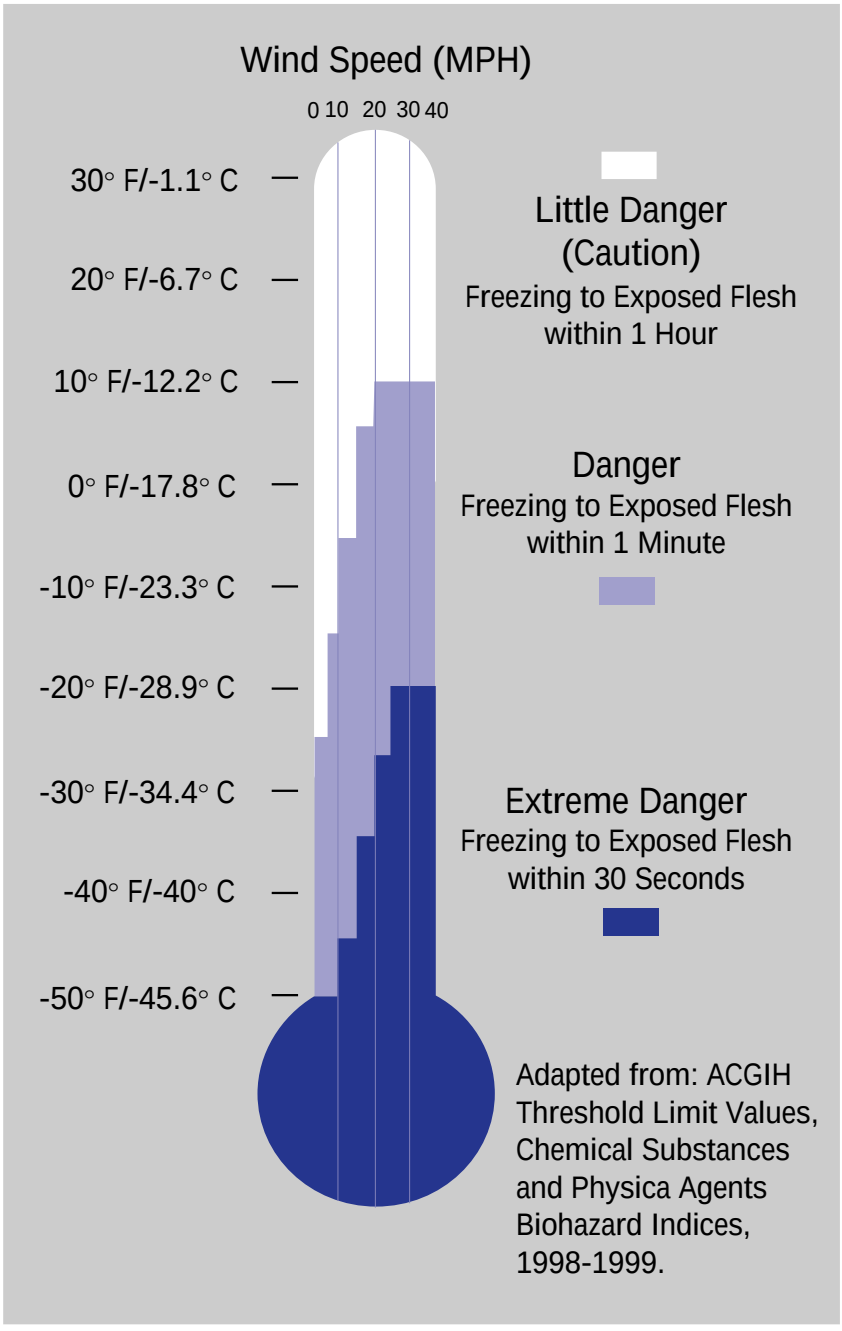
Workers Are at Increased Risk When

- They take certain medication (check with your doctor, nurse, or pharmacy and ask if any medicines you are taking affect you when working in hot environments).
- They have had a heat-induced illness in the past.
- They wear personal protective equipment (like respirators or suits).

THE COLD STRESS EQUATION

LOW TEMPERATURE + WIND SPEED + WETNESS = INJURIES & ILLNESS

When the body is unable to warm itself, serious cold-related illnesses and injuries may occur, and permanent tissue damage and death may result. **Hypothermia** can occur when *land temperatures* are **above** freezing or *water temperatures* are below 98.6°F/ 37°C. Cold-related illnesses can slowly overcome a person who has been chilled by low temperatures, brisk winds, or wet clothing.



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1998

FROST BITE

What Happens to the Body:

FREEZING IN DEEP LAYERS OF SKIN AND TISSUE; PALE, WAXY-WHITE SKIN COLOR; SKIN BECOMES HARD and NUMB; USUALLY AFFECTS THE FINGERS, HANDS, TOES, FEET, EARS, and NOSE.

What Should Be Done: (land temperatures)

- Move the person to a warm dry area. Don't leave the person alone.
- Remove any wet or tight clothing that may cut off blood flow to the affected area.
- **DO NOT** rub the affected area, because rubbing causes damage to the skin and tissue.
- **Gently** place the affected area in a warm (105°F) water bath and monitor the water temperature to **slowly** warm the tissue. Don't pour warm water directly on the affected area because it will warm the tissue too fast causing tissue damage. Warming takes about 25-40 minutes.
- After the affected area has been warmed, it may become puffy and blister. The affected area may have a burning feeling or numbness. When normal feeling, movement, and skin color have returned, the affected area should be dried and wrapped to keep it warm. **NOTE:** If there is a chance the affected area may get cold again, do not warm the skin. If the skin is warmed and then becomes cold again, it will cause severe tissue damage.
- Seek medical attention as soon as possible.

HYPOTHERMIA - (Medical Emergency)

What Happens to the Body:

NORMAL BODY TEMPERATURE (98.6° F/37°C) DROPS TO OR BELOW 95°F (35^0 C); FATIGUE OR DROWSINESS; UNCONTROLLED SHIVERING; COOL BLUISH SKIN; SLURRED SPEECH; CLUMSY MOVEMENTS; IRRITABLE, IRRATIONAL OR CONFUSED BEHAVIOR.

What Should Be Done: (land temperatures)

- Call for emergency help (i.e., Ambulance or Call 911).
- Move the person to a warm, dry area. Don't leave the person alone. Remove any wet clothing and replace with warm, dry clothing or wrap the person in blankets.
- Have the person drink warm, sweet drinks (sugar water or sports-type drinks) if they are alert. **Avoid drinks with caffeine** (coffee, tea, or hot chocolate) or alcohol.
- Have the person move their arms and legs to create muscle heat. If they are unable to do this, place warm bottles or hot packs in the arm pits, groin, neck, and head areas. **DO NOT** rub the person's body or place them in warm water bath. This may stop their heart.

What Should Be Done: (water temperatures)

- Call for emergency help (Ambulance or Call 911). Body heat is lost up to 25 times faster in water.
- **DO NOT** remove any clothing. Button, buckle, zip, and tighten any collars, cuffs, shoes, and hoods because the layer of trapped water closest to the body provides a layer of insulation that slows the loss of heat. Keep the head out of the water and put on a hat or hood.
- Get out of the water as quickly as possible or climb on anything floating. **DO NOT** attempt to swim unless a floating object or another person can be reached because swimming or other physical activity uses the body's heat and reduces survival time by about 50 percent.
- If getting out of the water is not possible, wait quietly and conserve body heat by folding arms across the chest, keeping thighs together, bending knees, and crossing ankles. If another person is in the water, huddle together with chests held closely.

How to Protect Workers

- Recognize the environmental and workplace conditions that lead to potential cold-induced illnesses and injuries.
- Learn the signs and symptoms of cold-induced illnesses/injuries and what to do to help the worker.
- Train the workforce about cold-induced illnesses and injuries.
- Select proper clothing for cold, wet, and windy conditions. Layer clothing to adjust to changing environmental temperatures. Wear a hat and gloves, in addition to underwear that will keep water away from the skin (polypropylene).
- Take frequent short breaks in warm dry shelters to allow the body to warm up.
- Perform work during the warmest part of the day.
- Avoid exhaustion or fatigue because energy is needed to keep muscles warm.
- Use the buddy system (work in pairs).
- Drink warm, sweet beverages (sugar water, sports-type drinks). Avoid drinks with caffeine (coffee, tea, or hot chocolate) or alcohol.
- Eat warm, high-calorie foods like hot pasta dishes.

Workers Are at Increased Risk When…

- They have predisposing health conditions such as cardiovascular disease, diabetes, and hypertension.
- They take certain medication (check with your doctor, nurse, or pharmacy and ask if any medicines you are taking affect you while working in cold environments).
- They are in poor physical condition, have a poor diet, or are older.

