Site Characterization Work Plan
Ash Road Site (7-04-032)
Vestal, Broome County, New York

Prepared for

New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233

Prepared by

EA Engineering, P.C., and Its Affiliate
EA Science and Technology
6712 Brooklawn Parkway, Suite 104
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(315) 431-4610

May 2008
Revision: FINAL
EA Project No. 14368.28

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28 May 2008

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28 May 2008

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May 2008
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1. INTRODUCTION

1.1 PROJECT BACKGROUND

The New York State Department of Environmental Conservation (NYSDEC) issued EA Engineering, P.C. and its affiliate EA Science and Technology (EA) an Immediate Activation Work Assignment (IAWA) to perform a Site Characterization at the Ash Road Site (NYSDEC Site No. 7-04-032). The site consists of a former commercial property located on Ash Road, in Vestal, Broome County, New York (Figure 1). The investigation will be expanded to areas where other commercial properties are located including areas on Ash Road, Sycamore Street, Stewart Street, Vestal Parkway, and Oziald Avenue.

The Work Assignment will be conducted under the NYSDEC State Superfund Standby Contract (Work Assignment No. D004438-26). An initial step in the Site Characterization is to prepare a Work Plan which describes the anticipated work activities. The elements of this Work Plan were prepared in accordance with the most recent and applicable guidelines and requirements of the NYSDEC and the New York State Department of Health (NYSDOH).

1.2 DESCRIPTION OF WORK TASKS

The following tasks will be completed as part of the Site Characterization:

- Work plan development and records review
- Field investigation including soil and groundwater investigation, and site survey
- Field documentation and reporting.

A brief summary of each activity is provided below and further details of the field activities are provided in Section 3.

1.2.1 Work Plan Development and Records Review (Task 1)

A conference call was conducted on 3 March 2008 to discuss the development of the Project Management Work Plan (PMWP) and the Site Characterization Work Plan. Meeting attendees included a representative from the NYSDEC Division of Environmental Remediation and EA. The conference call was performed in order to become familiar with the site and discuss proposed field work activities. A meeting was held at the site with the NYSDEC on 25 March 2008 to assess site conditions for drilling and further discuss the work plan.

A records review of data provided by the NYSDEC will be completed prior to site investigation field activities. An environmental records search including Sanborn maps, historical aerial photographs and topographic maps, telephone directories, and federal and state database records provided by Environmental Data Resources, Inc. will also be reviewed prior to the field activities.

1.2.2 Field Investigation (Task 2)

1.2.2.1 Soil and Groundwater Investigation

Soil and groundwater investigations will consist of soil borings, monitoring well installation, and soil and groundwater sampling at various locations throughout the targeted area. The protocol for this effort will follow the NYSDEC Division of Environmental Remediation *Draft DER-10 Technical Guidance for Site Investigation and Remediation*, December 2002.

1.2.2.2 Site Survey

A site survey will be completed by a surveying professional to determine topographic information and locate building structures and site feature for the preparation of a base map and groundwater contour map.

1.2.3 Field Documentation and Reporting (Task 3)

Field logbooks, soil boring logs, and groundwater sampling logs will be used during all on-site work. A dedicated field logbook will be maintained by the site manager overseeing the site activities. In addition to the logbook, original sampling forms used during the field activities will be submitted to NYSDEC as part of the final report. Field activities, including installation of the groundwater monitoring wells, will be photo documented.

Upon completion of the field activities, a site characterization report in accordance with Section 3.13 of DER-10 will be prepared and submitted to NYSDEC that includes a summary of field and laboratory analytical data, presents the locations of field samples, and a summary/discussion of the findings of the Remedial Investigation/Feasibility Study.

1.3 WORK PLAN ORGANIZATION

This Work Plan is organized into the following sections:

- ***Section 1***—The Introduction describes the overall approach and specific activities that will be performed during the site investigation at the Ash Road Site.

- ***Section 2***—The Site Background provides a brief site description and history.

- ***Section 3***—The Scope of Work section describes the various field activities to be completed during the investigation.

- ***Section 4***— The Storage and Disposal of Waste section describes the procedures for the storage and disposal of investigative derived waste generated during the site investigation.

- ***Section 5***—The Site Survey and Mapping section describes methods to collect and prepare site maps and groundwater maps.

- ***Section 6***— Provides the Data validation/determination of usability.

- ***Section 7***— Provides the Quality Assurance Project Plan (QAPP).

- ***Section 8***— Provides the Health and Safety Plan (HASP).

Field forms are provided in Appendix A. The following two project-specific technical plans were developed for this site investigation and are included as Appendixes B and C:

- The specific procedures for the collection, analysis, and evaluation of data that will be legally and scientifically defensible are presented in the QAPP Addendum (Appendix B). Sample forms to be completed during performance of field activities are provided in the QAPP Addendum Attachments.

- The site-specific hazards and levels of protective measures to be implemented in order to protect the safety and health of field personnel are detailed in the site HASP Addendum (Appendix C).

The PMWP for this Work Assignment (Schedule 2.11, Minority and Women-owned Business Enterprise utilization, Project Organization, and Schedule) was submitted as a separate deliverable on 29 April 2008.

2. SITE BACKGROUND

2.1 SITE LOCATION AND DESCRIPTION

The Ash Road site is a commercial property formerly known as Town Square Body Shop and Hall Plumbing. The property was purchased by Shippers Holding Company/Lowes Corporation in the late 1990s. The buildings were demolished during the construction of the Lowes retail store. The site currently consists of paved parking which is part of the larger parking lot for Lowes located on Sycamore Street. Surrounding properties includes a combination of commercial and residential. There is an auto repair shop and towing business (Wilcox Auto and Truck Service) located directly up gradient of the site which has a record of spills and reported dumping. Two other commercial businesses are located on Ash Road including Safelite Auto Glass and Auto Finishes Supply Company. A trailer park is located directly to the east of the site on Stewart Street.

2.2 GEOLOGY AND HYDROGEOLOGY

A review of the geologic map of New York, Hudson Sheet published by the University of the State of New York, the State Education Department, dated 1970, indicates that bedrock in this area is made up of units of the Sonyea Group including Rye Point Shale, Rock Stream Siltstone, Pultney, Sawmill Creek, Johns Creek and Montour Shales. These units consist of stratified units of sedimentary bedrock from the Upper Devonian and are approximately 200-1000 feet thick.

Soil boring logs generated during previous investigations conducted at the site indicate that the unconsolidated material at the site to depths of approximately 15 ft below grade consist of fine sand and silt with some intermittent layers of sand and gravel. Groundwater was encountered at approximately 4 to 8 ft below grade. Based on groundwater elevation data in the available report, groundwater flows generally from south to north across the site. The Clinton Street Ball Park Sole Source Aquifer underlies the site which is a very sensitive environmental receptor in the area. Several municipal and private water wells were also identified in the area.

2.3 SITE HISTORY/PREVIOUS INVESTIGATIONS

A Limited Phase II was completed by Gaynor and Associates at the former Town Square Body shop and Hall Plumbing in 1996. The results of the investigation were reported in Phase I/Limited Phase II Environmental Site Assessment, January 1996. Data collected during the investigation indicated that the soil and groundwater were impacted by chlorinated compounds and volatile organic compounds (VOCs). Perchloroethylene (PCE) concentrations in groundwater were as high as 27,000 ppb. Trichloroethene (TCE) concentrations in groundwater were reported as high as 4,630 ppb.

A Site Characterization investigation will be conducted at the Ash Road Site to determine the nature and extent of TCE and PCE contamination in the soil and groundwater at the site, and to determine the source area of the impacts.

3. SCOPE OF WORK

This section describes the data to be obtained during the field activities along with the number, types, and locations of samples. A Generic QAPP (EA 2006)[1] was developed for field activities performed under the NYSDEC Standby Contracts D004438 and D004441. The field sampling protocols and quality assurance/quality control procedures are provided in the site specific QAPP Addendum (Appendix B). Daily field reports will be completed for each day of field activities. A copy of the daily field report form is provided in Appendix A.

3.1 SOIL BORING, GROUNDWATER MONITORING WELL INSTALLATION, AND SAMPLING

3.1.1 Soil Boring Installation

A minimum of 32 soil borings will be installed a minimum of 10 ft into the groundwater table at the site using direct push, hollow stem auger drilling methods or a combination of both. Total depths of the borehole will be approximately 15 ft below ground surface (bgs). Proposed soil borings locations are shown on Figure 2. Soil samples will be collected continuously from the surface to the total depth of the boreholes using split spoon or core samplers. Soil samples will be characterized according to the Unified Soil Classification System. Soil boring logs will be generated at each location.

3.1.2 Soil Sampling Procedures

A photoionization detector (PID) with a 10.6 eV lamp will be used to screen soil samples from each interval. Samples will be collected from the samplers using clean nitrile gloves and placed in sealed plastic bags labeled with boring number, sampling interval, and recovery data and allowed to equilibrate before PID measurements are collected. If organic compounds are detected by the PID then one soil sample will be collected from the interval with the highest PID measurement and sent for laboratory analysis of VOCs by U.S. Environmental Protection Agency (USEPA) Method 8260B. If VOCs are not detected in samples, soil samples will be not be collected for analysis. Soil samples selected for analysis will be transferred from sealed plastic bags to properly labeled laboratory containers using clean nitrile gloves. Soil sample containers will be placed in ice filled coolers prepared for shipment. Samples will be shipped to the analytical laboratories within 24 hours. Some of the soil samples may be analyzed on an accelerated turn around time to help the site manager determine optimal locations of down gradient soil boring and monitoring wells. The samples will be labeled, handled, and packaged following the procedures described in Generic QAPP and QAPP Addendum. Quality assurance/quality control samples will be collected at the frequency detailed in the Generic

1. EA Engineering, P.C. 2006. *Generic Quality Assurance Project Plan for Work Assignments under NYSDEC Contracts D004438 and D004441*. October.

QAPP, QAPP Addendum, and Table 1. Soil cuttings generated during monitoring well installation will be drummed and disposed of as detailed in Section 4.

3.1.3 Monitoring Well Installation

Twenty monitoring wells will be installed in selected borings to the approximate depths of 15 ft bgs depending on groundwater elevations. The monitoring wells will be constructed of 2-in. polyvinyl chloride (PVC) casing and 10 ft of 0.010-slot screen. A sand pack will be installed around the screen up to 2 ft above the top of the screen. A 2-ft bentonite seal will be placed above the sand pack and the remaining annular space will be filled with bentonite grout to approximately 0.5 ft below the surface. Flush mounted steel covers and concrete pads of approximately 12-in. diameter be installed to protect each of the monitoring wells.

