FINAL
Site Characterization of the Former Depot Street Dry Cleaner Canisteo, Steuben County New York

Site Number 8-51-021

November 2008

Prepared for:

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List of Acronyms

ASP	Analytical Services Protocol
ASTM	American Society for Testing and Materials
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, xylenes
COC	chain-of-custody
DER	(NYSDEC) Division of Environmental Remediation
DPT	direct push technology
DUSR	Data Usability Summary Report
EDD	electronic data deliverable
EDR	Environmental Data Resources, Inc.
EEEPC	Ecology and Environment Engineering, P.C.
ELAP	Environmental Laboratory Approval Program
EPA	United States Environmental Protection Agency
GIS	geographic information system
HASP	Health and Safety Plan
ID	inner diameter
IDL	instrument detection limit
IDW	investigation-derived waste
LCS	laboratory control sample
LDPE	low-density polyethylene

List of Acronyms (Cont.)

µg/m^3	micrograms per cubic meter
µg/L	micrograms per liter
MDL	method detection limit
mL	milliliter
MS/MSD	matrix spike/matrix spike duplicate
MTBE	methyl-tert butyl ether
NAD	North American Datum
NAVD 88	North American Vertical Datum of 1988
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PCE	perchloroethylene
PDB	passive diffusion bag
ppb	parts per billion
ppbv	parts per billion by volume
ppm	parts per million
PID	photoionization detector
PQL	practical quantification limit
PRT	post-run tubing
PVC	polyvinyl chloride
QA	quality assurance
QAPP	Quality Assurance Project Plan
QC	quality control
RPD	relative percent difference
SDG	sample delivery group
TCE	trichloroethylene

List of Acronyms (Cont.)

TIC	tentatively identified compound
USGS	United States Geological Survey
UST	underground storage tank
VOA	volatile organic analysis
VOC	volatile organic compound

1 Introduction

Pursuant to Work Assignment No. D003493-57 dated September 6, 2005, and D004435-12 dated April 6, 2006 Ecology and Environment Engineering, P.C. (EEEPC) has prepared this site characterization report on behalf of the New York State Department of Environmental Conservation (NYSDEC), Division of Environmental Remediation (DER), for site characterization services performed on January 11 though 27, 2006, and May 10 and May 11, 2007, at the Former Depot Street Cleaner Site (Site No. 8-51-021), formerly located at the intersection of West Main Street and Depot Street in the village of Canisteo, Steuben County, New York (see Figure 1-1).

The objectives of the site characterization were to:

- Evaluate existing subsurface conditions at and in the vicinity of the site for contamination attributable to past uses of the property that may have impacted municipal supply wells in the area;
- Identify interim remedial measures that may be needed to address specific issues recognized at and in the vicinity of the site; and
- Generate a site characterization report.

To accomplish these objectives, the investigation described herein has been designed in accordance with the DER's December 2002 guidance document *Draft DER-10 Technical Guidance for Site Investigation and Remediation* (NYSDEC 2000).

Municipal Supply Well No. 1

Former Depot St. Dry Cleaner

N
W E
S

0 250 500 1,000

Feet

Figure 1-1
Site Location Map
Canisteo, New York

2 Background Information

2.1 Site Description and History

Site characterization activities were completed in the village of Canisteo. A brief site description and history is provided below.

Former Depot Street Dry Cleaner (Site No. 8-51-021), formerly located at 17 Depot Street in the village of Canisteo, New York, was located immediately north of the corner of West Main Street and Depot Street in the village of Canisteo, New York. The Environmental Data Resources Inc. (EDR) database search performed for 17 Depot Street provided Sanborn Fire Insurance maps (Sanborn maps) from 1886 through 1949. Review of the Sanborn maps indicated that the site was used as a printing shop from at least 1920 to 1930 and as a dry cleaner in 1949. The dates of operation of the dry cleaner are unknown. The dry cleaner no longer exists but is now part of a property occupied by an Acorn Markets convenience store containing active gasoline pump islands. The site is located within a mixed commercial and residential area approximately 1,000 feet south of the village well field.

Due to a tank failure and removal of several abandoned underground storage tanks (USTs), the site is currently part of a NYSDEC open spill cleanup (Spill No. 9970281). An air sparging system consisting of three air injection wells and four vacuum extraction wells is currently in operation on site.