Appendix B

Additional Potential Physical and Chemical Hazards

Additional Potential Physical and Chemical Hazards

POTENTIAL PHYSICAL HAZARDS	**CONTROL METHODS**
Overhead Hazards/Falling Objects	Overhead hazards will be identified prior to each task (i.e., inspecting drill rig mast, building structure). Hard hats will be required for each task that poses an overhead hazard.
Contact with Utilities	Prior to initiating site activities, all utilities will be located by the appropriate utility company and will be marked and/or barricaded to minimize the potential of accidental contact. A minimum distance of 25 feet between the derrick and overhead power lines must be maintained at all times.
Noise Exposure	Areas of potentially high sound pressure levels (>85 dBA) will be restricted to authorized personnel only. Engineering controls will be used to the extent possible. Hearing protection will be made available to all workers on site. Exposure to time-weighted average levels in excess of 85 dBA is not anticipated.
POTENTIAL CHEMICAL HAZARDS	**GENERAL CONTROL METHODS**
Contaminant Inhalation	Direct reading instruments will be used to monitor airborne contaminants. Established Lu Engineers' action levels will limit exposure to safe levels. Respiratory protection will be used as appropriate.
Contaminant Ingestion	Standard safety procedures such as restricting eating, drinking, and smoking to the support zone and utilizing proper personal decontamination procedures will minimize ingestion as a potential route of exposure.
Dermal Contaminant Contact	The proper selection and use of personal protective clothing and decontamination procedures will minimize dermal contaminant contact.
Potential contact with lower concentration waste and naturally occurring contaminants (i.e., methane)	Dermal contact with contaminants will be minimized by proper use of the following PPE: • Tyvex coveralls • Neoprene gloves • Booties (latex) or over-boots.

Appendix C

Equipment Checklist

Equipment Checklist - Churchville Ford Site

Personal Protective Gear

Level D		**Level B**	
Steel-toe work boots	X	SCBA	
Hard Hat	X	Spare air tanks	
Work gloves	X	Protective coveralls (Tyvek, Saranax)	
Work clothes/ coveralls	X	Chemical-resistant outer gloves	
Safety glasses or goggles (as needed)	X	Chemical-resistant inner gloves	
Rain Suit (as needed)	X	Steel-toe boots, chemical-resistant	
Earplugs (as needed)	X	Disposable chemical-resistant booties (optional)	
Disposable boot covers (as needed)	X	Hard hat (as needed)	
Orange safety vest (as needed)	X	Face sheild (as needed)	
Level D+		**Level A**	
Chemical-resistant disposable booties		SCBA	
Face sheild		Spare air tanks	
Safety goggles		Encapsulating suit, chemical-protective	
Dust mask		Chemical-resistant inner gloves	
Cut-resistant gloves		Chemical-resistant outer gloves	
Tyvek w/hood		Chemical-resistant steel-toe boots	
Inner & outer chemical-resistant gloves		Hard hat (as needed)	
Splash sheild (as needed)		Cooling vest (optional)	
Level C			
Air purifying respirator (full or half-face)			
Cartridges (type….)		**Misc.**	
5-minute escape mask (optional)		Insect repellant	
Chemical-resistant coveralls (Tyvek, Saranax)	X	Misquito net (as needed)	
Chemical-resistant outer gloves	X	Suncreen	
Inner gloves		Hand/Foot warmers	X
Steel-toe work boots	X		
Disposable boot covers (as needed)			
Hard hat (as needed)	X		

Monitoring Equipment

MiniRAE PID	X
Explosimeter	
4-Gas Meter	
Particulate Meter (Dust-Trak, etc)	
ppbRAE PID	
Weather station	
Sound level meter	
Personal sampling pumps	
Draeger pump w/ tubes	
Radiation detector (Mini-RAD)	

First Aid Equipment

First-Aid kit	X
Portable eye wash	
CPR mask	
Fire Extinguisher	X

Equipment Checklist - Churchville Ford Site

Sampling Equipment

Soil Sampling

4-oz. jars	X
Stainless steel spoons	X
Stainless steel bowl	X
Soil auger	
Soil sampling (coring) tool	
Labels	X
Permanent marking pens	X
Packaging tape	X
Ziploc bags	X
Water Sampling	
Polyethylene tubing	X
Flex tubing	
Water level meter	X
Bailers (disposable, SS, PVC)	X
Bailer twine	X
Stopwatch	
Peristaltic pump (Geopump)	X
Well key/wrench	
Socket wrench (as needed)	
Air Sampling	
Beeswax	X
Hot pot	X
Purge pump	X
Tedlar bags	X
Summa canisters	X
Digital camera	X
Wrenches (as needed)	X

Decon Equipment

Wash tub	X
Buckets	X
Scrub brushes	X
Pressurized sprayer	X
Detergent (Alconox, TSP)	X
Solvent (hexane, 10% HNO3)	
Plastic sheeting	X
Tarps and poles	
Trash bags	X
Trash cans	
Paper towels	X
Face mask sanitizer (as needed)	
Distilled water	X
Deionized water	
Sanitizing wipes	

Shipping Equipment

Shipping labels	X
Clear packing tape	X
Chain-of-custody forms	X
Custody seals	X
Strapping tape	X
Plastic baggies	X
Bubble wrap (as needed)	
Coolers	X

Miscellaneous Field Equipment

Basic tool kit	X	Tables	X
Step ladder (as needed)		Folding chairs	X
Surveyor's tape	X	Portable radios	
Marking paint	X	Wagon	
Nylon rope		Sled	
Surveyor's Flags	X	Digital camera	X
Bung wrench		Batteries & chargers	X
Pick		Flashlights	
Shovel	X		
Propane torch			
Surveying meter stick	X		
Pop-up canopy			
Clipboard	X		

Appendix C – Community Air Monitoring Plan

Environmental Restoration Program
Former Service Station Site (#E828143)
8264 Ridge Road West
Town of Clarkson
Monroe County, New York

Remedial Investigation

Community Air Monitoring Plan

Prepared For:

Town of Clarkson
P.O. Box 858
Clarkson, New York 14430

Prepared By:

LU ENGINEERS
Civil and Environmental
2230 Penfield Road
Penfield, New York 14526

January 2009

Project No. 40503

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1.0 Introduction

This Community Air Monitoring Plan (CAMP) has been prepared by Lu Engineers on behalf of the Town of Clarkson. This CAMP addresses potential volatile organic compound (VOC) and particulate air quality issues, which may arise during planned Remedial Investigation (RI) activities at the Former Service Station Site, 8264 Ridge Road West, Clarkson, New York.

The investigation activities planned during the portion of the project covered by this CAMP include soil borings, groundwater monitoring well installations, test pit completion, and soil and groundwater sampling.

Based on previous studies completed at the Site and the Site's history, the primary chemicals of concern at the subject site are various VOCs and metals. Disturbance of soils and/or groundwater could result in volatilization of the organic compounds and fugitive dust releases to the ambient air creating possible nuisance or health threats to the neighborhood.

CAMPs detail real-time monitoring for VOCs and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. This CAMP is intended to provide a measure of protection of the downwind community from potential airborne contaminant releases as a direct result of investigation and remedial wok activities. In addition, the CAMP helps to confirm that work activities did not spread contamination off-site through the air. In addition, dust and noise control measures may be necessary, based on specific site conditions. Measures of dust control include wind screens, watering, and enhanced particulate monitoring.

Air monitoring and response actions for VOCs and particulates are included in this CAMP. VOC and particulate monitoring of the work areas will also be conducted as part of the Health and Safety Plan (HASP) that will be implemented during RI activities by Lu Engineers. The following monitoring, response levels and actions are adapted from Division of Environmental Restoration (DER)-10 New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan.

2.0 Methodology

The RI activities at the Site will consist primarily of soil borings, well installations, test pit completion, and groundwater sampling. The following programs will be implemented to monitor and, if necessary, control the potential migration of fugitive VOCs and particulates on the property.

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

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing wells. Periodic monitoring during sampling may reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well bailing/purging, and taking a reading prior to leaving a sample location. Continuous monitoring may also be required during sampling activities.

2.1 VOC Monitoring, Response Levels, and Actions

For each day of intrusive field work, a wind sock or flag will be used to monitor wind direction in the area of the work zone. Based upon the daily wind direction, two temporary monitoring point will be identified, one upwind and one downwind of the immediate work area (i.e, exclusion zone), at the perimeter of the site or field work location.

VOC monitoring will be done with a photoionization detector (PID-MiniRAE Model 2000 or its equivalent) fitted with a 10.6 eV lamp. Prior to the commencement of field work each day, the meter will be calibrated and upwind concentrations will be measured to establish background conditions. Thereafter, readings will be recorded at the downwind perimeter of the immediate work area at approximate 15-minute intervals, and periodically at the upwind perimeter. The PID will calculate 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area of exclusion zone exceeds 5 parts per million (ppm) above the 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 5ppm over background, work activities can resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persists at levels in excess of 5 ppm over background, but less than 25 ppm, work activities must be halted, the source of vapors identified,

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

- If the organic vapor level is above 25-ppm at the perimeter of the work area, activities must be shut down.

2.2 Particulate Monitoring, Response Levels, and Actions

For each day of intrusive field work, a wind sock or flag will be used to monitor wind direction in the area of the work zone. Based upon the daily wind direction, two temporary monitoring point will be identified, one upwind and one downwind of the work area (i.e., exclusion zone), at the perimeter of the site or field work location.

Particulate monitoring will be done with a real time particulate meter (Mini Ram/Dust Trac) capable of monitoring particulate matter less than 10 microns in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for the comparison to the airborne particulate action level. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activity. Prior to the commencement of field work each day, background measurements of particulate levels will be logged at the upwind and downwind locations. Thereafter, readings and visual observations will be recorded at approximate 15-minute intervals.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

2.3 Work Area Monitoring

In addition to perimeter monitoring, monitoring for VOCs, particulates and explosive gases will be carried out continuously within the work area to monitor personal exposures and to compare work area readings with downwind and upwind readings. The first readings of the day will be obtained prior to the commencement of work to obtain daily background readings. Readings will be logged along with the perimeter measurements. Specific monitoring procedures to be used in the work zone can be found in the HASP prepared for this site.