3.1.4 Monitoring Well Development

The newly installed monitoring wells will be developed no sooner than 24 hours following installation. The wells will be developed using surging and pumping techniques. Well development will be considered complete when temperature, conductivity, and pH have stabilized and a turbidity of less than 50 nephelometric turbidity units (NTUs) has been achieved. Development water will be handled and disposed of as detailed in Section 4.

3.1.5 Groundwater Sampling

Groundwater samples will be collected from each of monitoring wells using low flow sampling techniques. The groundwater samples will be collected using the procedures outlined in the Section 3.1.8. Groundwater samples in all wells will be analyzed for VOCs by USEPA Method 8260B. Groundwater samples will also be collected and analyzed in accordance with NYSDEC Analytical Services Protocol. Some of the samples may be analyzed on accelerated turn around times to assist the site manager in determining the location of down gradient soil boring and monitoring wells. Mitkem Corporation of Warwick, RI will complete the analysis of samples collected on-site.

Groundwater monitoring well sampling procedures will include water level measurements, well purging, field measurements, and sample collection at each monitoring well location. A copy of the purging and sampling log form used to record well purging, water quality measurements, and sampling flow rates is provided in Appendix A. The objective of the groundwater sampling protocol is to obtain samples that are representative of the aquifer in the well vicinity so that analytical results reflect the composition of the groundwater as accurately as possible.

Rapid and significant changes can occur in groundwater samples upon exposure to sunlight, temperature, and pressure changes at ground surface. Therefore, groundwater sampling will be conducted in a manner that will minimize interaction of the sample and the surface environment. The equipment and protocol for collecting groundwater samples by each method are described below.

3.1.6 Purging and Sampling Equipment

Well purging and sampling will be performed using the following:

- Disposable Teflon bailers, grunfos submersible pump, or peristaltic pump
- Electronic water level measurement unit with accuracy of 0.01 ft
- PID instrument (MiniRAE or similar) to monitor vapor concentrations during purging and sampling as required by the HASP.

3.1.7 Field Analytical Equipment

Field equipment to be used at the site will include a Horiba U-22 water quality meter (or similar) with a flow-through cell, which includes probes for measurement of pH, Eh, turbidity, dissolved oxygen, temperature, and conductivity. Additionally, a PID will be used to get a headspace reading on the well head during groundwater sampling. Each piece of equipment will be checked by the EA Site Manager to be in proper working order before its use and calibrated as required by the manufacturer. Prior to each use, field analytical equipment probe(s) will be decontaminated. After each use, the instrument will be checked and stored in an area shielded from weather conditions.

Instruments will be calibrated at the beginning of each day of groundwater sampling.

3.1.8 Groundwater Sampling Procedures

During the groundwater sampling, groundwater samples will be analyzed by an approved Environmental Laboratory Approval Program (ELAP)-certified laboratory for VOCs by USEPA Method 8260B in accordance with NYSDEC Analytical Services Protocol. The following procedures will be used for monitoring well groundwater sampling:

- Wear appropriate personal protective equipment as specified in the HASP and the HASP Addendum. In addition, samplers will use new sampling gloves for the collection of each sample.
- Unlock and remove the well cap.
- Obtain PID readings and record them in the field logbook.
- Measure the static water level in the well with an electronic water level indicator. The water level indicator will be washed with Alconox detergent and water, then rinsed with deionized water between individual wells to prevent cross-contamination. Decontamination fluids will be containerized.

- Calculate the volume of water in the well.

- Purge using dedicated Teflon bailer procedures. Purged water will be containerized separately from decontamination fluids.

- Allow field parameters of turbidity, pH, reduction-oxidation potential (Eh), dissolved oxygen, specific conductivity, and temperature to stabilize before sampling. Purging will be complete if the following conditions are met:

  — Turbidity is below 50 NTUs
  — Consecutive pH readings are ±0.2 pH units of each other
  — Consecutive water temperatures are ±0.5°C of each other
  — Consecutive measured specific conductance is ±10 percent of each other.

  If these parameters are not met after purging a volume equal to three times the volume of standing water in the well, the EA Project Manager will be contacted to determine the appropriate action(s).

- If the well goes dry before the required volumes are removed, the well may be sampled when it recovers (recovery period up to 24 hours). Obtain sample from well with a bailer suspended on new, clean nylon twine. The sampling will be performed with a new bailer dedicated to each individual well. Collect the sample aliquot for VOC analysis by lowering and raising the bailer slowly to avoid agitation and degassing, then carefully pour directly into the appropriate sample bottles.

- Sample bottles containing appropriate preservative for the parameter to be analyzed will be obtained from the laboratory.

- Obtain field measurement of pH, dissolved oxygen, temperature, and specific conductivity and record it on the purging and sampling form. The instruments will be decontaminated between wells to prevent cross-contamination.

- Place analytical samples in cooler and chill to 4°C. Samples will be shipped to the analytical laboratories within 24 hours.

- Re-lock well cap.

- Fill out field logbook, sample log sheet, labels, custody seals, and chain-of-custody forms.

Groundwater samples will be placed in appropriate sample containers, sealed, and submitted to the laboratory for analysis. The samples will be labeled, handled, and packaged following the procedures described in Generic QAPP and QAPP Addendum. Quality assurance/quality control

samples will be collected at the frequency detailed in the Generic QAPP, QAPP Addendum, and Table 1.

3.2 DECONTAMINATION PROCEDURES

All non-dedicated equipment and tools used to collect samples for chemical analysis will be decontaminated prior to and between each sample interval using an Alconox rinse and potable water rinse. Additional cleaning of the equipment with steam may be needed under some circumstances. Decontamination fluids will be collected and stored in an appropriate container and disposed of appropriately. Contaminated materials will be disposed of daily by a regulated hauler.

3.3 LABORATORY ANALYSIS AND REPORTING

Soil and groundwater samples will be analyzed by an Environmental Lead Proficiency Analytical Testing (ELPAT) and ELAP-certified laboratory for full Target Compound List (TCL) of VOCs by USEPA Method 8260B.

It is anticipated that preliminary analytical results will be available within 2 weeks of receipt at the laboratory, and final results will be provided within the standard turnaround time (i.e., 30 days). All samples collected will be validated by a third party independent of the laboratory that performed the analyses and the consultant that performed the field work. A usability analysis will be conducted by a qualified data validator and a Data Usability Summary Report will be submitted to NYSDEC.

3.4 SITE CHARACTERIZATION REPORT

Upon completion of the field activities, a Site Characterization Report will be prepared and submitted to NYSDEC in accordance with Section 3.13 of DER-10. The report will include a summary of field and laboratory analytical data, site maps showing sampling locations and resistivity surveys, groundwater contours and flow direction, three dimensional map of geophysical data, isoconcentration contour maps of potential contamination plumes, and a discussion of the findings.

4. STORAGE AND DISPOSAL OF WASTE

EA is responsible for the proper storage, handling, and disposal of investigative derived waste, including personal protective equipment, and solids and liquids generated during the soil boring installation activities. All drummed materials will be clearly labeled with their contents and origin. All investigative derived waste will be managed in accordance with NYSDEC Department of Remediation Technical and Administrative Guidance Memorandum 4032.

Accordingly, handling and disposal will be as follows:

- Liquids generated from contaminated equipment or a decontamination activity that exhibit visual staining, sheen, or discernable odors will be collected in drums or other containers at the point of generation. They will be stored in a temporary staging area. A regulated waste subcontractor will then remove the generated waste stream and dispose of them at an off-site location.

- Liquid generated during existing and temporary well sampling or a decontamination activity will be collected in drums or other containers at the point of generation. Drums will be moved to a central location for pick up as arranged by EA.

- Soil and rock spoils from drilling operations that exhibit visible staining, sheen, or discernable odors will be containerized in drums and placed in a central location to be picked up by the waste hauler.

- Used protective clothing and equipment that is suspected to be contaminated with hazardous waste will be placed in plastic bags, packed in 55-gal ring-top drums, and transported to the drum staging area to be picked up by the waste hauler.

- Non-contaminated trash and debris will be placed in a trash dumpster and disposed of by a local garbage hauler.

- Non-contaminated protective clothing will be packed in plastic bags and placed in a trash dumpster for disposal by a local garbage hauler.

5. SITE SURVEY

The site survey will be performed by survey professional and will include topographic information, monitoring wells and soil boring locations, and site structures. A base map of the site and immediate vicinity will be developed using survey data. Relevant features of the site and adjacent areas, including street names, businesses, and other known features will be identified on the base map.