2.2 Conceptual Site Model

The village of Canisteo currently obtains groundwater from a municipal well field for use in the public water system. Recent sampling of the Canisteo village wells has indicated that perchloroethylene (PCE) and methyl-tert butyl ether (MTBE) are present in supply well no. 1. Supply well no.1 is the primary water source for the village.

Based on collected data, contaminants originating from the site could have been dispersed into the groundwater and ultimately could have reached the impacted municipal wells. Generally, low concentrations (i.e., less than 5 parts per billion [ppb]) of PCE, MTBE, and trichloroethylene (TCE) have been detected in environmental media collected from each site.

2.3 Subsurface Conditions

The village of Canisteo is situated above a valley-fill aquifer cut by pre-glacial streams and subsequently eroded deeper and wider by glaciers. The aquifer typically consists of 20 to 40 feet of highly permeable, stratified, well- sorted, saturated outwash sand and gravel of glaciofluvial origin and subordinate amounts of alluvium. The aquifers are underlain by glaciolacustrine units of fine sand and silt that is typically more than 150 feet thick and are of low permeability. Groundwater in the aquifers was first encountered at between 14 and 16 feet below ground surface (bgs) and is unconfined (USGS 1984a; 1984b). Bedrock beneath the village consists of Devonian shale and sandstone of the Canadaway group.

3 Site Characterization Activities

The tasks and requirements of this work assignment are specified in EEEPC's Contract No. D003493, and Work Assignment No. D003493-57 (September 2, 2005). The following is a summary of the work assignment scope.

3.1 Work Plan Development

EEEPC reviewed site records and conducted a site visit with the NYSDEC project manager on September 21 and 22, 2005. After reviewing existing site documentation, EEEPC held discussions with NYSDEC regarding the work scope.

3.1.1 Background Research

EEEPC reviewed existing information made available by NYSDEC, including spill reports for the Former Depot Street Dry Cleaner site. EEEPC also reviewed available files at the Steuben County Clerk and Tax Assessor's offices.

Database searches were performed by EDR for the site in accordance with American Society for Testing and Materials (ASTM) E 1527-00, *Standard Practice for Environmental Site Assessments*. The database searches also included review of historical Sanborn maps, historical topographic maps, city directories, and historic aerial photos. The information was presented in Appendix C of the work plan (EEEPC 2005) and was helpful in selection of site characterization sample locations.

3.1.2 Health and Safety Plan Preparation

A site-specific health and safety plan (HASP) pertaining to this investigation was prepared and was included in Appendix A of the work plan.

3.1.3 Quality Assurance Project Plan Preparation

EEEPC completed a master Quality Assurance Program Plan that was approved by NYSDEC under previous site characterization projects under this contract. A project-specific Quality Assurance Project Plan (QAPP) was prepared and was included in Appendix B of the work plan.

3.1.4 Base Map Development

Site base maps illustrating proposed sampling locations were created for each site using the geographic information system (GIS)-based aerial imagery available from the New York State GIS Clearinghouse. Property ownership data obtained from county/town records also were used. A base map for the site that illustrates the sample locations has been included as Figure 3-1.

3.2 Field Investigation

The site characterization conducted for the Former Depot Street Dry Cleaners site included subsurface soil, groundwater, and soil vapor investigations. Phase one sampling took place in January 2006 and consisted of sampling at four soil vapor, five groundwater, and six soil boring locations. May 2007 phase two sampling consisted of two soil vapor and 11 groundwater locations. Subsurface soil, groundwater, and soil vapor samples were collected using direct-push technology (DPT) (Geoprobe). Groundwater samples also were collected from an existing well. In addition to the environmental sampling effort, three piezometers were installed to assist in evaluating groundwater flow direction. Fieldwork was conducted by one field team consisting of a field team leader and a health and safety officer/sampler. A summary of the samples collected and a list of sample identifications is provided in Table 3-1. Photographs of the various field activities are provided in Appendix B.