3.0 Record Keeping and Quality Control

For the duration of the field activities, a monitoring log book will be kept to record calibration, operational notes and monitoring readings. All readings will be recorded and available for State (DEC and DOH) review. Instantaneous readings, if any, used for decision purposes should also be recorded. The results of the CAMP will be incorporated by Lu Engineers into required reports.

Instrumentation will be calibrated and/or operationally checked, either daily or at intervals recommended by the manufacturer. Only approved calibration gases will be used. All operators will have been trained in the proper use, maintenance, limitation, and interpretation of results of the monitoring equipment.

Appendix D – Qualifications

ROBERT J. ELLIOTT, P.E.

Principal in Charge

LU ENGINEERS
Civil and Environmental

-EDUCATION-

B.S.C.T., Civil Engineering, 1976,
Rochester Institute of Technology, Rochester, NY

- 30 Years Experience
- Village of Penn Yan Engineer
- ERP Brownfield Experience
- Remedial Investigation Expert

-REGISTRATION-

Professional Engineer, NY
Professional Engineer, PA
NYSDOL Asbestos Project Designer

-PROJECT EXPERIENCE-

Mr. Elliott has worked for Lu Engineers since it was first established in 1980 and has 30 years of civil and environmental engineering experience. The majority of his experience involves project engineering and management duties for hazardous wastes, petroleum, and water and wastewater related projects. Mr. Elliott has also managed asbestos-related projects involving assessment, removal design and monitoring.

REMEDIAL AND BROWNFIELD REDEVELOPMENT

Former Frink America ERP Brownfield Site, Clayton, NY
Senior Project Manager for NYS Environmental Restoration Program services on this waterfront Brownfield site. The project involved the identification of the vertical and horizontal extent of contamination, surface soil sampling, borings, removal of underground storage tanks, PCB sampling, an RI/FS report and development of a Work Plan to address known impacted soils.

Orchard-Whitney ERP Brownfield Investigation, City of Rochester, NY
Mr. Elliott served as Principal-in-Charge of environmental services at the Orchard-Whitney Brownfield site for the City of Rochester, NY under the NYSDEC Environmental Restoration Brownfield Program. This 3.9 acre site is located in a strategic economic development area of the City. The goal of this project is to generate a NYSDEC approved Site Investigation/Remedial Alternatives Report (SI/RAR). Initially, a waste characterization and an asbestos, hazardous waste and lead pre-demolition survey were performed. Subsurface investigation will begin after demolition is complete. The subsurface investigation will be used to further define the horizontal and vertical extent and concentrations of contaminants in the soil and groundwater.

Karenlee Drive, Henrietta, NY
Mr. Elliott was the Principal in Charge for implementing a Work Plan for the former wastewater treatment plant at 100 Karenlee Drive in the Town of Henrietta in accordance with the New York State Department of Environmental Conservation Brownfield Program. Lu Engineers provided oversight for installation of seven monitoring wells, the collection of subsurface soil samples during the well installation, the collection of water samples from the installed wells and the collection of surface soil samples. He provided coordination between NYSDEC and Town of Henrietta. A report describing the findings of the investigation was prepared for the Town of Henrietta.

Almor Voluntary Cleanup Plan, Warsaw, NY
Mr. Elliott was the Principal in Charge for the voluntary cleanup of the former Almor manufacturing plant. Extensive research was conducted during the remedial investigation in order to determine the nature and extent of the wastes and contamination associated with the property. Services provided included a geoprobe investigation of the site, stream sampling, groundwater sampling, limited soil removal and testing on an underground storage tank found on the site.

Abe Cooper Superfund Site, Watertown, NY
Mr. Elliott served as Project Manager responsible for the design of a River Bank Protection System along the Black River for the NYSDEC. This system was needed to prevent contaminated soils from leaching into the river. The system included remediation and stabilization of 700 linear feet of riverbank. A US Army Corps of Engineers Section 10 permit was completed for the excavation of approximately 6,000 cubic yards of existing soil at the riverbank and 2,575 c.y. of heavy stone fill for slope protection. A hazardous waste site remediation was also performed.

XLI Corporation, Brownfield Redevelopment, Rochester, NY
Mr. Elliott was the Principal in Charge for the Brownfield redevelopment project for this property listed on the New York State List of Inactive Hazardous Waste Disposal Sites. The project included: engineering design with site layout for parking, pedestrian access, site access, building location, vehicular traffic, utilities, and storm water collection and conveyance along with storm water retention/detention facility; surveying services including base mapping; health and safety plan; and developing a plan for the removal and relocation of landfill materials present on the site. Mr. Elliott worked closely with the City of Rochester and XLI Corporation to provide site development alternatives that satisfied the requirements of the City's Brownfield Pilot Program.

Davis Howland Oil Co. Site, Remedial Design and Construction Oversight, Rochester, NY
As Principal-In-Charge, Mr. Elliott was responsible for the construction oversight of remediation work and shop drawing review for remediation equipment at the Davis Howland Oil Corporation inactive hazardous waste disposal site in Rochester, NY. This $2 million NYSDEC Superfund project involves the implementation of remedial activities including a trailer mounted remediation system that treats the shallow groundwater, soil, and fractured bedrock beneath the site. We also continue to provide oversight and support the O&M subcontractor in the operations and maintenance and documentation associated with the continued remediation of this site. The remediation of the soil and groundwater included Air Sparging (AS) and Soil Vapor Extraction (SVE), groundwater pumping and treatment system and catalytic oxidation treatment (CatOX). In 2004, a soil vapor survey on properties in residential/commercial surrounding this site was conducted, as well as interior and basement air sampling.

Brownfield site, Wetland Delineation, Driving Park Ave., Rochester, NY
Mr. Elliott was the Principal-in-Charge of federal wetland delineation on a 12.7 acre Brownfield industrial site located in the City of Rochester, NY. The field delineation was done on approximately three acres of a wooded wetland. Hand-held global positioning system (GPS) was used to flag the boundary. Sampling was required to characterize the soils, hydrology and vegetation, and to support the boundary determination. A formal wetland delineation report suitable for submission to the U.S. Army Corps of Engineers was prepared and field visit with a representative of the U.S. Army Corps of Engineers was coordinated for concurrence on the boundary.

GREG ANDRUS, CHMM

Environmental Scientist

LU ENGINEERS
Civil and Environmental

-EDUCATION-

B.S., Geology, 1987, Washington & Lee University, Lexington, VA
Hydrogeology, Graduate Level Studies, SUNY at Brockport, Brockport, NY

- 20 Years Experience
- ERP Brownfield Specialist
- Certified Hazardous Materials Manager

-TRAINING, CERTIFICATIONS & ASSOCIATIONS-

Certified Hazardous Materials Manager
OSHA 40-Hour Training and Refresher Courses
OSHA Confined Space Entry Training
Air Program Information Management Systems
ACHMM Finger Lakes Chapter, Former President
Joint Services Pollution Prevention and Hazardous Waste Management Conference, San Antonio, TX
PC Application in Risk Assessment, Modeling and GIS
New York State Council of Professional Geologists
National Groundwater Association

-PROJECT EXPERIENCE-

Mr. Andrus' 20 years of experience includes a diverse range of geological and environmental engineering projects. Areas of specialization include remedial investigation/site characterization, site remediation, site assessment, regulatory compliance and permitting. His experience also includes noise impact analysis, wetland studies, asbestos building surveys, and abatement design and air contaminant impact analysis.

BROWNFIELDS

Port Leyden ERP Brownfield Investigation; Town of Leyden, NY
Mr. Andrus is the project manager for this NYSDEC funded Brownfield Remedial Investigation and implementation of interim remedial measures. This site investigation included subsurface sampling, soil vapor testing, well installation, sampling and testing and the removal of storage tanks, a geophysical investigation to identify the tanks; the sight was a former gas/service station. A report was developed evaluating remedial alternatives and recommendations for the next Brownfield Phase of this project.

Former Frink America property, NYSDEC ERP Brownfield, Clayton, NY
The former Frink America property underwent a Site Investigation under the NYSDEC Environmental Restoration Program. The goal of the project was to identify the vertical and horizontal extent of contamination located on site in order to establish an appropriate cleanup alternative. Mr. Andrus prepared scoping, budget, and hydrogeological and engineering review.

Orchard-Whitney ERP Brownfield Investigation, City of Rochester, NY
Lu Engineers is currently providing environmental services for the Orchard-Whitney Brownfield site for the City of Rochester under the NYSDEC Environmental Restoration Program. The 3.9 acres site is located in a strategic economic development area of the City. The goal of this project is to generate a NYSDEC approved Site Investigation/Remedial Alternatives Report (SI/RAR). Mr. Andrus is the Project Scientist involved in the initial task of waste characterization and an asbestos, hazardous waste and lead pre-demolition survey. He will assist with tasks such as tank and sensitive equipment removals and unforeseen environmental conditions.

Karenlee Drive, Henrietta, NY
Lu Engineers completed and implemented a Work Plan for the former wastewater treatment plant at 100 Karenlee Drive in the Town of Henrietta in accordance with the New York State Department of Environmental Conservation (NYSDEC) Voluntary Cleanup Program. Mr. Andrus provided oversight of installation of seven monitoring wells, the collection of subsurface soil samples during the well installation, the collection of water samples from the installed wells and the collection of eight surface soil samples. After all of the information had been obtained a report describing the findings of the investigation was prepared for the Town of Henrietta. The information from this project was utilized to determine the extent and concentration of suspected site contamination and its impact on proposed future site improvements.