6. DATA VALIDATION/DETERMINATION OF USABILITY

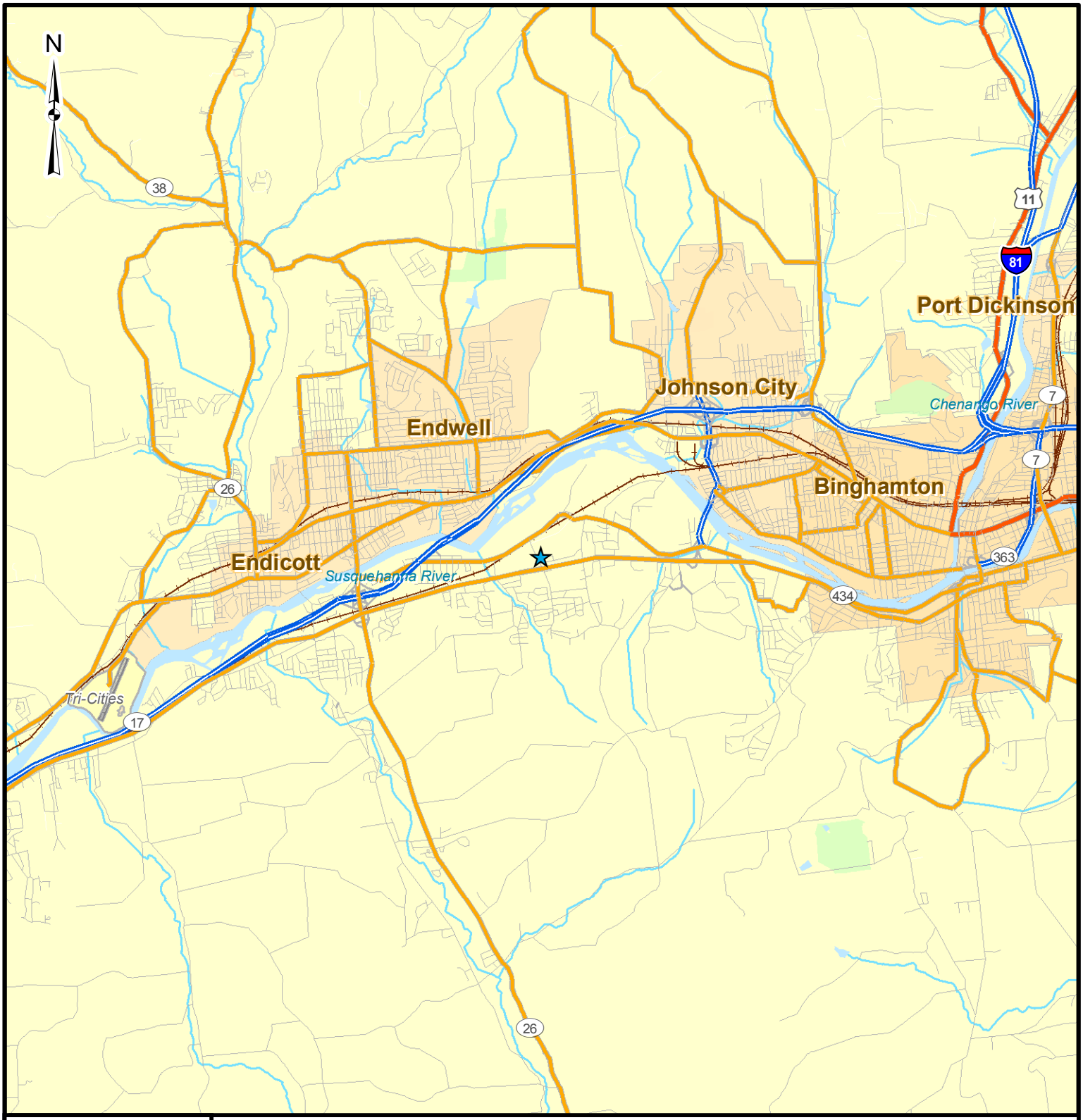
The collection and reporting of reliable data is a primary focus of the sampling and analytical activities. Laboratory and field data will be reviewed to determine the limitations, if any, of the data and to assure that the procedures are effective and that the data generated provide sufficient information to achieve the project objectives. A qualified independent third party will evaluate the analytical data according to NYSDEC Department of Environmental Remediation Data Usability Summary Report guidelines.

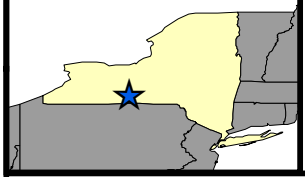
7. QUALITY ASSURANCE PROJECT PLAN

A Generic QAPP has been developed describing sampling, analysis, testing, and monitoring that could potentially be conducted during Work Assignments under the NYSDEC Standby Subcontracts D004438 and D004441. As previously stated, the Generic QAPP was submitted under separate cover on 20 June 2006 to the NYSDEC. An addendum to the Generic QAPP was developed to address site-specific quality assurance/quality control issues (Appendix B) for the proposed activities to complete the remedial investigation.

8. HEALTH AND SAFETY PLAN

A Generic HASP was developed for the Work Assignments conducted under the NYSDEC Standby Contracts D004438 and D004441. As previously stated, the Generic HASP was submitted under a separate cover on 20 June 2006 to the NYSDEC. An addendum to the Generic HASP was developed to address site-specific health and safety issues (Appendix C) for the proposed activities to complete the remedial investigation.





Legend

- Limited Access
- Highway
- Major Road
- Local Road
- Minor Road
- Other Road
- Ramp
- Railroads (Local)
- Stream
- Water

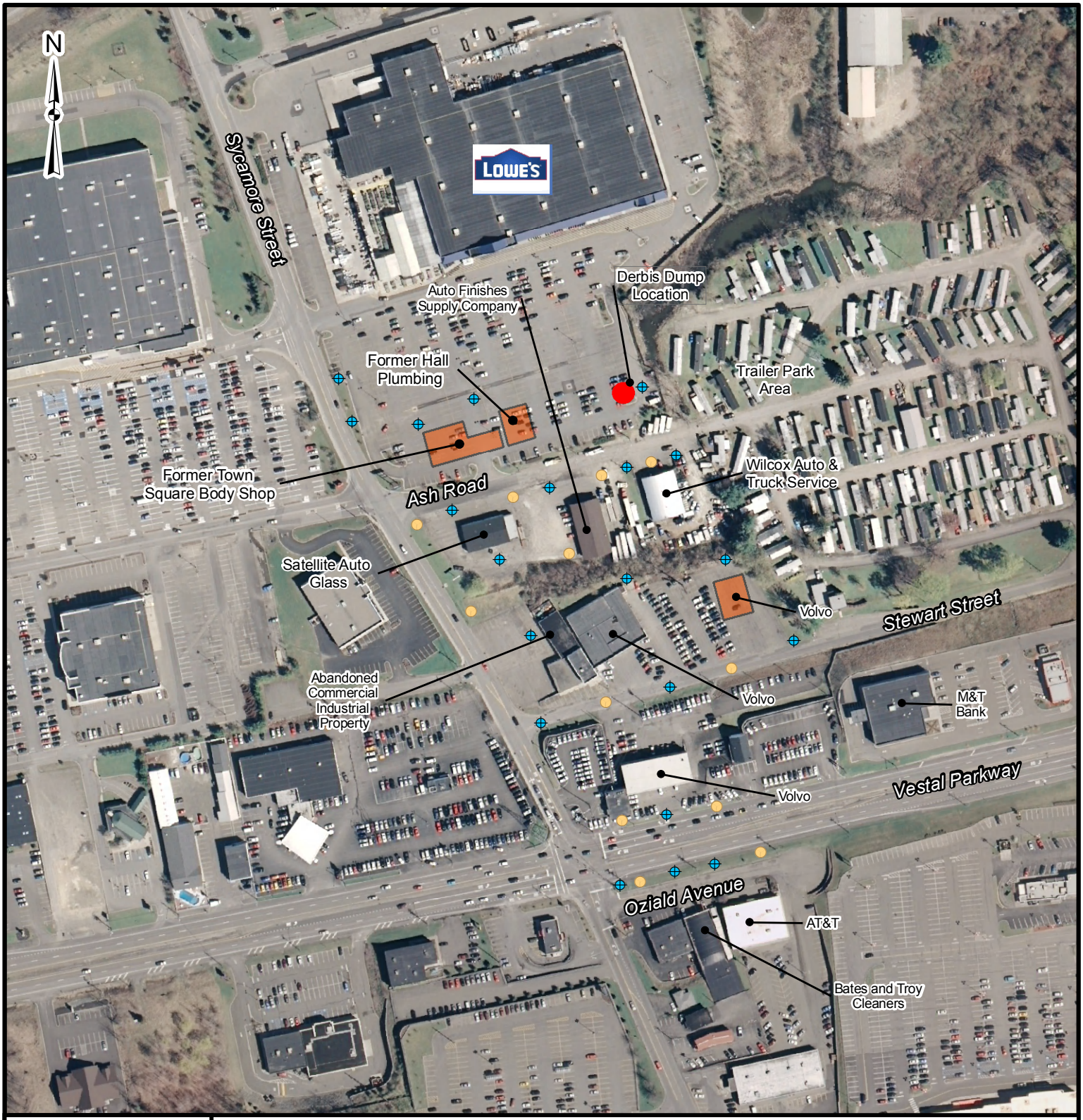
0 0.5 1 2 3 4 5 Miles

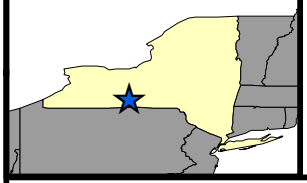
Source: ESRI Street Maps USA

ASH ROAD SITE
SITE CHARACTERIZATION WORK PLAN
VESTAL, NEW YORK

FIGURE 1
SITE LOCATION MAP

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	SCALE:	DATE:	PROJECT NO:	FILE NO:
JAG	CJS	MJS	JAG	AS SHOWN	3-18-2008	14368.28	GIS/PROJECTS/ FIGURE1.MXD





Legend

Proposed Well Locations

- Monitoring Well
- Soil Boring
- **BuildingFootprints**

0 75 150 300 450 600 Feet

Source: Orthophoto image, 2006 NYS Office of Cyber Security & and Critical Infrastructure Coordination (OCSCIC).

ASH ROAD SITE
SITE CHARACTERIZATION WORK PLAN
VESTAL, NEW YORK

FIGURE 2
PROPOSED SOIL BORINGS AND MONITORING WELLS LOCATIONS

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	SCALE:	DATE:	PROJECT NO:	FILE NO:
JAG	MJS	MJS	JAG	AS SHOWN	APRIL 2008	14368.28	GIS/PROJECTS/ FIGURE1.MXD

Appendix A

Field Forms

FIELD BORING LOG FORM

EA Engineering, P.C.
EA Science and Technology

LOG OF SOIL BORING

Coordinates: _____
Surface Elevation: _____
Casing Below Surface: _____
Reference Elevation: _____
Reference Description: _____

Job. No.	Client: New York State Department of Environmental Conservation	Location:
Drilling Method:		Soil Boring Number:
Sampling Method:		Sheet 1 of
		Drilling Start / Finish

Water Lev.				
Time				

Blow Counts (140-lb)	Feet Drvn/Ft. Recvrd	Well Diagram	PID (ppm) HNu	Depth in Feet		USCS Log	Surface Conditions: Weather: Temperature:
				0			
				1			
				2			
				3			
				4			
				5			
				6			
				7			
				8			
				9			
				10			
				11			
				12			
				13			
				14			
				15			
				16			
				17			
				18			
				19			
				20			

Logged by: _____ Date: _____

Drilling Contractor: _____ Driller: _____

EA Engineering P.C. and its Affiliate
EA Science and Technology

GROUNDWATER SAMPLING PURGE FORM

Well I.D.:	**EA Personnel:**	**Client:**
Location:	**Well Condition:**	**Weather:**
Sounding Method:	**Gauge Date:**	**Measurement Ref:**
Stick Up/Down (ft):	**Gauge Time:**	**Well Diameter (in):**

Purge Date:	**Purge Time:**
Purge Method:	**Field Technician:**

Well Volume		
A. Well Depth (ft):	**D. Well Volume (ft):**	**Depth/Height of Top of PVC:**
B. Depth to Water (ft):	**E. Well Volume (gal) C*D):**	**Pump Type:**
C. Liquid Depth (ft) (A-B):	**F. Five Well Volumes (gal) (E3):**	**Pump Designation:**

Water Quality Parameters

Time (hrs)	DTW (ft btoc)	Volume (liters)	Rate (Lpm)	pH (pH units)	ORP (mV)	Temperatur (oC)	Conductivity (uS/cm)	DO (ug/L)	Turbidity (ntu)

Total Quantity of Water Removed (gal): _____ **Sampling Time:** _____
Samplers: _____ **Split Sample With:** _____
Sampling Date: _____ **Sample Type:** _____

COMMENTS AND OBSERVATIONS: _____

Appendix B

Quality Assurance Project Plan Addendum

Quality Assurance Project Plan Addendum
for a Site Characterization
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28 May 2008

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EA Engineering, P.C.