Table 3-1 Sample Summary, Former Depot Street Dry Cleaner Site

	Sample Count and Sample IDs		
Dates Samples Collected	**Soil vapor**	**Groundwater**	**Soil**
Phase One Sampling			
1/24/2006 to 1/31/2006	4	15	18
	DS-SG-01	DS-GW-01(20)	DS-BH-01(15-16)
	DS-SG-02	DS-GW-01(30)	DS-BH-01(26-27)
	DS-SG-03	DS-GW-01(40)	DS-BH-01(36-37)
	DS-SG-04	DS-GW-02(18) (FD)	DS-BH-02(10-11)
		DS-GW-02(29)	DS-BH-02(25-26) (FD)
		DS-GW-02(40)	DS-BH-02(36-37)
		DS-GW-03(16)	DS-BH-03(8.6-9)
		DS-GW-03(25)	DS-BH-03(10-10.5)
		DS-GW-04(20)	DS-BH-03(15-16)
		DS-GW-04(30)	DS-BH-04(15-16)
		DS-GW-04(40)	DS-BH-04(26-27)
		DS-GW-05(20)	DS-BH-04(35-38)
		DS-GW-05(30)	DS-BH-05(15-16)
		DS-GW-05(40)	DS-BH-05(27-28)
		DS-GW-03(16)	DS-BH-05(36-37)
		DS-GW-03(25)	DS-BH-06(20-20.7)
		DS-GW-04(20)	DS-BH-06(30-31)
		DS-GW-06 (Existing MW-1)	DS-BH-06(36-37)

Table 3-1 Sample Summary, Former Depot Street Dry Cleaner Site

	Sample Count and Sample IDs		
Dates Samples Collected	**Soil vapor**	**Groundwater**	**Soil**
Phase Two Sampling			
5/10/2007 to 5/11/2007	2	11	
	DS-SG-05	DS-GW-06(16)	
	DS-SG-06	DS-GW-07(16)	
		DS-GW-07/DUP(16)	
		DS-GW-08(16)	
		DS-GW-09(16)	
		DS-GW-10(16)	
		DS-GW-11(16)	
		DS-GW-12(16)	
		DS-GW-13(24)	
		DS-GW-14(16)	
		DS-GW-15(32)	
		DS-GW-16(20)	

Key:

(##) = Sample depth collected.
- = No sample collected.
BH = Borehole.
DS = Depot Street.
/DUP = Phase 2 Field duplicate collected at this location.
(FD) = Phase 1 Field duplicate collected at this location.
GW = Groundwater.
SG = Soil Vapor.

Laboratory analysis of environmental samples was conducted by Columbia Analytical Services (Columbia) for phase one and Chemtech Environmental Laboratory (Chemtech) for phase two. Columbia is certified by the New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) for the United States Environmental Protection Agency (EPA) solid and hazardous waste methods and meets NYSDEC Analytical Services Protocol (ASP) deliverable requirements. Chemtech is also certified by the NYSDOH ELAP for the EPA solid and hazardous waste methods and meets NYSDEC ASP deliverable requirements. A table listing sample containers, preservatives, holding times and analyte list was presented in the site-specific QAPP that was submitted in the work plan as Appendix B.

3.2.1 Literature Search

EEEPC personnel visited the Steuben County Historical Society Office in September 2005 to obtain historical aerial photographs and visited the tax assessor's office to obtain accurate property line data. EEEPC also conducted a literature search to obtain surface waterbody class and flow data. Information from these efforts was used to refine the sample locations.

3.2.2 Subsurface Soil Characterization

The purpose of the subsurface soil sampling program was to determine if volatile organic compound (VOC) contamination related to past uses of the site is present and to assess the subsurface soil conditions beneath the site.

A total of 18 boreholes were drilled at the site (see Figure 3-1), six of which included soil sampling and geologic logging. A copy of the boring logs is provided as Appendix A of this report. Borings were installed via DPT using Geoprobe Model 66DT driving a 5-foot macro-core sampler with dedicated acetate sleeves. Continuous soil cores were collected at each location from ground surface to depths ranging from 25 to 45 feet bgs. Groundwater was generally encountered between 14 and 16 feet bgs.

EEEPC screened soil cores for organic vapors using a photoionization detector (PID) using a RAE Systems MiniRAE 2000 with a 10.6 eV lamp. EEEPC's field geologist recorded physical observations of soil cores and selected intervals for sampling and laboratory analysis based on either the observations (i.e., staining) or elevated PID readings. Subsurface soil samples were collected for analysis from zones exhibiting the highest PID reading. Elevated PID readings were only encountered at DS-BH-03. In the remaining boreholes with no elevated PID readings, subsurface soils were collected from three locations: the bottom, middle, and top of the saturated soil zone. Samples were sent to the laboratory for VOC analysis using EPA Method SW8260 and for percent solids.