Air Force Research Laboratory / Rome Research Site (AFRL/RRS), Rome, NY
Mr. Andrus served as project manager for four consecutive multi-years IDIQ contracts to provide civil and environmental engineering services to the AFRL/RRS at the former Griffiss Air Force Base. Under these contracts, Lu Engineers has conducted wetland delineations, decommissioning of wells, archaeological, UST closures and disposal area closures, design of backflow preventers; on-call environmental sampling services, air emissions surveys and air emissions control process design; asbestos surveys and management plans and wastewater sampling.

Former Motel/Restaurant, Medina, NY
Mr. Andrus acted as regulatory liaison and conducted information review for "Brownfield" site redevelopment at a gasoline station.

Steel Plant, Latrobe, Pennsylvania
Mr. Andrus conducted a Phase I and II involving extensive sampling and monitoring well installation and soil gas assessment for "Brownfield" site redevelopment.

State Police Barracks, Warsaw, NY
Mr. Andrus was the project geologist for remediation work on the NYS Police Troop 2 Barracks on Buffalo Road in Warsaw, NY. Tasks included a utility stakeout, test excavations, excavation and staging of impacted soils, and oversight of removal and disposal of excavated soils. Mr. Andrus assisted with preparation of a written report of the work performed, laboratory analysis, summary of soil contamination and recommendations for future work.

Transit Bus/DPW Storage and Maintenance Facility, Watertown, NY
Lu Engineers provided oversight of the building of trenches (for installing new utility lines) and advised them on the removal of the petroleum contaminated soils. As Project Geologist, Mr. Andrus assisted with background information review and performed site sampling and testing.

Regional Traffic Operations Center/Former Webaco Oil Property, Rochester, NY
Mr. Andrus assisted with periodic biocell evaluation of petroleum contaminated soils at the former Webaco Oil property at the Greater Rochester International Airport. Long-term biocell monitoring services and soil sampling were necessary to satisfy NYSDEC requirements.

Town of Clarkson, Phase I ESA and ERP Application, Clarkson, NY
Mr. Andrus conducted a Phase I Environmental Site Assessment on a vacant commercial property located on Route 104 in the Town of Clarkson. He also prepared an ERP Program application for NYSDEC funding of investigation and cleanup for this former gas/service station.

STEVEN CAMPBELL, CHMM

Project Manager

LU ENGINEERS
Civil and Environmental

- 20 Years Experience
- ERP Brownfield Specialist
- Certified Hazardous Materials Manager
- Environmental/Remediation Group Leader

-EDUCATION-

B.S., Environmental Health and Safety, 1987, Brockport State University

-CERTIFICATIONS-

Certified Hazardous Materials Manager (CHMM)
Hazardous Waste Operations and Emergency Response
40 Hour Site Worker- Supervisor Level
Emergency Spill Response-Hazmat Technician and Incident Commander
US Department of Transportation Hazardous Materials -Transport Awareness Level

-PROJECT EXPERIENCE-

Mr. Campbell is the Environmental/Remediation Group Leader, and is responsible for all Brownfield/ERP projects for the company. He has worked in the field of environmental health and safety for over 20 years. During his career, he has worked as an environmental scientist and a Project Manager in the governmental, consulting, and private sectors. Mr. Campbell has investigated and inspected properties ranging from low environmental concerns to major Superfund sites as both a government contractor and private consultant.

BROWNFIELDS

Orchard-Whitney ERP Brownfield Investigation, Rochester, NY
As Project Manager, Mr. Campbell was responsible for providing environmental services for the Orchard-Whitney Brownfield site for the City of Rochester, NY under the NYSDEC Environmental Restoration Program. The 3.9 acres site is located in a strategic economic development area of the City. The goal of this project is to generate a NYSDEC approved Site Investigation/Remedial Alternatives Report (SI/RAR). Initial tasks involved waste characterization and an asbestos, hazardous waste and lead pre-demolition survey. After this is complete, demolition oversight of the buildings will be provided. Lu Engineers staff will assist with tasks such as tank and sensitive equipment removals and unforeseen environmental conditions. Subsurface investigation will begin after demolition is complete. The subsurface investigation will be used to further define the horizontal and vertical extent and concentrations of contaminants in the soil and groundwater. All of this will provide a basis for developing remedial alternatives that are based on conceptual future uses. Survey, GIS mapping and planning for citizen's participation meetings will be provided as necessary.

Former Frink America property, NYSDEC ERP Brownfield, Clayton, NY
On this waterfront Brownfield site, Mr. Campbell served as Project Manager for the NYS Environmental Restoration Program (ERP). The project involved the identification of the vertical and horizontal extent of contamination, surface soil sampling, borings, removal of underground storage tanks, PCB sampling, an RI/FS report and development of a Work Plan to address known impacted soils. An ERP grant application was also prepared. After remediation, the newly developed property will house residences, public boat docks, a riverwalk, a small inn, office space and a marina while creating new park areas and enhanced deep water port space along the St. Lawrence River.

City of Rochester, Brownfield Assistance Program, Term Contract, Rochester, NY
Project Manager responsible for providing environmental investigation services through a 3 year term contract for the City of Rochester's Brownfield Assistance Program (BAP). The BAP provides technical and financial assistance to private parties that need to investigate environmental conditions on Brownfield properties. This program is part of the City of Rochester's 2003 Brownfield Assessment grant from the United States Environmental Protection Agency (EPA). Therefore, all work performed by Lu Engineers meets the EPA standards.

Sewall's Island, ERP Brownfield Investigation, City of Watertown, NY
Mr. Campbell is the Project Manager in charge of providing the City of Watertown with a Remedial Investigation/ Alternatives Analysis Report (RI/AAR) a site on Sewall's Island in the City of Watertown, New York. The site consists of 11 parcels representing a total of 15.18 acres. Our scope of work on this project includes completion of a NYSDEC approved Environmental Assessment and as necessary an Interim Remedial Measures (IRM) Work Plan, a geophysical survey, identification of asbestos containing materials in on-site debris, Remedial Investigation Implementation, completion of an instrument survey, a Remedial Investigation/ Alternatives Analysis Report and conducting public meetings to inform the public of findings and recommendations pursuant to requirements of the ERP program.

Nichol Inn, ERP Brownfield Investigation, Steuben County, NY
Mr. Campbell is the Project Manager currently working with Steuben County at the Nichol Inn property located in the Town of Pulteney, NY to provide a Remedial Investigation/ Alternatives Analysis Report. This report will be relied upon as a basis for making appropriate decisions for site remediation and future development. The Scope of Work also includes an Environmental Assessment and Interim Remedial Measures Work Plan, geophysical survey, asbestos survey, asbestos removal, building demolition and tank removal, a remedial Investigation Implementation, and instrument survey. This project is being completed under the NYSDEC Environmental Restoration Program.

XLI Corporation, Brownfield Redevelopment, Rochester, NY
Mr. Campbell was the Project Manager for a Brownfield redevelopment project for property located within the boundaries of a landfill listed on the NYS List of Inactive Hazardous Waste Disposal Sites. The project included: engineering design with site layout, storm water collection and conveyance along with storm water retention/detention facility; surveying services including base mapping; review of site specific environmental investigations; health and safety plan; and developing a plan for the removal and relocation of landfill materials present. Mr. Campbell worked closely with the City of Rochester and XLI Corporation to provide site development alternatives that satisfy the requirements of the City's Brownfield Pilot Program.

Karenlee Drive, Henrietta, NY
Project Manager, implementing a Work Plan for the former wastewater treatment plant at 100 Karenlee Drive in the Town of Henrietta, NY, in accordance with the New York State Department of Environmental Conservation Brownfield Program. Phase I and Phase II Environmental Assessments were completed and tank removals were performed. Oversight was provided for installation of seven monitoring wells, the collection of subsurface soil samples during the well installation, the collection of water samples from the installed wells and the collection of surface soil samples was provided. The information from this project was utilized to determine the extent and concentration of suspected site contamination and its impact on proposed future site improvements.

Almor Voluntary Cleanup Plan, Warsaw, NY
In his role as Project Manager, Mr. Campbell assisted the Wyoming County Industrial Development Agency by providing environmental services for the cleanup of the former Almor manufacturing plant. Extensive research was conducted during the remedial investigation in order to determine the nature and extent of the wastes and contamination associated with the property. Additional services include a geoprobe investigation of the site, stream sampling, groundwater sampling, limited soil removal and testing on an underground storage tank found on the site.

Regional Traffic Operations Center, Rochester, NY
Project Manager for the hazardous substance and remedial investigations, including abatement design, for the proposed facility located at the Greater Rochester International Airport. The $10 million facility was constructed on lands previously used, in part, as an electroplating facility and an above Major Oil Storage Facility. Work tasks include a geophysical survey to determine the location of buried features, soil-vapor surveys, completion of over 60 soil borings, installation of groundwater monitoring wells, sampling, recommendations for design abatement; development of construction abatement drawings, coordination with NYDEC and environmental construction monitoring.

SUSAN HILTON, P.E.

Environmental Engineer

LU ENGINEERS
Civil and Environmental

- 14 Years Experience
- Asbestos and Demolition Specialist
- ERP Expertise

-EDUCATION-

B.S. Chemical Engineering, 1993, Clarkson University

-CERTIFICATIONS & ASSOCIATIONS-

OSHA 40-hour Health and Safety Training for Hazardous Waste Site Operations
OSHA Confined Space Entry Training
NYSDOL Asbestos Inspector
FTA / National Transit Institute: NEPA Environmental Process

-REGISTRATION-

Professional Engineer

-PROJECT EXPERIENCE-

Ms. Hilton has 14 years of experience conducting environmental studies and assessments for federal, state, and local clients. As an Environmental Engineer, Ms. Hilton has experience in the areas of asbestos, lead, hazardous waste, pollution prevention, building demolition and wastewater.

