

Long laland | 170 Keyland Court | Bohamia, NY 11716 | Tel: 631.269.8800 Fax: 631.269.1699

Menhattaar | 1560 Broadway, 10th Floor, Suite 1024 | New York, NY 10036 | Te : 212.201.7905 Fax: 212.201.7906

www.impactenv.ronmental.com

November 26, 2008

Mr. Brian Jankauskas, P.E. **New York State Department of Environmental Conservation** Division of Environmental Remediation Remedial Bureau A 625 Broadway Albany, New York 12233-7015

Re: Groundwater Geochemical and Hydraulic Investigation Work Plan Melody Cleaners Site VCP Code 347-1 East Meadow, New York

Dear Mr. Jankauskas:

This letter serves as an abbreviated Groundwater Geochemical and Hydraulic Investigation Work Plan with respect to the above referenced site. The proposed investigative activities are intended to provide supplemental information regarding the natural attenuation evaluation proposed in the Remedial Investigation Report dated September 22, 2008. This proposed plan is based on the requirements of the New York State Department of Environmental Conservation (NYSDEC) as presented in a letter dated October 15, 2008. The NYSDEC has requested that: 1) slug tests be conducted at several locations in order to calculate hydraulic conductivity throughout the investigated areas; 2) groundwater samples be obtained at some off-site monitoring wells by low-flow sampling procedures for geochemical analysis. Accordingly, this plan outlines the procedures that will be followed to complete these required investigative activities.

It is proposed that this investigation be conducted at four monitoring wells, identified as MLW-31, MLW-4D, MLW-8D and MLW-9I. Monitoring well cluster MLW-3, MLW-8 and MLW-9 are located approximately on the centerline of the off-site plume. Laboratory analysis conducted on the groundwater samples obtained from MLW-31, MLW-8D and MLW-9I detected concentrations of PCE and its breakdown components (TCE and DCE), which indicates that on-going natural attenuation is occurring. Monitoring well cluster MLW-4 is located outside the path of the PCE plume. Geochemical data from MLW-4D will be utilized as background values for comparison. Supplemental hydraulic and geochemical information from those locations will be helpful to further understand the natural attenuation conditions in the off-site plume areas.

1. Slug Test

The proposed slug test will be performed using an electronic data-logger and pressure transducer. Real-time data will be transferred to data-logger for on-site analysis. A computer printout of the data will be submitted to the NYSDEC for review.

Prior to the test, depth-to-water will be measured utilizing a water level meter. Screen depth and diameter of wells will be confirmed based on previous well logs. Transducer and associated cable will be decontaminated prior to use.

The transducer and cable will be installed in the well to a depth below the target drawdown estimated for the test but at least two feet from the bottom of the well. The transducer will be temporarily taped to the well to keep the transducer at a constant depth. Initial water levels will be recorded. At zero time, a solid cylinder of known volume will be "Instantaneously" introduced (or removed) to raise (or depress) the water level. Depth-time measurements will be continued until the water level returns to equilibrium conditions or a sufficient number of readings have been made to clearly show a trend on a semi-log plot of time versus depth. Depth-to-water will be measured throughout the test to the nearest 0.01 foot in order to verify the accuracy of transducer readings.

Post operation data processing will be conducted utilizing AquifterTest[®] (Bouwer & Rice method for slug test evaluation). A computer printout of the data and the evaluation results will be submitted to the NYSDEC for review.

2. Investigation of Pumping Influence on the Plume

Transducers will be placed in MLW-6D, MLW-8D and MLW-9I to monitor the long term fluctuations in groundwater levels over a period of one month. An additional transducer will placed above water table within MLW-6D to monitor the ambient pressure change. Data obtained from the transducers will be compared to pumping information from the water district to determine whether the pumping activities conducted at the municipal pumping station has any potential of significantly influencing the plume movement.

3. Low-Flow Groundwater Sampling

A Grundfos[®] pump will be utilized for low-flow sampling. Prior to purging, static water levels will be measured utilizing a conventional water level meter. Upon completion of the measurement, the water level meter will be lowered to 0.3 ft below water table. The pump will be started at its lowest speed setting and slowly increased until discharge occurs. The pump speed will then be adjusted until there is little or no water level drawdown (less than 0.3 feet). Flow rates will be maintained at <500ml/min. Alarm signals from water level meter will be monitored to make sure the maximum drawdown level is not exceeded.

During well purging, a QED M20 Flow Cell will be utilized to monitor field parameters, including temperature, specific conductance, pH, DO and Redox. Purging will be considered complete and sampling may begin when all of the above indicator field parameters have stabilized. Stabilization is considered to be achieved when three consecutive readings, taken at three (3) to five (5) minute intervals, are within the following limits:

DO (±10%), Specific conductance (± 3%), pH (± 0.1 units), Redox (±10 millivolts), Turbidity (±10%)

Parameters and depth to groundwater will be documented on the purge logs in the filed for each interval that field measurements are recorded. A field log protocol will be conducted to record sampling data including: date, time, location, sample identification code, depth to water, well specifications, purging method, purging rate, and sampling techniques. All purging readings through the flow-cell will be automatically stored in the instrument and later downloaded. All field data will be submitted to the NYSDEC along with the final report.

The flow-through cell will be disconnected prior to water sampling for laboratory analyses. VOC samples will be collected first and directly into pre-preserved sample containers. All sample containers will be filled by allowing the pump discharge to flow gently down the inside of the container with minimal turbulence. During purging and sampling, the tubing will remain filled with water so as to minimize possible changes in water chemistry upon contact with the atmosphere. Samples will be labeled and placed into a cooler with ice or refrigerant for delivery to the laboratory. The development wastewater will be containerized for subsequent disposal.

One duplicate, one trip blank, and one Matrix Spike/Matrix Spike Duplicate (MS/MSD) will be collected during the sampling.

4. Geochemical and Microorganism and Analysis

The groundwater samples will be properly preserved for transportation to an ELAP certified laboratory (Chemtech of New Jersey) for analysis. The laboratory analysis method for each sample will consist of USEPA Test Method 8260 for total volatile organic analytes. The detection limits for the analysis will meet the acceptable criteria for ambient groundwater quality standards. In addition, the groundwater samples from MLW-31, MLW-4D, MLW-8D and MLW-9I will be analyzed for geochemical parameter including nitrate/nitrite, ferric/ferrous iron, sulfate/sulfide, carbon dioxide, alkalinity, chloride, hydrogen, volatile fatty acids and ethylene. The laboratory analytical results will be reported with Analytical Sampling Protocol (ASP) B deliverables.

Groundwater samples from MLW-31, MLW-8D and MLW-91 will be subject to polymerase chain reaction (PCR) genetic analysis for microbial communities in searching for *dehalococcoides* organisms which are the only known microorganisms that can completely decompose PCE all the way to ethylene.

5. Natural Attenuation Evaluation

The results of this investigation will be utilized to further evaluate natural attenuation in the offsite plume. The evaluation results will be presented to the NYSDEC in a letter report in support of the decision-making regarding the remedial options selection.

6. Schedule

Upon approval of this plan, the investigative activities will be completed within 4-weeks; the analytical data package will require an additional 3 weeks to receive from the laboratory; and the data evaluation will be completed approximately 2 weeks upon receipt of the analytical data.

Please feel free to call me with any questions or comments regarding this plan.

Sincerely,

Impact Environmental

Kevin Kleaka Project Manager

Attachment: Site Map