Upon completion, boreholes that were not being converted into piezometers (see Section 3.2.3.3) were backfilled with non-contaminated soil cuttings, based on PID readings, and/or a cement/bentonite grout.

A minimal amount of investigation-derived waste (IDW) was generated due to the Geoprobe technique and was handled in accordance with the work plan or as directed by NYSDEC. (Table 4-1 in Section 4 provides a summary of the samples collected, including sample number, date, depth and positive analytical results screened against NYSDEC criteria.)

3.2.3 Groundwater Characterization

The purpose of the groundwater sampling program was to determine if VOC contamination present in the village of Canisteo municipal wells may have originated from the site.

During phase one of the investigation, up to three vertical profiling groundwater samples were collected from each Geoprobe boring location for VOC analysis using EPA Method SW8260 (see Figure 3-1). One passive diffusion bag (PDB) groundwater sample was collected from existing monitoring well (DS-GW-06 [MW-1]). Phase two of the investigation consisted of a single groundwater sample from each sample location. The depth from which each groundwater sample was collected is provided in Table 3-1.

\\BUFSDL4\GIS\Buffalo\Steuben_County_RIFS\Maps\MXD\Report_May2008\Figure 3-1 2006 SampleLocations_DepotStreet.mxd 7/18/2007

Phase I Sample Locations (2006)

- Soil Vapor Sampling Location
- Soil Boring Only Sample
- Soil and Groundwater Sample Location
- Soil and Groundwater Sample Location W/ Piezometer
- Existing Monitoring Well (MW-1) Sampled

Phase II Sample Locations (2007)

- Groundwater Sampling Location
- Soil Vapor Sampling Location
- Approximate Property Boundary

W S E N

0 100 200 400

Feet

Figure 3-1
Former Depot Street Dry Cleaner
Sample Locations

3.2.3.1 Groundwater Sample Collection and Vertical Profiling

A Geoprobe SP15 groundwater sampler was driven into the subsurface at a depth close to the maximum depth of the corresponding borehole using Geoprobe Model 66DT. EEEPC collected groundwater samples using a check valve and dedicated tubing. During phase one of the investigation a total of 15 groundwater samples (see Table 3-1) were taken. Groundwater samples were collected from all borehole locations except for DS-BH-06 (see Figure 3-1) because groundwater was collected from nearby existing MW-1. Each of the five groundwater sampling locations had three discrete groundwater samples taken, except for DS-BH-03, which was stopped at a shallower depth due to a potential petroleum contamination zone, and only two samples were collected. During phase two of the investiagion a total of 11 samples (see Table 3-1) were collected at the locations shown on Figure 3-1. One sample was collected from each location.

EEEPC encountered groundwater at depths ranging from 14 to 16 feet bgs. During phase one of the investigation, the sampler was driven to near-maximum depth of the borehole and the first groundwater sample was collected by EEEPC. The profiler was backed out into the middle of the water table (approximately 10 to 15 feet) and at least one volume of groundwater was purged through the sampler before the next groundwater sample was collected. The profiler was backed out to approximately 5 feet below the water table and at least one volume of groundwater was purged through the sampler before the last groundwater sample was collected. During phase two only the first sample was collected, and at least one well volume was purged before sampling took place. After groundwater sampling was completed, the borehole was backfilled with clean, chemically inert, non-carbonated, sorted silica sand to 2 feet bgs, followed by bentonite to just below grade. The borehole was then capped with an appropriate material to return the site to its original condition (e.g., asphalt, gravel, and topsoil).

All groundwater samples were submitted for VOC analysis by EPA Method SW8260B. Purged water was managed as described in the work plan.

3.2.3.2 Existing Monitoring Well Sampling

One passive diffusion bag groundwater sample was collected from an existing monitoring well on site (MW-1) (see Figure 3-1). A PDB sampler, equivalent to the samplers described in United States Geological Survey (USGS) Water Investigation Report 01-0460, *User's Guide for Polyethylene-Based Passive Diffusion Bag Samplers to Obtain Volatile Organic Compound Concentrations in Wells* (2001), was purchased from a certified manufacturer and used to collect a groundwater sample at existing monitoring well MW-1 at the former Depot Street Dry Cleaner site.