BROWNFIELDS

Frink America property, NYSDEC ERP Brownfield Program, Clayton, NY
Project Engineer on the former Frink America Brownfield site project in Clayton, NY. This 8.4 acre property was a former snowplow manufacturing facility located in the waterfront resort district of the Village. Ms. Hilton prepared demolition plans, specifications and estimates for asbestos removal. The demolition was completed by Town of Clayton forces. She coordinated with our subconsultant to prepare asbestos removal drawings. Ms. Hilton also coordinated our air/project monitoring staff and responded to all contractor questions during construction.

Karenlee Drive, NYS Brownfield Program, Henrietta, NY
Lu Engineers completed and implemented a Work Plan for the former wastewater treatment plant at 100 Karenlee Drive in the Town of Henrietta, NY in accordance with the NYSDEC Brownfield Program. Ms. Hilton provided engineering services for the building demolition on behalf of the Town of Henrietta. Specifications for the demolition of the former administration building, digester building and garage building were developed.

HAZARDOUS

Rome Laboratory, Former Griffiss Air Force Base, Rome, NY
Ms. Hilton prepared a Hazardous Waste Management Plan for the facility. The plan required reviewing federal and state hazardous waste regulations to implement changes to the plan. Waste manifests from the previous year were also reviewed. Employees handling hazardous waste use this plan as a reference along with organizations in the community, such as fire department and hospitals handling emergency response actions. An inspection of initial and satellite accumulation points was also conducted.

Rome Laboratory, Newport Research Facility, Griffiss Air Force Base, Rome, NY
As Project Engineer, Ms. Hilton selected a total fluid extraction system with sufficient vacuum and water handling capabilities to extract petroleum from contamination in soils and groundwater at the Newport Facility. She assisted with installation of piezometer wells and performed monitoring of the system twice. The wastewater being extracted by fluid systems was being treated with two activated carbon units and stored in an on-site holding tank. Ms. Hilton also procured a wastewater discharge permit from the local municipality.

Route 104, West Ridge Road, NYSDOT, Town of Greece, and City of Rochester, NY
Ms. Hilton's responsibilities included the development of a Hazardous Waste/Contaminated Materials Assessment Report. Specific responsibilities include research into past land use via multiple sources of information. Federal, state, and local agencies were contacted for information regarding hazardous waste sites, chemical and petroleum bulk storage facilities, underground storage tanks, waste sites, and sites which generate, treat, or dispose of regulated waste. The assessment report included recommendations for further study.

Buffalo Road/West Avenue, City of Rochester, Rochester, NY
Responsibilities included the development of specifications for the removal and disposal of non-hazardous petroleum contaminated soil, PCB contaminated soil, pesticide contaminated soil, and contaminated groundwater.

ENVIRONMENTAL ASSESSMENTS / AUDITS

Ms. Hilton has performed environmental assessments/audits. Her responsibilities included researching past land use using federal, state, and local database sources. Petroleum and chemical bulk storage facilities, underground tank records, waste sites, generators of regulated waste in the vicinity of the property were investigated for their potential to impact the audited properties. Reports discussed the findings of the investigations and made recommendations for further study if necessary.

2.83 acre Parcel, Pittsford, NY
Ms. Hilton was the Project Manager for a Phase II Environmental Site Investigation on 2.83 acre parcel in Pittsford, NY. The objective of the work was to determine if there were any mercury contaminated soils; if any soil contamination exists relative to its use as a construction and demolition landfill site; if asbestos containing materials were disposed of on this site; and if there were any visual indications of environmental issues on the site. Work on an adjacent site had indicated elevated levels of mercury in the soils. A backhoe was used to dig test pits. Subsurface soil samples were collected and analyzed for mercury, volatile organics, semi-volatile organics and other RCRA metals to determine if they fell below USEPA hazardous waste limits. A report was prepared documenting the findings of the field and laboratory work.

DEMOLITION

Rome Research Site, Building 119 Demolition and Parking Lot Expansion, Rome, NY
Ms. Hilton is overseeing the preparation of the demolition design and associated hazardous materials abatement design for the demolition project of Building 119 at the U.S. Air Force Rome Research Site. Asbestos removal documents were also prepared for the project.

Monroe County Health and Social Services Building, Rochester, NY
This project involved renovation of the first and second floors of an active 10-story building with vital services for the community that could not be interrupted. As Project Manager, Ms. Hilton reviewed record drawings, conducted inspection, collected asbestos bulk samples, and then prepared asbestos abatement drawings and specifications. She attended pre-bid meetings, progress meetings, issued addenda and reviewed qualifications of low bidder. During construction, Ms. Hilton provided guidance to Lu Engineers' air/project monitor and performed random inspections. At the end of the project, Ms. Hilton prepared record drawings for the work.

LAURA SMITH

Environmental Technician

LU ENGINEERS
Civil and Environmental

-EDUCATION-

B.S., Environmental Management, 2005,
Rochester Institute of Technology, Rochester, NY

- 6 Years Experience
- ERP Brownfield Expertise
- Hazardous Waste Certified
- Soil Vapor Extraction Experience

-REGISTRATION-

OSHA 40-hour Health and Safety Training for Hazardous Waste Site Operations Certification
OSHA Confined Space Entry Training
Attended OSHA 501 Trainer's Course

-PROJECT EXPERIENCE-

Ms. Smith has worked on a variety of projects in her 6 year career including environmental site assessments, site investigations, environmental compliance and management systems, pollution prevention, and remediation project monitoring.

BROWNFIELDS

Former Frink America, ERP Brownfield Site, Clayton, NY
Lu Engineers obtained a NYSDEC Environmental Restoration Program grant for investigation and remediation activities at the Former Frink America property, on behalf of the Clayton Local Development Corporation. Ms. Smith created a Quality Assurance Project Plan (QAPP), Citizen Participation Plan (CPP), and assisted with preparation of the Remedial Investigation Work Plan, RI Report, and Interim Remedial Measures Work Plan for approval by the NYSDEC. A sub-slab vapor sampling and indoor air sampling was also conducted for the NYSDOH.

Regional Traffic Operations Center, Rochester, NY
Lu Engineers provided engineering services for the remediation of petroleum contaminated soils as part of the RTOC project at the Greater Rochester International Airport. Ms. Smith prepared a Summary of Site Investigation and Remedial Actions/ Risk Assessment Report to gain petroleum spill site inactivation status for the former Webaco Oil parcel on Scottsville Road.

Town of Leyden, ERP Brownfield Site, Leyden, NY
Ms. Smith performed a Phase I Environmental Site Assessment for the Town of Leyden at a vacant former Mobil Service Station. She also assisted the Town by preparing an application for the Environmental Restoration Program. The ERP application was approved by the NYSDEC.

Town of Clarkson, Phase I ESA and ERP Application, Clarkson, NY
Ms. Smith conducted a Phase I Environmental Site Assessment on a vacant commercial property located on Route 104 in the Town and Hamlet of Clarkson. We also prepared a successful ERP program application for NYSDEC funding of investigation and cleanup. The property was a former gas/service station.

NYSDEC SUPERFUND SITES

Davis Howland Site, Rochester, NY
Ms. Smith conducted indoor air and sub-slab vapor sampling in residences surrounding the former Davis Howland Oil Company site. She also performed a vacuum survey to assess effectiveness of the soil vapor extraction system.

Former Smith-Corona Site, Cortland, NY
Ms. Smith provided assistance with indoor air and sub-slab vapor surveys and sampling for a large number of residences located at the former Smith-Corona site in Cortland, NY.

Diamond Cleaners Site, Elmira, NY

Ms. Smith provided assistance on a Remedial Investigation/ Feasibility Study (RI/FS) at Diamond Cleaners and four other drycleaner sites for the NYSDEC in Elmira, NY. She assisted with indoor air and sub-slab vapor sampling at the Diamond Cleaners site, soil borings, groundwater well and piezometer installation and soil vapor sampling.

Hidden Valley Electronics Site, Vestal, NY
Ms. Smith assisted with installation of a sub-slab vapor extraction system at the former Hidden Valley Electronics, a NYSDEC Inactive Hazardous Waste Site. She conducts continuing operations and maintenance activities to optimize system performance.

Preferred Electric Motors Site, Rochester, NY
Ms. Smith provided assistance with a Remedial Investigation/ Feasibility Study at the Preferred Electric Motors NYSDEC Inactive Hazardous Waste Site in Rochester, NY. Ms. Smith prepared the site-specific Health and Safety Plan and conducted indoor ambient air, sub-slab vapor sampling in residences surrounding the site and sub-slab ventilation system installation oversight.

ENVIRONMENTAL REMEDIATION

Oil Removal at Finger Lakes Developmental Disabilities Office, Newark, NY
Lu Engineers provided oversight for the removal of approx. 37,750 gallons of #6 fuel oil from two of the four underground storage tanks (UST) at the Finger Lakes Developmental Disabilities Office facility located in Newark, NY. Following the oil removal, Lu Engineers performed a subsurface investigation of existing soil and groundwater conditions in the area of the USTs. Ms. Smith assisted with the subsurface investigation and oil removal report.

Rochester Genesee Regional Transportation Authority, Rochester, NY
Ms. Smith performed subsurface investigation and remediation at the RGRTA facility. A petroleum product recovery well pump system was designed and installed as part of interim remedial activities. She also assisted with monitoring well development and preparation of the project report.