28 May 2008

Judith A. Graham, Project Manager — Date
EA Science and Technology

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Revision: FINAL
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CONTENTS

LIST OF TABLES

1. PURPOSE AND OBJECTIVES

1.1 PURPOSE

A Generic Quality Assurance Project Plan (QAPP) (EA 2006)[1] was developed for field activities performed under the New York State Department of Environmental Conservation (NYSDEC) Standby Contracts D004438 and D004441. This QAPP Addendum was prepared for the Work Plan associated with performance of the site characterization at the Ash Road Site, located in Vestal, Broome County, New York (NYSDEC Site No 7-04-032). The principal purpose of this QAPP Addendum is to supplement the Generic QAPP with site-specific procedures for the collection, analysis, and evaluation of data that will be legally and scientifically defensible.

1.2 QUALITY ASSURANCE PROJECT PLAN OBJECTIVES

This QAPP Addendum provides site-specific information and standard operating procedures applicable to all work performed at the site that is not included in the Generic QAPP. The information includes definitions and generic goals for data quality and required types and quantities of quality assurance/quality control (QA/QC) samples. The procedures address sampling and decontamination protocols; field documentation; sample handling, custody, and shipping; instrument calibration and maintenance; auditing; data reduction, validation, and reporting; corrective action requirements; and QA reporting. The Work Plan contains a site description and information on site field activities, such as sample locations, sampling procedures, analytical methods, and reporting limits.

1. EA Engineering, P.C. 2006. *Generic Quality Assurance Project Plan for Work Assignments under NYSDEC Contracts D004438 and D004441*. October.

2. PROJECT ORGANIZATION AND RESPONSIBILITIES

While all personnel involved in an investigation and the generation of data are implicitly a part of the overall project management and QA/QC program, certain members of the Project Team have specifically designated responsibilities. Project personnel responsibilities are summarized below.

2.1 EA ENGINEERING, P.C. AND ITS AFFILIATE EA SCIENCE AND TECHNOLOGY

EA Engineering, P.C. and its Affiliate EA Science and Technology (EA) will provide oversight, coordination, health and safety, field support, and evaluation of analytical data. Field support will be provided during subsurface soil sampling. EA also will be responsible for evaluation of analytical test results, which will be submitted to NYSDEC. The EA staff involved in this project are as follows:

- ***Tom Porter, EA Project QA/QC Officer—***The QA/QC Officer will provide guidance on technical matters and review technical documents relating to the project. He will assess the effectiveness of the QA/QC program and recommend modifications when applicable. Additionally, the QA/QC Officer may delegate technical guidance to specially trained individuals under his direction.

- ***Judith A. Graham., EA Project Manager***—The Project Manager provides overall coordination and preparation of the project within EA. This includes coordination with NYSDEC and New York State Department of Health, budget control, subcontractor performance, implementation of the QAPP, and allocation of resources and staffing to implement both the QA/QC program and the site Health and Safety Plan.

- ***Scott L. Graham, P.G., EA Project QA/QC Coordinator—***The Project QA/QC Coordinator is responsible for project-specific supervision and monitoring of the QA/QC program. He will ensure that field personnel are familiar with and adhere to proper sampling procedures, field measurement techniques, sample identification, and chain-of-custody procedures. He will coordinate with the analytical laboratory for the receipt of samples and reporting of analytical results, and will recommend actions to correct deficiencies in the analytical protocol or sampling. Additionally, he will prepare QA/QC reports for management review.

- ***Kris Charney, EA Site Manager***—The Site Manager will serve as the on-site contact person for field investigations and tests. He will be responsible for coordinating the field activities including inspecting and replacing equipment, preparing daily and interim reports, scheduling sampling, and coordinating shipment and receipt of samples and containers.

The Program Health and Safety Officer is also an integral part of the project implementation team.

- ***Peter Garger, EA Program Health and Safety Officer***—The Program Health and Safety Officer will be responsible for the development, final technical review, and approval of the Health and Safety Plan. In addition, he will provide authorization, if warranted, to modify personal protective equipment requirements based on field conditions. He will also provide final review of all health and safety monitoring records and personal protective equipment changes to ensure compliance with the provisions of the Health and Safety Plan.

2.2 LABORATORY

Laboratory analyses for this project will be performed by Mitkem in Warwick, RI, under a subcontract agreement with EA. Environmental Data Validation, Inc will have sample analysis and review responsibilities on this project. The laboratories will have their own provisions for conducting an internal QA/QC review of the data before they are released to EA. The laboratories' contract supervisors will contact EA's Project Manager with any sample discrepancies or data concerns.

Hardcopy and electronic data deliverable formatted QA/QC reports will be filed by the analytical laboratories when data are submitted to EA. Corrective actions will be reported to the EA Project Manager along with the QA/QC report (Section 9 of the Generic QAPP). The laboratories may be contacted directly by EA or NYSDEC personnel to discuss QA concerns. EA will act as laboratory coordinator on this project, and all correspondence from the laboratories will be coordinated with EA's Project Manager.

3. SAMPLING RATIONALE, DESIGNATION, AND CONTAINERS

3.1 SAMPLING RATIONALE

The sampling rationale presented for each planned field activity is detailed in the Work Plan for a Site Characterization (EA 2008)[2]. The rationale and frequency of the QC samples collected is discussed in the Generic QAPP. The remedial investigation laboratory program, illustrated in Table 1, includes the number of samples for each sample location, as well as QA/QC samples. The frequency of QA/QC samples are expressed as a percentage of the total number of samples collected for that matrix. The Generic QAPP also includes analytical methods and reporting limits.

3.2 SAMPLE DESIGNATION

Field samples collected from the site will be assigned a unique sample tracking number. Sample designation will be an alpha-numeric code, which will identify each sample by the site identification, matrix sampled, location number, sequential sample number (or depth of top-of-sample interval for excavation soil samples), and date of collection. Each sampling location will be identified with a two-digit number. Sequential sample numbers at each location for samples will begin with 01 and increase accordingly. For soil borings, the top depth of the sample interval will be used as the sample number. The final portion of the sample tracking number will be the sample date.

The following terminology will be used for the sample identification:

- **Groundwater Samples**

  Monitoring Wells
  — SITE ID-GW-MW-XX

- **Soil Samples**
  — SITE ID-B-01 through 02 (for boring samples).

3.3 SAMPLE CONTAINERS

Table 2 outlines the types of sample containers and preservatives required for sample collection. Please note that liquid waste samples, which exhibit an oily characteristic, do not require acid preservation.

2. EA Engineering, P.C. 2008. Work Plan for a Site Characterization Ash Road Site (Site No. 7-04-032), New York. April.

3.4 DATA QUALITY CONTROL OBJECTIVES

Data Quality Control Objectives (DQOs) are qualitative and quantitative statements, which specify the quality of data required to support decisions. DQOs are developed to achieve the level of data quality required for anticipated data use. DQOs are implemented so that, for each task, the data are legally and scientifically defensible. The development of DQOs for a specific site and measurement takes into account project needs; data uses, types, and needs; and data collection. These factors determine whether the quality and quantity of data are adequate for their end use. Sampling protocols have been developed, and sampling documentation and handling procedures have been identified to realize the required data quality.

DQOs are established prior to data collection and are not considered a separate deliverable. Rather, the DQO development process is integrated with the project planning process, and the results are incorporated into the QAPP for the site location. DQOs will be specified for each planned data collection activity. The DQO process results in an effective plan, which details the chosen sampling and analysis options, and the statements of confidence in decisions made during the corrective action process. Confidence statements are possible through the application of statistical techniques to the data.

3.5 FIELD INVESTIGATION DATA QUALITY OBJECTIVES

In order to permit calculation of precision and accuracy for the sampling media, blind field duplicate samples will be collected, analyzed, and evaluated.

Through the submission of field QC samples, the distinction can be made between laboratory problems, sampling technique considerations, sample matrix effects, and laboratory artifacts. To assure media sample quality, all sample collection will be performed in strict accordance with procedures set forth in this QAPP.

Precision will be calculated as relative percent difference if there are only two analytical points, and percent relative standard deviation if there are more than two analytical points. Blind field duplicate sample analyses will provide the means to assess precision.

Quality will be assured through the implementation of the structured and coherent QAPP, defining characterization and pre-sampling location inventory. This QAPP has been designed so that the appropriate numbers of samples for each location of interest are obtained for analysis. While 100 percent quality is the goal, it must be recognized that unforeseen events may result in the generation of some data that may not be acceptable for use.

Currently published analytical methods have been identified for the analysis of the collected samples, so that the data generated remain comparable to any previous or future generated data. EA will use an analytical laboratory with a demonstrated proficiency in the analysis of similar samples using the referenced methods. In addition, samples will be collected using documented procedures to ensure consistency of effort and reproducibility, if necessary.

3.6 LABORATORY DATA QUALITY OBJECTIVES

The analytical laboratory will demonstrate analytical precision and accuracy by the analysis of various QC samples (i.e., laboratory duplicates, spike samples, matrix spike duplicates, and laboratory control samples). Precision, as well as instrument stability, also will be demonstrated by comparison of calibration response factors from the initial calibration to that of the continuing calibrations. Precision will be presented as relative percent difference, relative standard deviation, or percent difference, whichever is appropriate for the number and type of QC samples analyzed. Laboratory accuracy will be evaluated by the addition of surrogate and matrix spike compounds, and will be presented as percent recovery. Laboratory blanks also can be used to demonstrate the accuracy of the analyses and possible effects from laboratory artifact contamination.