The PDB sampler consisted of a 1.5-foot long low-density polyethylene (LDPE) tube closed at both ends and containing deionized water. To prepare the PDB sampler for deployment, a dedicated stainless-steel weight was attached to the bottom of the PDB and a dedicated stainless-steel cable was attached to the top.

The assembly was lowered into the well so that the sampler was positioned at the approximate midpoint of the well screen. The cable from which the sampler was hung was attached to the well cap. The sampler remained undisturbed in the well for two weeks. After two weeks the PDB sampler was removed from the well using the attached cable. Care was taken to not expose the sampler to heat or agitation. Upon removal from the well, the PDB sampler was examined for evidence of algae, iron, and other coatings. The bag was also examined for tears in the membrane. After the PDB sampler was removed from the weighted line, excess liquid was removed from the outside of the bag to minimize the potential for cross-contamination. The bag was cut with a dedicated, stainless-steel knife. Water was poured from the PDB into three 40 milliliter (mL) volatile organic analysis (VOA) vials, placed in a cooler maintained with ice at 4°C, packaged and shipped to Chemtech in accordance with the procedures specified in the work plan.

3.2.3.3 Piezometer Installation and Water Level Survey

Once subsurface soil sampling was completed, four boreholes were converted into piezometers (see Figure 3-1). The purpose of the piezometers was to assess the groundwater flow direction in the vicinity of each site and to provide groundwater sampling locations for possible future use. The piezometers were installed by driving the Geoprobe casing down the borehole (to depths determined in the field) and installing the piezometer through the casing. Each piezometer was constructed using a 5-foot segment of 1-inch inner diameter (ID) polyvinyl chloride (PVC) screen having a 0.10-inch slot size, followed by 1-inch ID Schedule 40 PVC riser to approximately 0.1 to 0.3 feet below grade. The screen was set from approximately 10 feet to 15 feet below the water table to 4 feet below the water table. A threaded PVC cap was placed on the bottom of the screen. All PVC connections were flush-threaded. A sand pack of Morie #0 sand (or equivalent size) extended from the bottom of the screen to a height of generally 10 to 15 feet above the screen. The sand pack generally was capped with a 2-foot to 5-foot-thick bentonite seal. After the bentonite seal hydrated, bentonite grout was installed to approximately 1 foot below grade. Each piezometer was completed with a flush-mount steel protective casing set in concrete and a concrete anti-percolation pad.

Water Level Survey

Subsequent to piezometer installation, but not within 24 hours of completion, static groundwater level measurements were collected from the piezometers in accordance with procedures described in the work plan. A summary of piezometer construction and groundwater elevation data is presented in Table 3-2.

Groundwater levels were measured in piezometers PZ-1, PZ-2, and existing monitoring well MW-1. Groundwater flow at the site is toward the northeast at a very low horizontal gradient of 0.002 feet per foot (see Figure 3-2). Flow is generally toward the municipal well, which is approximately 1,570 feet to the northeast.

Soil Vapor Sampling Location
Geoprobe Location - Soil Sampling Location
Geoprobe Sampling Location
Geoprobe Sampling w/ Piezometer
Existing Monitoring Well (MW-1) Sampled
Approximate Property Boundary
Groundwater Elevation Contour
(Dashed when inferred)

(PZ-1 1087.73) Groundwater Elevation (January 2006)
Direction of Groundwater Flow

N
W E
S

0 50 100 200
Feet

Figure 3-2
Former Depot St. Dry Cleaner
Sample Locations and
Groundwater Contours

Table 3-2 Summary of Piezometer Construction and Groundwater Elevation Data, Former Depot Street Dry Cleaner Site

Piezometer Identification	Screened Interval (feet bgs)	Ground Elevation (ft AMSL)	Depth to Top of Screen (ft bgs)	Top of Screen Elevation (ft AMSL)	Top of Riser Elevation (ft AMSL)	Depth to Groundwater (ft below top of riser)	Groundwater Elevation (ft AMSL)
DS-PZ-1	25 - 30	1129.91	25	1104.91	1129.8	10.23	1119.57
DS-PZ-2	25 - 30	1130.12	25	1105.12	1129.91	10.73	1119.18
DS-PZ-3	12 - 17	1131.73	12	1119.73	1131.53	NA	NA
DS-PZ-4	12 - 17	1130.39	12	1118.39	1130.11	NA	NA
MW-01	NA	1130.97	NA	NA	1130.65	11.29	1119.36

Key:

bgs = Below ground surface.
ft = Feet.
AMSL = Above mean sea level.
NA = Not available.