Longway's Diner, Phase II ESA, Pamelia, NY
Assisted with performed a Phase II Environmental Site Assessment in Pamelia, NY. Lu Engineers provided oversight of soil borings, coordinated lab analysis, interpreted analytical results, and prepared a report on the findings. Ms. Smith then prepared a Remediation Work Plan to address petroleum contamination at the site.

Phase II/Remediation, 70 & 81 N. Main Street, Fairport, NY
Lu Engineers provided Phase II and environmental remediation services for property on Main Street which was a former petroleum storage facility in Fairport, NY. Ms. Smith provided oversight of the tank removal.

Appendix E – Estimated Project Schedule

Remedial Investigation Schedule

Former Service Station Site
8264 Ridge Road West
Clarkson, New York

ERP ASSESSMENT	**Month**															
Task/Milestone	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Work Plan Preparation & Submission																
Agency Review and Approval																
Community Involvement																
Public Information Mailings																
Public Comment Period (45 days)																
Investigation Activities																
Geophysical Survey																
Asbestos and Hazardous Materials Survey																
IRM- Asbestos Removal/ Building Demo/ Tank Removal																
Soil Sampling and Well Installation																
Groundwater Sampling																
Sampling analytical results																
Management & Deliverables																
Draft Remedial Investigation / Alternatives Analysis Report																
Agency Review and Approval																
Final Remedial Investigation / Alternatives Analysis Report																
Quarterly Progress Reports																

Environmental Restoration Program
Former Service Station Site (#E828143)
8264 Ridge Road West
Town of Clarkson
Monroe County, New York

Citizen Participation Plan

Prepared For:

Town of Clarkson
P.O. Box 858
Clarkson, New York 14430

Prepared By:

LU ENGINEERS
Civil and Environmental
2230 Penfield Road
Penfield, New York 14526

October 2008
Revised January 2009

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Preface

Environmental Restoration Program

This Citizen Participation Plan (CPP) has been developed for the Former Service Station Site under New York State's Environmental Restoration Projects (ERP) Program.

Brownfields are abandoned, idled, or under-used properties where expansion or redevelopment is complicated by real or perceived environmental contamination. They typically are former industrial or commercial properties where operations may have resulted in environmental contamination. They often pose not only environmental, but legal and financial burdens on communities. Left vacant, contaminated sites can diminish the property value of surrounding sites and potentially threaten the economic viability of adjoining properties.

Resources Available For Community Redevelopment

In an effort to encourage the cleanup and redevelopment of brownfields, New Yorkers approved a $200 million Environmental Restoration Fund as part of the $1.75 billion Clean Water/Clean Air Bond Act of 1996 (1996 Bond Act). Under the Program, the State provides grants to municipalities to reimburse up to 90 percent of eligible costs for site investigation and remediation activities. Only New York State municipalities are eligible. The term "municipality" includes counties, cities, towns and villages as well as local public authorities, public benefit corporations, school and supervisory districts and improvement districts. The term also includes municipalities acting in partnership with a community-based organization.

Once remediated, the property may then be reused for commercial, industrial, residential or public use. In addition, the municipality and all successors in title, lessees, and lenders are released from remedial liability for hazardous substances that were on the property prior to the grant. The State indemnifies these same persons in the amount of any settlements/judgments obtained regarding an action relating to hazardous substances that were on the property prior to the grant.

1.0 Overview of Citizen Participation Plan

The objective of this CPP is to encourage communication among all parties involved, or affected by, contaminant investigation and cleanup activities at the Former Service Station Site in Clarkson, New York. A major goal of citizen participation is to provide opportunities for gathering public knowledge and input needed to make informed decisions about remedial actions. This will help to create a site restoration plan with strong support from local residents and community groups.

The CPP seeks to assure an open process for the interested and possibly affected public. This includes public officials at all levels, citizen interest groups, commercial interests, individuals in the area of the Site, and the media. These parties can be a part of the decision-making process for this Site, and need to be informed about on-Site activities. It also identifies locations where these parties can obtain additional information about the remedial program for this Site. Specific opportunities for public and community input into the decision-making process are indicated.

The CPP is a working document. It can be enhanced to accommodate changes in either public attitude, or in the nature and scope of technical activities at the Site. The activities listed below are not intended to be an all-inclusive list, but an outline of possible activities, which may be conducted in coordination with the site investigation and remedial process.

This CPP includes the following information:

- A description of the Site history, indicating possible types of contamination, any past studies, and any previous remedial measures that may have occurred at the Site;
- A description of the proposed Remedial Investigation (RI) activities;
- Listing of contacts representing the affected and interested public agencies associated with this project;
- Identification of a local repository for information and reports generated during the course of completing the investigation activities; and
- Description of planned citizen participation activities.

This CPP has been prepared by Lu Engineers on behalf of the Town of Clarkson specifically for this Site. Definitions of some common terms used in the RI process may be found in Appendix 2.

2.0 Site Background

The Site is located at 8264 Ridge Road West (NYS Route 104) in the Town of Clarkson, Monroe County, New York (Figure 2). The Site is an approximate 0.71-acre parcel (Tax Account #054.14-1-21) and contains a body shop/garage, an office/storage building, and two storage trailers. The southern portion of the Site consists of a paved parking lot, and the northern portion of the Site consists of a wooded lot. The Site is located at the north side of the Ridge Road West.

The area surrounding the Site is mainly residential with a few commercial properties along Route 104. A garage, reportedly utilized as a limousine service, is located west of the Site, and a residence is located to the east. There are no schools, daycares, or medical facilities within a half-mile radius of the Site.

2.1 Site History

The Site was used as an automotive service station for at least 50 years. Based on review of property deed records and aerial photographs, the body shop/garage was constructed in the 1930s or 1940s. The property was utilized as a retail gasoline station until the early 1970s as well as vehicle maintenance operations.

It was reported that Webaco Oil Company, Inc. owned the Site from 1953 to 1974. The Site was purchased by Charles C. Thomas in 1974 and the office/storage building was constructed. Mr. Thomas reportedly leased the Site to several tenants including 104 Enterprises, 104 Communications, 104 Collision, Spurr Auto Dealership; and it was used for vehicle repair and associated commercial sales until the late 1960s.

The Site was purchased by Commercial Property Holdings, LLC in 2002 and has been unoccupied since. Monroe County foreclosed on the property and sold it to the Town of Clarkson, the current owner.

3.0 Project Objectives

The Town of Clarkson and the NYSDEC, in cooperation with the NYSDOH, are committed to informing and involving the public during the process to develop the Remedial Investigation and Alternatives Analysis Report (RI/AAR) for the Former Service Station Site. The RI is a detailed study to determine how much contamination there is, how far it extends, and potential threats to public health and the environment. Using information developed during the RI, the AAR evaluates possible ways to clean up the Site. NYSDEC describes its preferred remedy in a Proposed Remedial Action Plan (PRAP). After public comment, the selection of a remedy is finalized in a Record of Decision.

Proposed field investigation activities planned to meet project objectives are described below along with information that is needed to fully characterize the Site and evaluate potential remedial alternatives.

3.1 Geophysical Survey

A survey will be conducted of the accessible areas of the property to identify whether previously unknown tanks or other buried metallic features may be located on the Site that could have significance to Site environmental conditions.

3.2 Demolition Inspection and Sampling

An asbestos survey of the two structures on the Site will be conducted. The Town of Clarkson will hire a licensed asbestos removal contractor to remove the materials in accordance with federal, state and local regulations. Once the asbestos containing materials have been removed, an appropriately qualified subcontractor will demolish the buildings.

3.3 Tank and Drum Removal

An underground storage tank (UST) of an unknown size, containing degraded gasoline and water located near the southwest corner of the Site and a 275-gallon aboveground storage tank (AST) containing approximately 20 gallons of residual fuel oil, located west of the body shop/garage will be excavated, removed, and disposed of in accordance with NYSDEC protocols. An appropriately qualified and licensed subcontractor will be utilized for tank and soil removal work. Soil samples will be collected from the sidewalls and floor of the excavation and analyzed for volatile organic compounds (VOCs), semi-volatile compounds (SVOCs), polychlorinated biphenyls (PCBs) and Metals. These compounds are commonly found in fuel oil.

In addition, a 55-gallon drum and other hazardous materials containers, located in the body shop/garage will be emptied, removed and disposed of off-Site by an appropriately qualified subcontractor.

3.4 Subsurface Soil Samples

The installation of twenty five (25) soil borings is proposed for the Site. Four (4) of these soil borings will be converted to permanent groundwater monitoring wells. Soil samples will also be collected to determine contaminant disposal options.

3.5 Groundwater Investigation

Groundwater sampling will be conducted for contaminants. Field parameters, including turbidity, pH, conductivity, dissolved oxygen, and temperature will be measured periodically and recorded prior or collecting the samples. Once these parameters have stabilized (and at least three (3) well volumes have been purged), the well will be sampled.

Groundwater depths, laboratory analytical data, site survey data, and global positioning system (GPS) data will be used to prepare contaminant concentration plume maps.

3.6 Soil Vapor Sampling

Soil vapor sampling will take place at the Site to investigate the potential for vapor from soil and groundwater contamination to migrate into a building's indoor air. Due to the irregular shape of the Site, two (2) vapor samples will be collected from the Site.

The RI Work Plan provides additional details about the investigation. Copies can be reviewed at the repositories listed in Section 4.1 of this CPP.

3.7 Project Schedule

The above activities are expected to begin at the Site in the Spring of 2009. The initial field activities will take approximately four weeks to complete. The remaining sampling activities will take place based on the results of the initial data gathered. Laboratory results should be available about eight weeks later. A Draft RI Report will be submitted to the NYSDEC and the NYSDOH about one month following data submittal.