4. ANALYTICAL LABORATORY

The data collected during this investigation will be forwarded to NYSDEC for review.

Groundwater and soil samples will be submitted to Mitkem Corporation located in Warwick, RI. The laboratory is New York State Department of Health Environmental Laboratory Approval Program-certified, meeting specifications for documentation, data reduction, and reporting.

5. ANALYTICAL TEST PARAMETERS

This QAPP Addendum will require the analysis of soil and groundwater samples using U.S. Environmental Protection Agency Method 8260B for volatile organic compounds. Compound lists for each analytical method are included in the Generic QAPP.

6. ANALYTICAL DATA VALIDATION

The laboratory will review data prior to release from the facility. Objectives for review are in accordance with the QA/QC objectives stated in the Generic QAPP. The laboratories are required to evaluate their ability to meet these objectives. Outlying data will be flagged in accordance with laboratory standard operating procedures, and corrective action will be taken to rectify the problem.

In order to ensure the validity of analytical data generated by a project, it will be validated by Environmental Data Validation, Inc., who is independent from the analysts and the project. The Generic QAPP addresses implementation of independent validation.

TABLE 1 SITE CHARACTERIZATION ANALYTICAL PROGRAM

	Sample Matrix	VOC USEPA Method 8260
No. of Samples	Aqueous	25
Field Duplicate		1
Trip Blank (a)		1
MS/MSD		2
Total No. of Analyses		29
No. of Samples	Soil	37
Field Duplicate		2
Rinsate Blank (b)		14
MS/MSD		4
Total No. of Analyses		57

(a) Trip Blanks are required for VOC sampling of aqueous media at a rate of one per sample shipment.
(b) One rinsate blank per day of sampling with a field device that requires field documentation.

NOTE: MS/MSD = Matrix spike/matrix spike duplicate.
USEPA = U.S. Environmental Protection Agency.
VOC = Volatile organic compound.

Laboratory quality control samples will be collected at a rate of 1 per 20 samples, per matrix.

TABLE 2 - SAMPLE CONTAINERS, PRESERVATION, AND HOLDING TIMES

Parameter	Matrix	Container Size/Type	Sample Volume	Preservation	Maximum Holding Time from Verifiable Time of Sample Receipt
TCL VOCs	Water	Two 40 mL glass vials with Teflon-lined Septa	80 mL	No headspace, cool 4°C HCl	14 days
TCL VOCs	Soil	One 40z wide-mouth glass jar with Teflon-lined cap	Fill 4 oz jar with minimal headspace	None, cool 4°C	14 days

NOTE: TCL = Target compound list.
VOC = Volatile organic compound.

Appendix C

Health and Safety Plan Addendum

Health and Safety Plan Addendum
For a Site Characterization Work Plan
Ash Road Site (7-04-032)
Vestal, Broome County, New York

Prepared for

New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233

Prepared by

EA Engineering, P.C., and Its Affiliate
EA Science and Technology
6712 Brooklawn Parkway, Suite 104
Syracuse, New York 13211
(315) 431-4610

May 2008
Revision: FINAL
EA Project No. 14368.28

Health and Safety Plan Addendum
For a Site Characterization Work Plan
Ash Road Site (7-04-032)
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Prepared for

New York State Department of Environmental Conservation
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Prepared by

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28 May 2008

Christopher J. Canonica, P.E., Program Manager — Date
EA Engineering, P.C.

28 May 2008

Judith A. Graham, Project Manager — Date
EA Science and Technology

May 2008
Revision: FINAL
EA Project No.: 14368.28

CONTENTS

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ATTACHMENT I: FIELD FORMS

LIST OF FIGURES

1. INTRODUCTION

1.1 GENERAL

A Generic Health and Safety Plan (HASP) (EA 2006)[1] was developed for field activities performed under the New York State Department of Environmental Conservation (NYSDEC) Standby Contracts D004438 and D004441. This HASP Addendum is to supplement the Generic HASP with site-specific information to protect the health and safety of personnel while performing field activities to complete the Work Assignment for the Ash Road Site (NYSDEC Site No 7-04-032), Vestal, Broome County, New York (Figure 1).

This HASP Addendum describes the safety organization, procedures, and protective equipment that have been established based on an analysis of potential physical, chemical, and biological hazards. Specific hazard control methodologies have been evaluated and selected to minimize the potential for accidents or injuries to occur. One copy of the Generic HASP and this HASP Addendum will be maintained for use during the scheduled field sampling effort. The copies will be made available for site use and employee review at all times.

This HASP Addendum addresses regulations and guidance practices set forth in the Occupational Safety and Health Administration (OSHA) Standards for Construction Industry, 29 Code of Federal Regulations (CFR) 1926, including 29 CFR 1926.65, *Hazardous Waste Operations and Emergency Response* and 29 CFR 1926.59, *Hazardous Communications*.

The following are provided as attachments:

- Attachment A: Worker Training and Physical Examination Record
- Attachment B: Health and Safety Plan Review Record
- Attachment C: Site Entry and Exit Log
- Attachment D: Accident Investigation Report
- Attachment E: Emergency Telephone Numbers and Hospital Directions
- Attachment F: Emergency Equipment Available Onsite
- Attachment G: Map to Hospital
- Attachment H: Personal Protective Equipment Activity Record
- Attachment I: Field Forms.

NOTE: This site-specific HASP Addendum should be left open to display Attachment E (Emergency Telephone Numbers and Hospital Directions) and made available to all site personnel in a conspicuous location for the duration of field activities in the event of an emergency.

1. EA Engineering, P.C. 2006. *Generic Health and Safety Plan for Work Assignments under NYSDEC Contracts D004438 and D004441*. June.

1.2 SITE LOCATION

The Ash Road site is a commercial property formerly known as Town Square Body Shop and Hall Plumbing. These former properties were purchased by Shippers Holding Company/Lowes Corporation in the late 1990's. The buildings were demolished during the construction of the Lowes retail store. The site currently consists of paved parking which is part of the larger parking lot for Lowes located on Sycamore Street.

1.3 POLICY STATEMENT

EA will take every reasonable step to provide a safe and healthy work environment and to eliminate or control hazards in order to minimize the possibility of injuries, illnesses, or accidents to site personnel. EA and EA subcontractor employees will be familiar with the Generic HASP and this HASP Addendum for each of the project activities they perform. Prior to entering the site, the Generic HASP and this HASP Addendum will be reviewed and an agreement to comply with the requirements will be signed by EA personnel, subcontractors, and visitors (Attachment B).

Operational changes that could affect the health and safety of the site personnel, community, or environment will not be made without approval from EA's Project Manager and Program Health and Safety Officer. This document will be periodically reviewed to ensure that it is current and technically correct. Any changes in site conditions and/or the scope of work will require a review and modification to the HASP Addendum. Such changes will be documented in the form of a revision to this addendum.

2. KEY PERSONNEL

The following table contains information on key project personnel:

Title	Name	Telephone No.
Officer-in-Charge	Richard Waterman	508-485-2982
Program Health and Safety Officer	Peter Garger, CIH	410-771-4950
Program Manager	Chris Canonica, P.E.	315-431-4610
Quality Assurance/Quality Control Officer	Tom Porter, P.G.	315-431-4610
Project Manager	Judith Graham	315-431-4610
Quality Assurance/Quality Control Coordinator	Scott L. Graham, P.G.	315-431-4610
Site Manager/Site Health and Safety Officer	Kris Charney	315-431-4610
NYSDEC Project Manager	Ralph Keating	518-402-9774

3. SCOPE OF WORK

This HASP Addendum was developed to designate and define site-specific health and safety protocols applicable to project activities. It is to be implemented and followed during field activities at the Ash Road Site in Vestal, New York. The scope of work covered by this HASP Addendum includes:

- Soil boring installation
- Subsurface soil sampling
- Monitoring well installation
- Groundwater sampling.

Each of these activities is summarized below; additional detail for each activity is provided in the Work Plan for a Site Characterization.

3.1 SOIL BORING INSTALLATION

A minimum of 32 soil borings will be installed approximately 10 ft into the groundwater table or bedrock at the site using hollow stem auger or direct push drilling methods. Total depths of the borehole will be approximately 15- 25 ft below ground surface (bgs). Proposed soil borings locations are shown on Figure 1. Soil samples will be collected continuously from the surface to the total depth of the boreholes using split spoon or core samplers. Soil samples will be characterized according to the Unified Soil Classification System. Soil boring logs will be generated at each location.

3.1.1 Soil Sampling Procedures

A photoionization detector (PID) with a 10.6 eV lamp will be used to screen soil samples from each interval. Samples will be collected from the samplers using clean gloves and placed in sealed plastic bags labeled with boring number, sampling interval, and recovery data and allowed to equilibrate before PID measurements are collected. If organic compounds are detected, then soil samples with the highest PID measurements will be collected from the soil borings and sent for laboratory analysis of volatile organic compounds (VOCs) by U.S. Environmental Protection Agency (USEPA) Method 8260B. If VOCs are not detected in samples, soil samples will be not be collected for analysis. Soil samples selected for analysis will be transferred from sealed plastic bags to properly labeled laboratory containers using clean nitrile gloves. Soil samples containers will be placed in ice filled coolers prepared for shipment. Samples will be shipped to the analytical laboratories within 24 hours. The samples will be labeled, handled, and packaged following the procedures described in Generic Quality Assurance Project Plan (QAPP) and QAPP Addendum. Quality assurance/quality control samples will be collected at the frequency detailed in the Generic QAPP, QAPP Addendum, and Table 1. Soil cuttings generated during monitoring well installation will be drummed and

disposed of as detailed in Section 4.

3.2 GROUNDWATER MONITORING WELLS

3.2.1 Monitoring Well Installation

Twenty monitoring wells will be installed in selected borings to the approximate depths of 15-25 ft bgs depending on groundwater elevations. The monitoring wells will be constructed of 2-in. polyvinyl chloride (PVC) casing and 10 ft of 0.010-slot screen. A sand pack will be installed around the screen up to 2 ft above the top of the screen. A 2-ft bentonite seal will be placed above the sand pack and the remaining annular space will be filled with bentonite grout to approximately 0.5 ft below the surface. Flush mounted steel covers and concrete pads of approximately 12-in. diameter be installed to protect each of the monitoring wells

3.2.2 Groundwater Sampling

In total, groundwater samples will be collected from approximately 20 locations. The table below lists the monitoring wells to be installed at the Ash Road Site. Groundwater samples will be collected as described in Sections 3.1.3 and 3.1.4 of the work plan.