3.2.4 Soil Vapor Sampling

The purpose of the soil vapor sampling program was to determine if VOC contamination is present in the unsaturated zone above the water table, which could potentially affect the public.

Four soil vapor samples were collected during phase one of the investigation and an additional two samples were collected during phase two (see Table 3-1) the location of these samples are shown on Figure 3-1. These samples were taken with a Geoprobe rig using the post-run tubing (PRT) system. The PRT system uses a Geoprobe to drive a clean drive-point adaptor and new expendable point approximately 8 feet bgs and pulling the rods back 6 inches to create a void, allowing soil vapor to migrate into the bottom of the drive-point adaptor. A clean, dedicated, and unused piece of ¼-inch ID food-grade polyethylene tubing was attached to the stainless-steel adaptor. The tubing was inserted into the probe rod and extended to the bottom of the rod. Using a counter-clockwise circular motion, the tubing was threaded to the drive-point adaptor and tightened to compress the "O-ring" seal. To ensure the integrity of the connections, a vacuum check was performed on the system prior to purging and collecting a sample. After connecting the tubing to the down-hole drive-point adaptor, the line was purged by drawing a measured volume (at least one tubing volume) of soil vapor through the tubing using the vacuum system mounted on the Geoprobe unit. A tubing pinch valve was used to seal the end of the tube while the connection to the sample canister was made.

Sample canisters were cleaned at the laboratory and shipped under vacuum to the site. Sample canisters were checked prior to sampling to verify the vacuum. Sample canisters were fitted with controllers set to draw soil vapor in over a 1-hour period. Once the canisters were placed in the appropriate locations, the canister valve was opened and then closed after the 1-hour time period. An identification tag attached to the canister was completed with the sampling information

and location, a chain-of-custody (COC) form was completed, and the canisters were transported back to Columbia for analyses.

Upon completion of sampling, the Geoprobe rods were removed from the ground and the hole was backfilled with bentonite chips to just below grade. The hole was topped off with asphalt or topsoil, as appropriate.

3.2.5 Site Survey

Popli Consulting Engineers of Penfield, New York, conducted a site survey that included:

- Horizontal locations and vertical elevations of Geoprobe soil borings;
- Horizontal locations and vertical elevations of new piezometers, including the ground elevation and the elevation of the inner PVC riser of each piezometer;
- Horizontal locations of the 2006 soil vapor sampling locations; and
- Establishment of the horizontal location of key site features.

Vertical control was established to the nearest ±0.1 foot for ground surface elevations. Piezometer inner casing elevations were reported to the nearest 0.01 foot. Elevations were determined relative to a North American Vertical Datum of 1988 (NAVD 88). Coordinates were given in the State Plane East Zone (feet), North American Datum (NAD) 1983 to an accuracy of ±0.5 foot. The survey data was used to update site base maps which are presented as Figure 3-1. Soil vapor and groundwater grab sample locations of the May 2007 sampling were recorded in the field, but not surveyed.

3.2.6 Air Monitoring

The site safety officer performed air monitoring during all intrusive site activities (subsurface soil borings, groundwater sampling, and soil vapor sampling) to characterize airborne contaminant concentrations, including organic vapors and explosive gases. Air monitoring was conducted for the protection of site workers and the community and to characterize environmental samples. The HASP was presented in Appendix A of the work plan and specified the monitoring equipment that was used for contaminants of interest and the frequency with which the monitoring was to be performed.

3.3 Quality Assurance/Quality Control

The quality assurance (QA)/quality control (QC) procedures utilized for the project are described in the QAPP (see Appendix B of the work plan). These procedures were implemented for all project activities. This section presents the outcome of the QA/QC program and provides an opportunity to review the completeness and quality of the data collected. Any data usability concerns are summarized below and are incorporated into the data assessment (see Section 4).