4.0 Citizen Participation Activities

This section describes citizen participation activities that have been completed or are planned to be conducted during remedial investigation work at the Site.

It is the expressed intent of the Town of Clarkson, NYSDEC, and the NYDOH to provide information to the public in a timely, complete, and accurate manner. Towards this end, the Town of Clarkson has compiled a list of individuals to whom the public can address specific requests for information. These contacts are both local and state public officials and are knowledgeable of the proposed investigative activities. This list of contacts is provided in Section 5.0, below.

A local repository has been established at the Town of Clarkson Town Hall and at the NYSDEC Region 8 office. Repositories of information are identified in Section 4.1 below. A copy of the documents relevant to the RI/AAR, including the RI Work Plan, will be placed in the repositories to allow interested citizens and groups to review these documents.

A Fact Sheet detailing the availability of the RI Work Plan will be sent out to the residents and other interested parties on the mailing list. This mailing list is presented in the attached Appendix 1. An additional mailing list of adjacent residents is maintained confidentially and not included in this document. Parties who express interest in being placed on or removed from the mailing list will be added or removed as requested. Fact Sheets will be placed in the document repositories.

This CPP will be updated as additional activities, such as public meetings and/or additional Fact Sheets are planned.

Once the RI/AAR has been accepted, the NYSDEC will issue a PRAP for the Site. This plan will use the information contained in the RI/AAR and evaluate several alternatives to address the contamination at the Site. This plan will then propose a course of remedial action for the Site.

A public meeting will then be held to present the RI/AAR and the PRAP to the public. This presentation will be followed by a formal question and answer period. The PRAP will also have a 45-day comment period, during which written comments and questions can be submitted.

After the comment period, a ROD will be issued by the NYSDEC identifying the remedy selected for the Site, and the basis for this selection. As part of the ROD, a responsiveness summary will be prepared. This responsiveness summary will include all relevant and significant questions and comments received on the PRAP and the NYSDEC/NYSDOH responses to this input.

The ROD and the PRAP, and all NYSDEC-approved reports, plans, and fact sheets on this project will be placed in the document repositories for public review. These documents may be distributed more widely, such as to interested local groups, if warranted.

4.1 Document Repository

A document repository has been established at the Town of Clarkson Town Hall to provide the public with convenient access to important project documents. Documents related to this project are located at:

Clarkson Town Hall
3710 Lake Road
P.O. Box 858
Clarkson, New York 14430
Attn: Town Clerk
Phone: (585) 637-1130
Hours: Mon, Wed, Thurs, Fri - 8 am - 4 pm; Tuesdays 8 am - 6:30 pm

Complete project records will also be kept at the following locations:

NYSDEC Region 8 Division of Environmental Remediation
6274 East Avon-Lima Road
Avon, New York 14414-9519
Attn: Matthew Gillette (585) 226-5308
or Lisa LoMaestro-Silvestri (585) 226-5326
Hours: M-F, 8:30-4:45

4.2 Public Comment Periods

Public comment will be solicited after the submittal of the Draft RI Work Plan to the NYSDEC. A 45-day comment period will also be provided before final approval of the RI/AAR submitted upon completion of remedial investigation activities.

4.3 Public Meetings

If requested, public meetings will be held to explain the proposed Work Plan and offer an opportunity for comments.

5.0 Project Contacts

For additional information about the project at the Former Service Station Site, the public is encouraged to contact any of the following project staff:

New York State Department of Environmental Conservation-Region 8
Matthew P. Gillette, P.E.
Division of Environmental Remediation
6274 East Avon-Lima Road
Avon, New York 14414-9519
Phone: (585) 226-5308

NYSDEC Regional Citizen Participation Specialist
Lisa LoMaestro-Silvestri
6274 East Avon-Lima Road
Avon, New York 14414-9519
Phone: (585) 226-5326

New York State Department of Health
Julia Kenney
547 River Street, Room 300
Troy, New York 12180-2216
Phone: (518) 402-7860

Monroe County Department of Health
Jeffrey Kosmala
111 Westfall Road – Room 976
P.O. Box 92832
Rochester, New York 14692-8932
Phone: (585) 274-6904
jkosmala@mc.rochester.lib.ny.us

Town of Clarkson
Paul Kimball
Town Supervisor
3710 Lake Road
P.O. Box 858
Clarkson, New York 14430
Phone: (585) 637-1130

6.0 Available Documents

The Town of Clarkson Town Hall has a complete inventory of all documents related to the Former Service Station Site. Additional documents will be developed during the course of the remedial investigation and cleanup. These documents will be available in the repositories. Their availability will be announced through fact sheets and public meetings.

7.0 Public Contact List

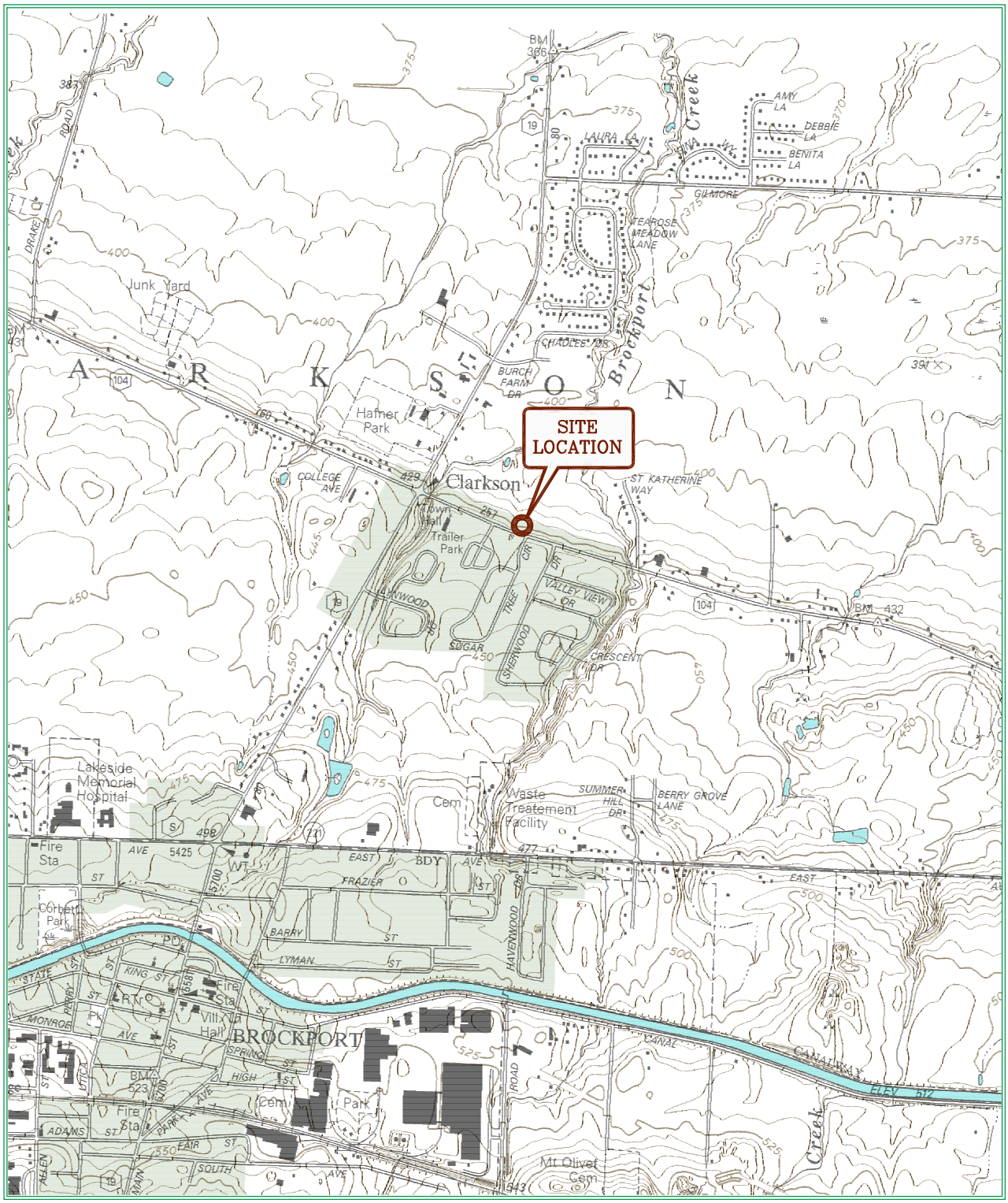
The Town of Clarkson has developed a list of interested and affected parties to aid in keeping the community informed and involved during all investigation and cleanup activates at the Former Service Station Site. The list includes neighboring property owners, generally within a block of the Site; citizens groups; local news media; local, state and federal officials; civic, business and environmental organizations. The contact list will be reviewed periodically and updated as appropriate. The list will be used for all mailings, notices and fact sheets. Any interested and/or affected parties are encouraged to ask to be included on the contact list.

The Public Contact List is included as Appendix 1.

