PRECISION
ENVIRONMENTAL SERVICES, INC.
831 RT. 67,LOT 28
BALLSTON SPA, NY 12020
TEL: 518-885-4399
FAX: 518-885-4416
CERTIFIED WOMEN-OWNED BUSINESS ENTERPRISE

April 29, 2009

Ms. Sheilla Paige
Environmental Engineer
New York State Department of Environmental Conservation
Region 4
1130 North Westcott Road
Schenectady, NY 12306-2014

RE: Proposed Supplemental Subsurface Investigation Work Plan
Brandywine Ave. Plume Trackdown
Brandywine Ave., Albany Ave. and State Street, Schenectady, NY 12305
NYSDEC Spill No.: 9706794
NYSDEC Site No.: 4-47-040

Dear Ms. Paige:

This letter is intended to represent Precision Environmental Services, Inc.'s (PESs) proposed work plan to perform a supplemental subsurface investigation at the above referenced facility. Specifically, the investigation will take place along Brandywine Ave., Albany Ave. and State Street in the City of Schenectady, NY (collectively hereafter referred to as the "Site") (see Attachment A, Figure 1 for site location detail). The work that has been proposed herein is pursuant to a review of historical documents made available by the New York State Department of Environmental Conservation (NYSDEC) and will be completed under Contract No.: C100906.

PROPOSED WORKSCOPE:
The primary objective of the subsurface investigation is to supplement previous investigative work completed by others in the past at the site, obtain new data with respect to contaminant occurrence and concentration in soil water and soil vapor at the site and determine if soil intrusion is an issue due to the historical levels of PCE and TCE previously identified in groundwater and soil. To acquire data necessary to complete the investigation, PES proposes to utilize direct push, soil-probing methodology coupled with the installation of groundwater monitoring wells and soil vapor collection probes. The subsurface investigation will involve the installation of approximately thirty eight (38) 2.25-inch diameter soil borings, which where appropriate will be completed as one (1)-inch diameter, temporary, groundwater monitoring wells, and a yet to be determined quantity of soil vapor collection probes. Attachment A Figure 2 provides detail regarding the locations of the initially proposed soil borings. Soil boring, monitoring well and soil vapor collection point quantities, locations and depths will be adjusted in the field based on site-specific empirical data collected during the investigation. Actual boring locations may also be adjusted in the field due to access limitations or the location of underground or overhead utilities.

Soil Boring Installation:
Soil borings will be installed at the Site utilizing PESs all terrain, direct push soil probe. A hydraulic percussion hammer will advance the soil probe into the subsurface to retrieve

successive soil core samples from the borehole at four-foot increments. A qualified environmental professional from PES will oversee and document all soil boring installation activities including local lithology as ascertained through dissection of the soil cores. Soil samples will be continuously collected and monitored using a photoionization detector (PID) to qualitatively determine the presence and amount of volatile organic compounds (VOCs) and to determine groundwater monitoring well and/or soil vapor collection probe construction. As determined in the field and through soil characteristics discovered at the Site, a minimum of one (1) soil sample from each borehole will be secured in laboratory-supplied glassware, placed on ice and shipped via chain-of-custody protocol under separate contract to Adirondack Environmental Laboratories, Inc. of Albany, NY. Soil samples will be selected for laboratory analysis based on elevated PID responses, visual or olfactory evidence of impacts and/or the location of the soil relative to the water table interface. The sampling locations will be based on conditions encountered in the field and will be strategically selected to allow for site characterization and evaluation. The laboratory results will provide quantitative data regarding the soil quality below the Site. Unless otherwise expressed by the NYSDEC, PES proposes to analyze the soil samples via EPA analytical method 8260.

Soil generated during the investigation will be placed back in open boreholes where possible and/or scattered on the ground surface at the Site. Soils that contain evidence of VOC contamination (as documented through PID screening and/or visual and olfactory observation) will be containerized and stored on Site as subsequently discussed. All non-dedicated, down-hole equipment will be decontaminated prior to and between use at each boring location. A non-phosphate detergent and tap water wash followed by a tap water rinse will be utilized to ensure equipment is decontaminated.