Laboratory data reports and the details of the data review are provided as PDF files on a compact disc in Appendix C.

3.3.1 Field QC Samples

Field QC samples provide a means to check ways that sample quality can be compromised in the field or through shipping and to also document overall sampling precision. The following sections describe field QC samples collected during the site characterization and any potential concerns regarding sample collection and handling procedures on data usability.

Trip Blanks

Trip blanks check for the possible introduction of VOCs from the time the samples are collected to the time they are analyzed. Trip blanks were supplied by the laboratory. They were prepared by filling 40-mL glass vials with organic-free deionized water. They were handled like field samples; however, they were not opened once prepared. A total of four trip blanks were submitted for analysis, three from phase one and one from phase two. One trip blank sample accompanied each shipment containing aqueous samples to be analyzed for VOCs.

Low-level acetone was detected in all four trip blanks. Acetone is a common laboratory contaminant. Acetone was also detected in several of the laboratory method blanks. The source of the volatiles appears to be laboratory background and the trip blank results do not indicate any concerns with sample handling or transport procedures.

Trip blanks consisting of a closed, sealed summa canister were also provided by the laboratory and accompanied the phase one shipment containing soil vapor samples to be analyzed for VOCs. Benzene, 1,1,1-trichloroethane, methylene chloride, tetrachloroethene, and toluene were detected in DS-SG-TB-01. 1,1,1-trichloroethane was detected in associated laboratory method blanks. The outlier reports list specific sample results qualified based on the associated trip blank values. Since the blank canisters were not opened once they had been prepared until they were opened at the laboratory for analysis, the level of contaminants detected indicate that a review of the canister cleaning procedure is recommended. Trip blanks are reported with the groundwater and soil vapor samples on the summary tables in Section 4 and in Appendix C.

Duplicate Samples

Consistency in both sample collection and sample analysis is checked through analysis of duplicate samples. Duplicate samples consist of aliquots of sample media placed in separate sample containers and labeled as separate samples. Duplicate samples were collected at a rate of approximately one per 20 field samples. Table 3-1 lists duplicate samples. Duplicate sample analytical data are presented in the Data Usability Summary Reports (DUSRs) in Appendix C and are included on the summary tables in Section 4.

In general, the field duplicate results indicated good precision. Volatile compounds detected at trace levels demonstrated higher variability. The results do not indicate any concerns with the sampling or sample handling procedures.

Rinsate Samples

Rinsate samples were not collected because all samples were collected using dedicated disposable sampling equipment.

3.3.2 Laboratory QC Samples

Data quality was evaluated based on sample integrity, holding times, method blank results, spike recoveries, surrogate recoveries, and duplicate precision. A complete sample listing for the samples analyzed is provided in the associated DUSRs (see Appendix C). The DUSRs include attached outlier reports from the automated data validation. The outlier reports list specific analytes outside control limits and associated samples. Many results were reported below reporting limits and flagged "J" as estimated by the laboratory. The results below the reporting limit also are listed as an attachment to the DUSRs.

The following sections describe laboratory QC samples reported with the sample data and any potential concerns with sample analysis procedures on data usability.

Holding Times

Holding times are established and monitored to ensure analytical results accurately represent analyte concentrations in a sample at the time of collection. Exceeding the holding time for a sample generally results in a loss of the analyte due to a variety of mechanisms (e.g., deposition on the sample container walls or precipitation). Holding times were established in the QAPP based on NYSDEC's ASP requirements. All samples were analyzed within these project-specified holding times except for those listed on Table 3-3. Results for the affected samples are qualified "UJ" or "J" as estimated bias low.