Groundwater samples will be analyzed by Mitkem, located in Warwick, RI for VOCs as described in Section 3.1.3 of the Work Plan and in accordance with the NYSDEC Analytical Services Protocol.

The following wells from the monitoring well network are expected to be sampled at the site:

Well Sampling at Ash Road Site	
Proposed Monitoring Wells	
MW-01	MW-11
MW-02	MW-12
MW-03	MW13
MW-04	MW-14
MW-05	MW-15
MW-06	MW-16
MW-07	MW-17
MW-08	MW-18
MW-09	MW-19
MW-10	MW-20

3.3 STORAGE AND DISPOSAL OF WASTE

EA is responsible for the proper storage, handling, and disposal of investigative derived waste, including personal protective equipment, and solids and liquids generated during the well drilling, well development, and well sampling activities. Liquids generated during sampling that exhibit visual staining, sheen, or discernable odors will be collected in drums or other containers

at the point of generation. The drums will be stored in a central location for pick up by regulated waste haulers. All drummed materials will be clearly labeled with their contents and origin. All investigative derived waste will be managed in accordance with NYSDEC-Division of Environmental Remediation Technical and Administrative Guidance Memorandum 4032 (NYSDEC 1989)[2].

2. NYSDEC. 1989. Technical and Administrative Guidance Memorandum No. 4032, Disposal of Drill Cuttings. 21 November.

4. POTENTIAL HAZARD ANALYSIS

Based upon the above field activities, the following potential hazard conditions may be anticipated:

- The use of mechanical equipment such as drill rigs, powered augers, and hammer drills can create a potential for crushing and pinching hazards due to movement and positioning of the equipment; movement of lever arms and hydraulics; entanglement of clothing and appendages in exposed drives and augers; and impact of steel tools, masts, and cables should equipment rigging fail or other structural failures occur during hydraulic equipment operation and drilling mast extension and operation. Heavy equipment work must be conducted only by trained, experienced personnel. If possible, personnel must remain outside the turning radius of large, moving equipment. At a minimum, personnel must maintain visual contact with the equipment operator. When not operational, equipment must be set and locked so that it cannot be activated, released, dropped, etc.

- Equipment can be energized due to contact with overhead or underground electrical lines, utilities impaired by excavation of communication or potable/wastewater lines, or a potential for fire or explosion may occur due to excavation of below ground propane/ natural gas lines. Prior to commencement of invasive operations, a drilling/excavation permit will be obtained and the area will be inspected and flagged. Personnel should be aware that although an area may be cleared, it does not mean that unanticipated hazards will not appear. Safe distances will be maintained from live electrical equipment as specified in Generic HASP. Workers should always be alert for unanticipated events such as snapping cables, digging into unmarked underground utilities, etc. Such occurrences should prompt involved individuals to halt work immediately and take appropriate corrective measures to gain control of the situation.

- Work around large equipment often creates excessive noise. Noise can cause workers to be startled, annoyed, or distracted; can cause physical damage to the ear, pain, and temporary and/or permanent hearing loss; and can interfere with communication. If workers are subjected to noise exceeding an 8-hour time-weighted average sound level of 85 dBA, hearing protection will be selected with an appropriate noise reduction rating to comply with 29 CFR 1910.95 and to reduce noise below levels of concern.

- Personnel may be injured during physical lifting and handling of heavy equipment, construction materials, or containers. Additionally, personnel may encounter slip, trip, and fall hazards associated with excavations, manways, and construction debris and materials. Precautionary measures should be taken in accordance with the Generic HASP and this HASP Addendum.

- Field operations conducted during the winter months can impose excessive heat loss to personnel conducting strenuous activities during unseasonably cold weather days and can impose cold-related illness symptoms during unseasonably cold weather days, or when wind chill is high. In addition, heavy rains, electrical storms, and high winds may create extremely dangerous situations for employees.

- Entry into a confined space in support of this project is forbidden. However, it is not anticipated that confined space entry will be required during the completion of the field activities.

- Field investigation activities intended to define potential sources of environmental contamination often require employees to be in direct proximity or contact with hazardous substances. Employees may be exposed through inhalation of toxic dusts, vapors, or gases. Normal dust particulates from surficial soil may have adsorbed or absorbed toxic solvents, petroleum compounds, or toxic metal salts or metal particulates. Air monitoring equipment will be used to monitor airborne organic vapors and particulates. Water collected during well development and groundwater sampling activities may also contain toxic vapors, liquids, and gases and be inhaled during normal operations, or may be splashed onto the skin or eyes. Ingestion of toxic materials contained in dusts or particulates can be ingested if eating, smoking, drinking, and gum chewing are permitted prior to personnel washing their hands and face or removing contaminated work clothing and personal protective equipment. Some chemicals may be absorbed directly through the skin. Personal protective equipment, properly designed for the chemicals of concern, will always be provided and worn when a potential for skin contact is present.

5. PERSONAL PROTECTIVE EQUIPMENT

Based upon currently available information, it is anticipated that Level D protection will be required for currently anticipated conditions and activities. If at any time the sustained level of total organic vapors in the worker breathing zone exceeds 5 parts per million (ppm) above background, site workers will evacuate the area and the condition will be brought to the attention of the site Health and Safety Officer. Efforts will then be undertaken to mitigate the source of the vapors. Once the sustained level of total organic vapors has decreased to below 5 ppm above background, site workers will be allowed to continue activities at the direction of the site Health and Safety Officer.

The personal protective equipment components for use during this project are detailed in the Generic HASP. The components of Level D personal protective equipment are summarized below.

5.1 LEVEL D PERSONAL PROTECTIVE EQUIPMENT

Level D will be worn for initial entry onsite and initially for all activities and will consist of the following:

- Coveralls or appropriate work clothing
- Steel-toe, steel-shank safety boots/shoes
- Hard hats (when overhead hazards are present or as required by the site Health and Safety Officer)
- Chemical resistant gloves (nitrile/neoprene) when contact with potentially contaminated soil or water is expected
- Safety glasses with side shields
- Hearing protectors (during drilling or other operations producing excessive noise)
- Boot covers (optional unless in contact with potentially contaminated soil or water)
- Polycoated coveralls (optional when contact with contaminated soil and water is anticipated, e.g., when surging/pumping wells and pressure-washing equipment).

Insulated clothing, hats, etc. must be worn when temperatures or wind chill fall below 40°F.

6. SITE CONTROL AND SECURITY

Only authorized personnel will be permitted to conduct field activities. Authorized personnel include those who have completed hazardous waste operations initial training, as defined under OSHA Regulation 29 CFR 1910.120/29 CFR 1926.65, have completed their training or refresher training within the past 12 months, and have been certified by a physician as fit for hazardous waste operations.

6.1 SAFE WORK PRACTICES

Safe work practices that will be followed by site workers include, but are not limited to, the following rules:

- Working before or after daylight hours without special permission is prohibited.
- Do not enter restricted or posted areas without permission from the site Health and Safety Officer.
- Smoking is limited to designated areas.
- Possessing, using, purchasing, distributing, or having controlled substances in their system throughout the day or during meal breaks is prohibited.
- Consuming or possessing alcoholic beverages is prohibited.
- Good housekeeping – employees will be instructed about housekeeping throughout field activities.
- Sitting or kneeling in areas of obvious contamination is prohibited.
- Avoid overgrown vegetation and tall grass areas.

6.2 DAILY STARTUP AND SHUTDOWN PROCEDURES

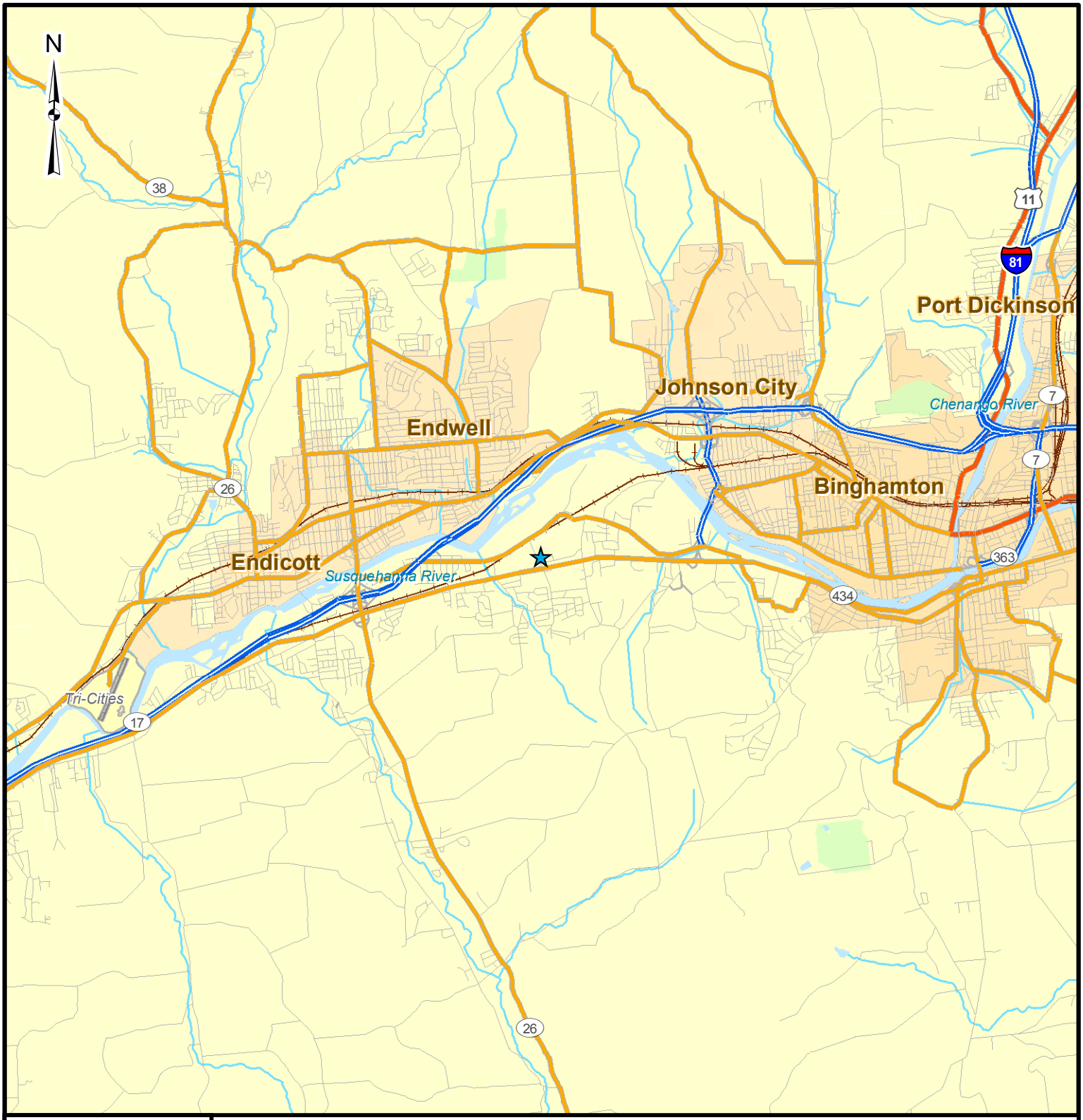
The following protocols will be followed daily prior to start of work activities:

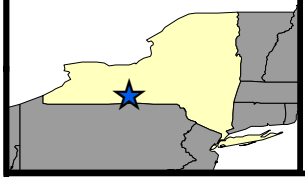
- The site Health and Safety Officer will review site conditions to determine if modification of work and safety plans is needed.
- Personnel will be briefed and updated on new safety procedures as appropriate.