Temporary Monitoring Well Construction:
At select boring locations, a temporary one (1)-inch diameter, PVC, groundwater monitoring well with 0.010-inch slotted screen will be installed. Each well will be constructed such that the screened section extends across the observed water table. The annular space surrounding the well screen will be filled with #0 silica sand to approximately one (1)-foot above the well screen. A bentonite seal will be placed above the sand to prevent the infiltration of surface waters. The remaining annular space will be filled with clean native material (based on PID screening and/or visual or olfactory evaluation) to a depth of approximately one (1)-foot below grade. Monitoring wells will then be completed with flush-to-grade, bolt down, traffic rated road boxes set in concrete. Upon completion, each well will be developed by repetitive bailing. The wells will later be gauged and sampled, as discussed subsequently.

Monitoring Well Surveying/Gauging:
Following installation, monitoring wells will be surveyed to develop an accurate site map and to determine groundwater elevations and groundwater gradient. All elevation data will be relative to an assumed elevation based on a site-specific benchmark. The depth to groundwater *(gauging)* and the presence and/or thickness of LNAPL or DNAPL will be measured at each well to allow calculation of the groundwater gradient.

Monitoring Well Sampling:
Groundwater samples will be collected from all newly installed monitoring wells and analyzed for volatile organic compounds (VOCs) using EPA Method 8260. Encountered LNAPL or DNAPL will be collected, characterized and sampled for identification through laboratory verification. Sampling and/or gauging order will be formulated based on the information obtained during the installation process and historic knowledge of the Site. Gauging and sampling will be performed from the least to the most contaminated well to minimize the possibility of cross contamination. All sampling devices (i.e.: *bailers and/or water level indicator, etc.*) will be decontaminated before, and between, each well. Samples will be secured in laboratory-supplied glassware, placed on ice and shipped via chain-of-custody protocol to Adirondack Environmental Services, Inc. of Albany, NY.

Soil Vapor Probe Installation:
Following installation of soil borings and temporary groundwater monitoring wells and subsequent sampling, analysis and review of collected data, a preliminary determination will be made regarding the water quality and possible VOC impacts beneath the Site. The results will ultimately determine the location and quantity of soil vapor collection probes that will be needed to characterize vapor phase contaminants at the Site.

Soil vapor probes will be installed in locations immediately adjacent to previously installed soil borings, where lithologic and hydrogeologic characteristics have already been documented. At each respective location two (2) temporary soil vapor probes will be installed using direct-push technology to drive steel rods equipped with detachable stainless steel drive points to the desired depth. Paired soil vapor probes will be installed at two depths, the shallow probe at a depth equivalent to that of a typical building foundation (approximately 8-feet below grade) and the deeper probe approximately 1 to 2-feet above the observed water table interface. If the water table is determined to be within 16-feet of the ground surface, then one soil vapor probe at 8-feet below grade may be sufficient. If the water table is within 5-feet from the ground surface, a decision whether or not to install a soil vapor probe at that location will be made in consultation with the NYSDEC based on field conditions encountered.

Once the desired depth is reached, the drive rod will be retracted revealing a six (6)-inch double braided stainless-steel sampling screen attached to dedicated Teflon lined tubing of laboratory or food grade which will be used to collect soil vapor samples. The annular space of the borehole will then be backfilled with glass beads to a minimum of 6-inches above the screened interval. A bentonite seal will then be placed from approximately 6-inches above the screen to the ground surface and immediately hydrated. The bentonite seal will be allowed a minimum of 48-hours to fully hydrate prior to any sample collection. Vapor probes will then be completed with flush-to-grade, bolt down, traffic rated road boxes set in concrete.

Soil Vapor Probe Sampling:
Prior to collection of soil vapor samples, vapor collection implants will be purged to ensure an accurate sample is obtained from the vadose zone. One to three implant volumes (volume of sample probe and tube) will be purged at a flow rate that does not exceed 0.2 liters per minute. At the time of purging, helium will be utilized as a tracer gas to evaluate the integrity of the implant and bentonite seal to ensure that ambient air is not short-circuiting the sampling zone. The tracer gas will be administered utilizing a helium-enriched shroud that will be employed over the implant in accordance with New York State Department of Health's Guidance for Evaluating Soil Vapor Intrusion (October 2006) (hereafter referred to as the 'Guidance'). Purge air will be monitored in real time utilizing a helium detector to verify probe integrity. Immediately following sample

collection, the shroud will again be enriched with helium and the implant will be purged and monitored in real time to ensure implant integrity was maintained throughout the sampling event.