Table 1
Summary of Citizen Participation Activities

Project Phase	Document to Repository	Notice	Fact Sheet	Comment Period	Other
Assessment Grant Application	Yes	Newspaper Notice	N/A	30 days	Creation of Contact List
Proposed Remedial Investigation Work Plan	Yes	Citizens Mailing	Yes	N/A	Approval of CP Plan
Draft Remedial Feasibility Report	Yes	Citizens Mailing	Yes	45 Days	--

Figure 1
Site Location Map



SCALE: 1" = 2000'

Lu Engineers
ENVIRONMENTAL • TRANSPORTATION • CIVIL

FIGURE 1. SITE LOCATION MAP

TOWN OF CLARKSON (FORMER SERVICE STATION)
8264 RIDGE ROAD WEST
BROCKPORT, NEW YORK 14420

DATE:	JULY 2010
SCALE:	1:24,000
DRAWN BY:	DLS

MAP SOURCE: NYS DOT RASTER QUADRANGLE
BROCKPORT / MONROE COUNTY
DOT EDITION DATE: 1997 / USGS CONTOUR DATA: 1971

J:\Projects\40500 Clarkson\40503 Brownfield Inv-Cleanup\Cadd\IRM\USGS-LocationMap.dwg, 2/28/2011 11:32:58 AM, diane'AC2009

Appendix 1
Public Contact List

Contact Person	Organization	Address
Media Contacts		
News Director	WROC-TV 8	201 Humboldt St. Rochester, NY 14610
News Director	R News Channel 9	71 Mt. Hope Ave. Rochester, NY 14620
News Director	WHEC-TV 10	191 East Ave. Rochester, NY 14604
News Director	WOKR-TV 13	P.O. Box 20555 Rochester, NY 14602-0555
News Director	WXXI-TV 21	280 State St. Rochester, NY 14614
Assignment Editor	Rochester Democrat and Chronicle	55 Exchange Blvd. Rochester, NY 14614
Elected Officials		
U.S. Congressman Thomas Reynolds	U.S. House of Representatives	500 Essjay Rd. Williamsville, NY 14221
U.S. Senator Hillary Rodham Clinton	U.S. Senate	100 State St. Rochester, NY 14614
U.S. Senator Charles Schumer	U.S. Senate	100 State St. Rochester, NY 14614
Assemblyman Brian Kolb	NYS Assembly	481 Hamilton St. Geneva, NY 14456
Senator Patricia McGee	NYS Senate	700 State St., Westgate Plaza Olean, NY 14760
Maggie Brooks	Monroe County Executive	110 County Office Building 39 W. Main St. Rochester, NY 14614
Paul Kimball	Town of Clarkson	3710 Lake Road P.O. Box 858 Clarkson, NY 14430

Contact Person	Organization	Address
Agency Officials		
David Goodwin	Town of Clarkson Highway Department	3710 Lake Road P.O. Box 858 Clarkson, NY 14430
Matthew P. Gillette, P.E.	NYSDEC Region 8	6274 East Avon-Lima Rd. Avon, NY 14414
Bart Putzig, P.E.	NYSDEC Region 8	6274 East Avon-Lima Rd. Avon, NY 14414
Lisa LoMaestro-Silvestri	NYSDEC Region 8 Citizen Participation Office	6274 East Avon-Lima Rd. Avon, NY 14414
Linda Vera	NYSDEC Region 8 Citizen Participation Office	6274 East Avon-Lima Rd. Avon, NY 14414
Captain Michael Van Durme	NYSDEC Region 8 Law Enforcement	6274 East Avon-Lima Rd. Avon, NY 14414
Jeffrey Kosmala	Monroe County Department of Health	111 Westfall Road, Rm. 938 Rochester, NY 14620
Julia Kenny	New York State Department of Health	Flanigan Square 547 River Street, Room 300 Troy, NY 12180-2216
Interested Parties		
Barbara Warren, Executive Director	Citizen's Environmental Coalition	33 Central Ave., 3rd Floor Albany, NY 12210
Document Repository		
	Town of Clarkson Town Hall	3710 Lake Road P.O. Box 858 Clarkson, NY 14430
	NYSDEC Region 8	6274 East Avon-Lima Rd. Avon, NY 14414

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Adjacent Residents		
Patrick Evans or Current Resident	Neighbor- vacant land, north of the Site	
James D. Hare or Current Resident	Neighbor- 8265 Ridge Road West	8265 Ridge Road West. Clarkson, NY
Arthur Wisnowski or Current Resident	Neighbor- 8251 Ridge Road West	
Ruth Twigger or Current Resident	Neighbor- 8287 Ridge Road West	8287 Ridge Road West Clarkson, NY
Ronald Beardslee or Current Resident	Neighbor- 8258 Ridge Road West	8258 Ridge Road West Clarkson, NY
Randall Dangler or Current Resident	Neighbor- 8280 Ridge Road West	

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Appendix 2

Environmental Restoration Program Glossary and Acronyms

This glossary defines terms associated with New York's citizen participation program, and important elements of the Brownfield program. Words in **bold** in the definitions are defined elsewhere in the glossary.

Administrative Record — Part of a site's **Record of Decision** which lists and defines documents used in the development of NYSDEC's decision about selection of a remedial action.

Availability Session — A scheduled gathering of program staff and members of the public in a casual setting, without a formal presentation or agenda but usually focusing on a specific aspect of a site's remedial process.

Citizen Participation — A program of planning and activities to encourage communication among people affected by or interested in Brownfield sites and the government agencies responsible for investigating and remediating them.

Citizen Participation Plan — A document which must be developed at a site's **Site Investigation** stage. A CP Plan describes the citizen participation activities that will be conducted during a site's remedial process.

Citizen Participation Specialist — A staff member from an NYSDEC central office of regional office who has specialized training and experience to assist a **project manager** and other staff to plan, conduct and evaluate a site-specific citizen participation program.

Comment Period — A time period for the public to review and comment about various documents and DER actions. For example, a 45-day comment period is provided when DER issues a **Proposed Remedial Action Plan (PRAP)**.

Contact List — Names, addresses and/or telephone numbers of individuals, groups, organizations, government officials and media affected by or interested in a particular Brownfield site. The size of a contact list and the categories included are influenced by population density, degree of interest in a site, the stage of the remedial process and other factors. It is an important tool needed to conduct outreach activities.

Division of Environmental Remediation

A major program unit within the New York State Department of Environmental Conservation created to manage the hazardous waste site remedial program, the Brownfield program, and the Voluntary Cleanup program. Staff include: engineers, geologists, chemists, attorneys, citizen participation specialists, environmental program specialists and support staff.

Document Repository

A file of documents pertaining to a site's remedial and citizen participation programs which is made available for public review. The file generally is maintained in a public building near the Brownfield site to provide access at times and a location convenient to the public.

Fact Sheet

A written discussion about part or all of a site's remedial process, prepared and provided by DER to the public. A fact sheet may focus on: a particular element of the site's remedial program; opportunities for public involvement; availability of a report or other information, or announcement of a **public meeting** or **comment period**. A fact sheet may be mailed to all or part of a site's **contact list**, distributed at meetings, placed in a **document repository** and/or sent on an "as requested" basis.

Interim Remedial Measure (IRM)

A discrete action which can be conducted at a site relatively quickly to reduce the risk to people's health and the environment from a well-defined contamination problem. An IRM can involve removing contaminated soil and drums, providing alternative water supplies or securing a site to prevent access.

New York State Department of Health

Agency within the executive branch of New York State government which: performs health-related inspections at suspected contaminated sites; conducts health assessments to determine potential risk from environmental exposure; reviews Exposure Assessments prepared during the **Site Investigation/Remedial Alternatives Report**; conducts health-related community outreach around sites; and reviews remedial actions to assure that public health concerns are adequately addressed.

Operable Unit

A discrete part of an entire site that produces a release, threat of release, or pathway of exposure. An Operable Unit can receive specific investigation, and a particular remedy may be proposed. A **Record of Decision** is prepared for each Operable Unit.

Operation and Maintenance

A period in which remedial action may be conducted following construction at a site (for example, operation of a "pump and treat" system), or which is performed after a remedial action to assure its continued effectiveness and protection of people's health and the environment. Activities can include site inspections, well monitoring and other sampling.

Project Manager

An NYSDEC staff member within the **Division of Environmental Remediation** (usually an engineer, geologist or hydro geologist) responsible for the day-to-day administration of remedial activities at, and ultimate disposition of, an Environmental Restoration site. The Project Manager works with legal, health, **citizen participation** and other staff to accomplish site-related goals and objectives.

Proposed Remedial Action Plan (PRAP)

An analysis by DER of each alternative considered for the remediation of an Environmental Restoration site and a rationale for selection of the alternative it recommends. The PRAP is created based on information developed during the **Site Investigation/Remedial Alternatives Report**. The PRAP is reviewed by the public and other state agencies.

Public Meeting

A scheduled gathering of **Division of Environmental Remediation** staff with the affected/interested public to give and receive information, ask questions and discuss concerns about a site's remedial program. Staff from other NYSDEC divisions, legal and health staff, and staff from consultants and a responsible party often also attend. A public meeting, unlike an **availability session**, generally features a formal presentation and a detailed agenda.

Record of Decision (ROD) — A document which provides definitive record of the cleanup alternative that will be used to remediate an Environmental Restoration site. The ROD is based on information and analyses developed during the **Site Investigation/Remedial Alternatives Report** and public comment.

Remedial Construction — The physical development, assembly and implementation of the remedial alternative selected to remediate a site. Construction follows the **Remedial Design** stage of a site's remedial program.

Remedial Design — The process following finalization of a **Record of Decision** in which plans and specifications are developed for the **Remedial Construction** of the alternative selected to remediate a site.

Remedial Investigation/ Alternatives Analysis Report (SI/RAR) — The RI fully defines and characterizes the type and extent of contamination at the site. The AAR, which may be conducted during or after the RI, uses information developed during the RI to develop alternative remedial actions to eliminate or reduce the threat of contamination to public health and the environment.