- Safety equipment will be checked for proper function.

- The site Health and Safety Officer will ensure that the first aid kit is adequately stocked and readily available.

- The Contractor is responsible for the security of its own equipment. All on-site equipment and supplies will be locked and secure.





Legend

- Limited Access
- Highway
- Major Road
- Local Road
- Minor Road
- Other Road
- Ramp
- Railroads (Local)
- Stream
- Water

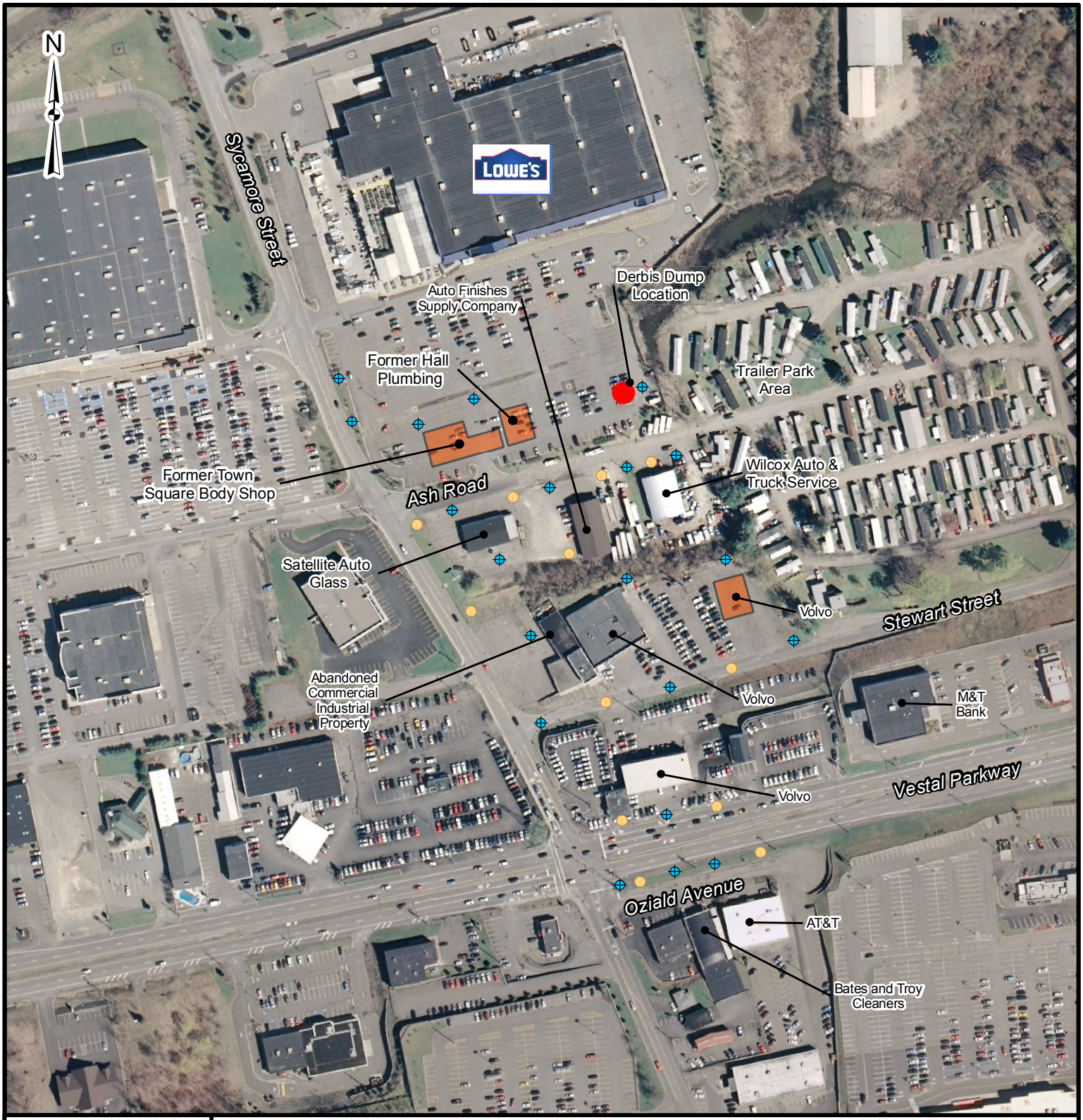
0 0.5 1 2 3 4 5 Miles

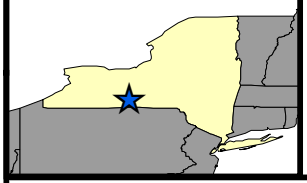
Source: ESRI Street Maps USA

ASH ROAD SITE
SITE CHARACTERIZATION WORK PLAN
VESTAL, NEW YORK

FIGURE 1
SITE LOCATION MAP

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	SCALE:	DATE:	PROJECT NO:	FILE NO:
JAG	CJS	MJS	JAG	AS SHOWN	3-18-2008	14368.28	GIS/PROJECTS/ FIGURE1.MXD





Legend

Proposed Well Locations

- Monitoring Well
- Soil Boring
- **BuildingFootprints**

0 75 150 300 450 600 Feet

Source: Orthophoto image, 2006 NYS Office of Cyber Security & and Critical Infrastructure Coordination (OCSCIC).

ASH ROAD SITE
SITE CHARACTERIZATION WORK PLAN
VESTAL, NEW YORK

FIGURE 2
PROPOSED SOIL BORINGS AND MONITORING WELLS LOCATIONS

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	SCALE:	DATE:	PROJECT NO:	FILE NO:
JAG	MJS	MJS	JAG	AS SHOWN	APRIL 2008	14368.28	GIS/PROJECTS/ FIGURE1.MXD

Attachment A

Worker Training and Physical Examination Record

ATTACHMENT A

WORKER TRAINING AND PHYSICAL EXAMINATION RECORD

SITE: Ash Road, Vestal, New York

Name	OSHA 40-Hour Hazardous Waste Operations Training		OSHA Hazardous Waste Supervisor Training	CPR (date of expiration)	First Aid (date of expiration)	Date of Last Physical Examination
	Initial	Annual				
EA PERSONNEL						
Tom Porter	2/3/89	11/8/06	3/3/89	---	---	6/12/01
Judith A. Graham	4/13/93	12/17/07				12/17/07
Scott L. Graham						
Christopher Canonica						
Kris Charney	3/17/96	6/26/09	9/08/07	6/29/09	6/26/09	3/01/06
Richard Waterman	8/88	1998	2/94	3/04	3/05	---
SUBCONTRACTOR OR ADDITIONAL PERSONNEL						
---	---	---	---	---	---	---
---	---	---	---	---	---	---

NOTE: Prior to performing work at the site, this Health and Safety Plan must be reviewed and an agreement to comply with the requirements must be signed by all personnel, including contractors, subcontractors, and visitors. Contractors and subcontractors are ultimately responsible for ensuring that their own personnel are adequately protected. In signing this agreement, the contractors and subcontractors acknowledge their responsibility for the implementation of the Health and Safety Plan requirements. All personnel onsite shall be informed of the site emergency response procedures and any potential safety or health hazards of the operations.

Attachment B

Review Record

ATTACHMENT B

HEALTH AND SAFETY PLAN REVIEW RECORD

I have read the Health and Safety Plan for this site and have been briefed on the nature, level, and degree of exposure likely as a result of participation in this project. I agree to conform to all the requirements of this Plan.

SITE: **Ash Road, Vestal**, **New York**			
Name	Signature	Affiliation	Date

Attachment C

Site Entry and Exit Log

ATTACHMENT C

SITE ENTRY AND EXIT LOG

SITE: Ash Road, Vestal, New York				
Name	Date	Time of Entry	Time of Exit	Initials

Attachment D

Accident Investigation Report

ACCIDENT/LOSS REPORT

THIS REPORT MUST BE COMPLETED BY THE INJURED EMPLOYEE OR SUPERVISOR AND FAXED TO EA CORPORATE HUMAN RESOURCES WITHIN 24 HOURS OF ANY ACCIDENT. THE FAX NUMBER IS **(410) 771-1780**.

NOTE WHENEVER AN EMPLOYEE IS SENT FOR MEDICAL TREATMENT FOR A WORK RELATED INJURY OR ILLNESS, PAGE 4 OF THIS REPORT MUST ACCOMPANY THAT INDIVIDUAL TO ENSURE THAT ALL INVOICES/BILLS/CORRESPONDENCE ARE SENT TO HUMAN RESOURCES FOR TIMELY RESPONSE.