Vapor samples will be collected using laboratory supplied and certified clean, stainless steel canisters with two (2)-hour flow controllers and dedicated Teflon lined or polyethylene tubing that is of laboratory or food grade quality. An ambient air sample will be simultaneously obtained along with any and all soil vapor samples collected. All sampling will be completed in accordance with the Guidance. Vapor samples will be analyzed by an ELAP certified lab for VOC's using EPA Method TO-15. Where possible, a minimum-reporting limit of 1 microgram per cubic meter will be achieved for all analytes.

Investigation-Derived Wastes:
Should VOC impacts be evident within the subsurface at the Site, all investigation-derived waste (IDW), such as decontamination rinsate, soil cuttings and monitoring well development/purge water, will be containerized in U.S. Department of Transportation-approved 55-gallon, steel, open-top drums. Drums will be properly labeled and staged on Site pending characterization and offsite disposal in accordance with federal and state requirements. The actual location(s) of the drum staging area(s) will be determine during the implementation of the work at the site.

Reporting:
Upon receipt of the laboratory analyses of soil, groundwater and vapor samples, a subsurface investigation report will be prepared that combines newly acquired and historic information. The report will include:

- A Brief description of the regional geology, from the literature, and local geology – inferred from the soil boring logs.
- Detailed site map illustrating major surface structures and boring/well/vapor collection probe locations within the area of study.
- Soil boring data, monitoring well and vapor probe completion details.
- Field observations resulting from soil monitoring with the PID instrument, LNAPL/DNAPL occurrence, thickness, etc.
- Groundwater flow direction and gradient will be discussed. A groundwater gradient map for the Site will be included (if appropriate).
- VOC (if present) distribution will be discussed.
- A brief conclusion section regarding soil, groundwater and soil vapor conditions on-site will be included, as supported by the data collected during the investigation.
- All data, well logs and lab analysis reports will be included as appendices.
- Recommendations for future work will be included at the end of the report.

Project Organization:
Individual tasks of the proposed work scope will be performed as expediently as possible under the field conditions encountered. All aspects of the project will be coordinated and supervised by experienced representatives of PES. The project team assigned to this work scope will be comprised of experienced personnel capable of completing the technical and logistical aspects of the assignment.

Scheduling:
Albeit unknown at this time, PES is anticipating a minimum of ten (10) workdays to complete the fieldwork for the investigation. Each boring will be placed within the public right-of-way, thus Site access from the City of Schenectady will be required prior to the start of work. Additionally, proposed boring locations will be identified in the field prior to start of work to enable each location to be cleared by the Underground Facilities Protection Organization. PES can implement the proposed subsurface investigation within 30 days following approval of this work plan and the granting of property access from the City of Schenectady. A report of findings will be submitted within 45 days after receipt of the laboratory analytical data associated with the subsurface investigation work.

PES greatly appreciates the continued opportunity to provide environmental services to the NYSDEC. If you have any questions concerning any aspect of this correspondence, please call the undersigned at (518) 885-4399.

Sincerely,
Precision Environmental Services, Inc.

Stephen M. Phelps
Project Manager

Attachments

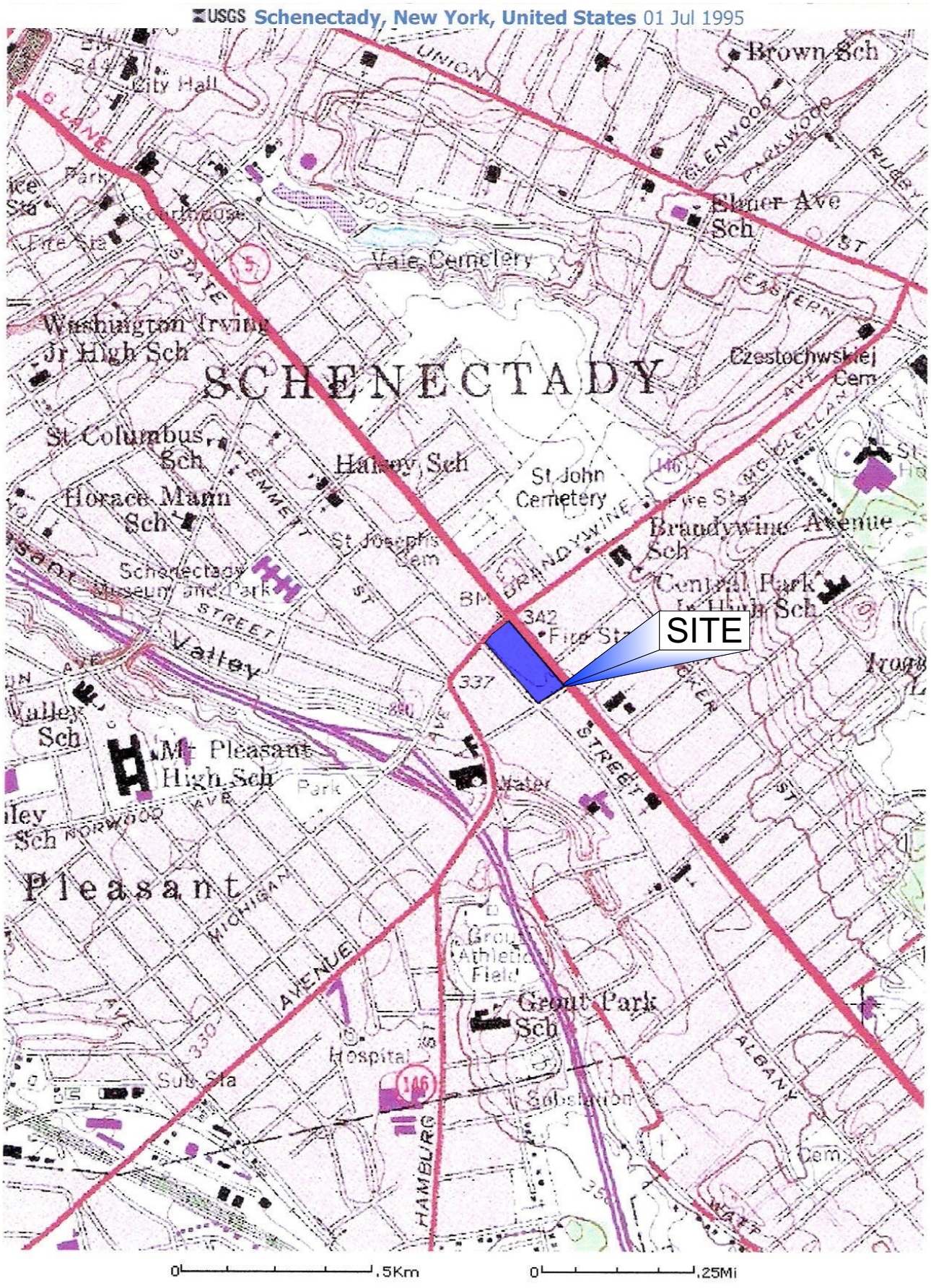

IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY

PRECISION ENVIRONMENTAL SERVICES, INC.
831 RT. 67 LOT 28
BALLSTON SPA, NY 12020
TEL: 518-885-4399
FAX: 518-885-4416
CERTIFIED WBE

BRANDYWINE PLUME TRACKDOWN

SITE LOCATION DETAIL

Location: Brandywine & Albany Ave.'s & State St., Schenectady, NY

Project No.: NYSDEC Spill No.: 9706794 | **Scale:** As Shown

Date: February 26, 2009 | **Figure:** 1

N

LEGEND

⊗ PROPOSED SOIL BORING

NOTE: 2007 AERIAL IMAGERY PROVIDED COURTESY OF NEW YORK STATE GIS CLEARING HOUSE

PRECISION ENVIRONMENTAL SERVICES, INC.
831 RT. 67,LOT 28
BALLSTON SPA, NY 12020
TEL: 518-885-4399
FAX: 518-885-4416
CERTIFIED WOMEN-OWNED BUSINESS ENTERPRISE

PROPOSED SOIL BORING LOCATIONS

BRANDYWINE AVE. PLUME TRACKDOWN

LOCATION: SCHENECTADY, NY

PROJECT #: NYSDEC SITE NO.: 4-47-040

DATE: 04-29-09

FIGURE: 2

SCALE: NTS