A. DEMOGRAPHIC INFORMATION:

NAME OF INJURED EMPLOYEE:_____
HOME ADDRESS:_____
HOME PHONE:_____ DATE OF BIRTH:_____
AGE:_____ SEX: M F
MARITAL STATUS:_____ NAME OF SPOUSE (if applicable)_____
SOCIAL SECURITY NUMBER:_____ DATE OF HIRE:_____
NUMBER OF DEPENDENTS:_____
EMPLOYEES JOB TITLE:_____
DEPT. REGULARLY EMPLOYED:_____
WAS THE EMPLOYEE INJURED ON THE JOB: Y N
PRIMARY LANGUAGE OF THE EMPLOYEE: _____

B. ACCIDENT/INCIDENT INFORMATION:

DATE OF ACCIDENT:_____ TIME OF ACCIDENT:_____
REPORTED TO WHOM: _____ NAME OF SUPERVISOR_____
EXACT LOCATION WHERE ACCIDENT OCCURRED (**including street, city, state, and county**):
_____
_____

EXPLAIN WHAT HAPPENED (include what the employee was doing at the time of the accident and how the accident occurred): _____
_____
_____
_____

DESCRIBE THE INJURY AND THE SPECIFIC PART OF THE BODY AFFECTED (i.e., laceration, right hand, third finger):
_____
_____

OBJECT OR SUBSTANCE THAT DIRECTLY INJURED EMPLOYEE:_____
_____
NUMBER OF DAYS AND HOURS EMPLOYEE USUALLY WORKS PER WEEK:_____
IS THE EMPLOYEE EXPECTED TO LOSE AT LEAST ONE FULL DAY OF WORK?_____
DOES THE EMPLOYEE HAVE A PREVIOUS CLAIM? Y N if yes, STATUS Open Closed
WAS THE EMPLOYEE ASSIGNED TO RESTRICTED DUTY? _____

C. ACCIDENT INVESTIGATION INFORMATION

WAS SAFETY EQUIPMENT PROVIDED? Y N If yes, was it used? Y N
WAS AN UNSAFE ACT BEING FORMED ? Y N If yes, describe_____
WAS A MACHINE PART INVOLVED? Y N If yes, describe _____
WAS THE MACHINE PART DEFECTIVE? Y N If yes, in what way _____
WAS A 3RD PARTY RESPONSIBLE FOR THE ACCIDENT/INCIDENT? Y N
If yes, list Name, address and phone number_____
_____
WAS THE ACCIDENT/INCIDENT WITNESSED? Y N
If yes, list Name, address and phone number: _____
_____

D. PROVIDER INFORMATION

WAS FIRST AID GIVEN ON SITE? Y N
If yes, what type of medical treatment was given _____
PHYSICIAN INFORMATION (if medical attention was administered)
NAME:_____
ADDRESS (incl. City, state and zip):_____
PHONE:_____

HOSPITAL ADDRESS (incl. Name, address, city, state, zip code & phone)
_____
_____

WAS THE EMPLOYEE HOSPITALIZED? Y N If yes, on what date_____
WAS THE EMPLOYEE TREATED AS AN OUTPATIENT, RECEIVE EMERGENCY TREATMENT OR AMBULANCE SERVICE? _____

PLEASE ATTACH THE PHYSICIANS WRITTEN RETURN TO WORK SLIP

***NOTE* A PHYSICIANS RETURN TO WORK SLIP IS REQUIRED PRIOR TO ALLOWING THE WORKER TO RETURN TO WORK**

E. AUTOMOBILE ACCIDENT INFORMATION (complete if applicable)

AUTHORITY CONTACTED AND REPORT #_____
EA EMPLOYEE VEHICLE YEAR, MAKE AND MODEL_____

V.I.N._____ PLATE/TAG #_____
OWNER'S NAME AND ADDRESS:_____
_____
DRIVER'S NAME AND ADDRESS: _____
_____
RELATION TO INSURED:_____DRIVER'S LICENSE #_____
DESCRIBE DAMAGE TO YOUR PROPERTY:_____
_____
_____
DESCRIBE DAMAGE TO OTHER VEHICLE OR PROPERTY:_____
_____
_____
OTHER DRIVER'S NAME AND ADDRESS: _____
_____
OTHER DRIVER'S PHONE:_____
OTHER DRIVER'S INSURANCE COMPANY AND PHONE:_____
_____
LOCATION OF OTHER VEHICLE:_____
NAME, ADDRESS AND PHONE OF OTHER INJURED PARTIES:_____
_____
_____
WITNESSES

NAME:_____ PHONE:_____
ADDRESS:_____
STATEMENT:_____
_____
SIGNATURE: _____

NAME:_____ PHONE:_____
ADDRESS:_____
STATEMENT:_____
_____
SIGNATURE: _____

F. ACKNOWLEDGEMENT

NAME OF SUPERVISOR:_____
DATE OF THIS REPORT: _____ REPORT PREPARED BY:_____

I have read this report and the contents as to how the accident/loss occurred is accurate to the best of my knowledge.

Signature: _____ Date: _____
Injured Employee

I am seeking medical treatment for a work related injury/illness.

Please forward all bills/invoices/correspondence to:

EA ENGINEERING, SCIENCE, AND TECHNOLOGY, INC.

11019 McCORMICK ROAD

HUNT VALLEY, MD 21031

ATTENTION: Michele Bailey
HUMAN RESOURCES

(410) 584-7000

INCIDENT REPORT

THIS REPORT IS TO BE COMPLETED WHEN A NEAR MISS OCCURS THAT COULD HAVE POTENTIALLY RESULTED IN SERIOUS PHYSICAL HARM. PLEASE FAX THIS FORM TO EA HUMAN RESOURCES DEPARTMENT AT **(410) 771-1780**.

EXPLAIN WHAT HAPPENED (include what the employee was doing at the time the near miss and how it occurred:) _____

REPORT PREPARED BY: _____ DATE:_____

Attachment E

Emergency Telephone Numbers and Hospital Directions

ATTACHMENT E

EMERGENCY TELEPHONE NUMBERS AND HOSPITAL DIRECTIONS

SITE: Ash Road Site, Vestal, NY.	
Police: VESTAL Police Sub-station 2317 Vestal Parkway East, Vestal , NY (607) 754-1827	9-1-1
Fire: Vestal Fire Department 605 Vestal Parkway West, Vestal, NY (607) 754-1313	9-1-1
Ambulance: Superior Ambulance Services, Inc. 46 Exchange Street, Binghamton, NY (607) 772-1456	9-1-1
Hospital: Lourdes Hospital	(607) 798-5111
Poison Control Center: American Association of Poison Control Centers ***St. Joseph's Poison Control Hotline- Elmira, NY***	(800) 222-1222 (800) 333-0542
Directions to Lourdes Hospital47 Riverside Drive, Johnson City, NY 13905 Go SOUTH on SYCAMORE ST toward Vestal Parkway (0.3 mi) Turn LEFT onto VESTAL PKWY E/NY-434 E. (1.5 mi) Merge onto NY-201 N toward JOHNSON CITY. (1.0 mi) Enter next roundabout and take 1st exit onto RIVERSIDE DR. (1.1 mi) End at Lourdes Hospital - 47 Riverside Dr Johnson City, NY 13790 **Estimated Time: 8 minutes. Estimated Distance: 3.96 miles**	
Program Safety and Health Officer: ***Peter Garger, CIH***	(410) 771-4950
Program Manager: ***Christopher Canonica, P.E.***	(315) 431-4610
EA Project Manager ***Judith Graham***	(315) 431-4610
In case of spill, contact *Judy Graham*	(315) 431-4610
EA Medical Services EMR 4360 Chamblee Dunwoody Road, Suite 202 Atlanta, Georgia 30341 ***Contact: Dr. Elayne F. Theriault***	(800) 229-3674
Site Manager/Site Health and Safety Officer: ***Kris Charney***	(315) 431-4610
In case of accident or exposure incident, contact Corporate Health and Safety Officer ***Peter Garger***	(410) 771-4950

Attachment F

Emergency Equipment Available Onsite

ATTACHMENT F

EMERGENCY EQUIPMENT AVAILABLE ONSITE

Type of Equipment	Location
Communications Equipment	
Mobile Telephone	In EA vehicle
Medical Support Equipment	
First Aid Kits	In EA vehicle
Eye Wash Station	In EA vehicle
Fire Fighting Equipment	
Fire Extinguishers	In EA vehicle

Attachment G

Map to Hospital

ATTACHMENT G
MAP TO HOSPITAL

Directions to Lourdes Hospital, 47 Riverside Drive, Johnson City, NY 13790

Start out going SOUTH on SYCAMORE ST toward Vestal Parkway (0.3 mi)
Turn LEFT onto VESTAL PKWY E/NY-434 E. (1.5 mi)
Merge onto NY-201 N toward JOHNSON CITY. (1.0 mi)
Enter next roundabout and take 1st exit onto RIVERSIDE DR. (1.1 mi)
End at Lourdes Hospital - 47 Riverside Dr Johnson City, NY 13790

Estimated Time: 8 minutes. Estimated Distance: 3.96 miles

Attachment H

Personal Protective Equipment Activity Record

ATTACHMENT H

PERSONAL PROTECTIVE EQUIPMENT ACTIVITY RECORD

SITE: Ash Road, Vestal, New York		
Weather Condition:		Onsite Hours: From To
Changes in Personal Protective Equipment Levels[(a)]	Work Operations	Reasons for Change
Site Health and Safety Plan Violations	Corrective Action Specified	Corrective Action Taken (yes/no)
Observations and Comments:		
Completed by: _____ Site Health and Safety Officer Date		
(a) Only the Site Health and Safety Officer may change personal protective equipment levels, using only criteria specified in the Health and Safety Plan.		

Attachment I

Field Forms

EA Engineering P.C. and its Affiliate
EA Science and Technology

GROUNDWATER SAMPLING
PURGE FORM

Well I.D.:	**EA Personnel:**	**Client:**
Location:	**Well Condition:**	**Weather:**
Sounding Method:	**Gauge Date:**	**Measurement Ref:**
Stick Up/Down (ft):	**Gauge Time:**	**Well Diameter (in):**

Purge Date:	**Purge Time:**
Purge Method:	**Field Technician:**

Well Volume		
A. Well Depth (ft):	**D. Well Volume (ft):**	**Depth/Height of Top of PVC:**
B. Depth to Water (ft):	**E. Well Volume (gal) C*D):**	**Pump Type:**
C. Liquid Depth (ft) (A-B):	**F. Five Well Volumes (gal) (E3):**	**Pump Designation:**

Water Quality Parameters

Time (hrs)	DTW (ft btoc)	Volume (liters)	Rate (Lpm)	pH (pH units)	ORP (mV)	Temperature (oC)	Conductivity (uS/cm)	DO (ug/L)	Turbidity (ntu)

Total Quantity of Water Removed (gal): _____ **Sampling Time:** _____
Samplers: _____ **Split Sample With:** _____
Sampling Date: _____ **Sample Type:** _____

COMMENTS AND OBSERVATIONS: _____