Table 3-3 Summary of Samples Exceeding Holding Time, Former Depot Street Dry Cleaner Site

Client Sample ID	Matrix	Method	Sample Date	Analysis Date	Analysis Type
DS-BH-03(10-10.5)	SO	8260B	01/25/2006 8:15	02/21/2006 22:17	RES
DS-BH-03(15-16)	SO	8260B	01/25/2006 8:45	02/21/2006 22:42	RES
DS-BH-03(8.6-9)	SO	8260B	01/25/2006 8:09	02/21/2006 21:51	RES
DS-BH-04(15-16)	SO	8260B	01/25/2006 10:20	02/09/2006 21:00	RES
DS-BH-04(26-27)	SO	8260B	01/25/2006 10:35	02/21/2006 2:34	RES
DS-BH-06(20-20.7)	SO	8260B	01/26/2006 8:35	02/22/2006 11:25	DL
DS-BH-06(20-20.7)	SO	8260B	01/26/2006 8:35	02/22/2006 21:43	DL1
DS-BH-06(30-31)	SO	8260B	01/26/2006 9:02	02/22/2006 11:00	DL

Method Blanks

Laboratory blank samples are analyzed and evaluated to determine the existence and magnitude of possible contamination during the sampling and analysis process. Analyte concentrations in the blanks are generally below the practical quantification limit (PQL). If the analyte is present in the sample at similar trace levels, then the analyte is likely a common background contaminant from some phase of the sampling, extraction, or analytical procedure, and associated low-level sample concentrations are not considered to be site-related. If the analyte concentration is above the PQL, then there is a potential contamination problem and sample results may be biased high or the data unusable. The analytes found in the method blanks and associated qualified results are reported as an outlier in the attachments to the DUSRs (if applicable).

The phase one investigation method blanks were all performed at the required frequency. 1,1,1-trichloroethene was detected in the soil vapor method blanks. Methylene chloride and acetone were detected in the aqueous method blanks. Methylene chloride, acetone, 2-butanone, cyclohexane, xylenes, and methylcyclohexane were detected in soil method blanks. The associated sample results were qualified "U" as non-detect at the PQL or with elevated reporting limits. The results do not have a significant impact on data usability as most of the qualified sample data were below the PQL. The only results with significantly elevated reporting limits were 1,1,1-trichloroethane in the soil vapor samples.

The phase two investigation method blanks were all performed at the required frequency. Acetone was detected in the aqueous method blank and dichlorodifluoromethane was detected in the soil vapor method blank. The associated sample results were qualified "J" as an estimated value. Each of the groundwater samples detected concentrations of acetone and each of the soil vapor samples detected concentrations of dichlorodifluoromethane.

Surrogate Spikes

Laboratory performance for individual samples analyzed for organic compounds is established by the use of surrogate spikes in which samples are spiked with surrogate compounds prior to preparation and analysis. Unusually low or high surrogate recovery values may indicate some deficiency in the analytical system or that some matrix effects exist, resulting in low or high sample results for target compounds. The surrogate results outside QC limits are presented as an outlier reported in the attachments to the DUSRs (if applicable).

Many samples for volatile organics had surrogate recoveries outside of control limits. The majority of the recoveries were high. All affected samples were reanalyzed and matrix effects substantiated. Results have been flagged to reflect any bias as determined by surrogate recoveries (see the DUSRs in Appendix C).

Matrix Spike and Matrix Spike Duplicate Analysis

Matrix spike and matrix spike duplicate (MS/MSD) analyses are intended to provide information about the effects that the sample matrix exerts on the digestion/extraction and measurement methodology. MS recovery values that do not meet laboratory QC criteria may indicate that sample analyte results are being attenuated in the analysis procedure. The potential sample bias may be estimated by noting the degree to which the MS concentration was elevated or lowered in the spike analysis. However, this bias should serve only as an approximation; sample-specific problems may be the cause of the discrepancy, particularly in soil samples. Recoveries of a post-digestion spike or a laboratory control sample (LCS) are used to verify that the analytical methodology is acceptable and that MS recoveries are due to matrix effects. An MSD analysis is performed to evaluate the precision of the sample results. Precision is measured as the relative percent difference (RPD) between analytical results for duplicate samples. The laboratory's failure to produce similar results for MSD samples may indicate that the samples were non-homogeneous (particularly in soil samples), or that method defects may exist in the laboratory's techniques. The MS results outside QC limits are reported as an outlier in the attachments to the DUSRs (if applicable).

The MS/MSD sample analyses were performed at the required frequency. The MS/MSD recoveries and RPD values indicate potential matrix problems for the VOC analyses. The associated parent sample results are qualified "J" as estimated or "UJ" as an estimated reporting limit. The MS/MSD recoveries do not indicate any analytical issues and the impacts from matrix effects do not appear to significantly affect data usability.

Laboratory Control Sample Analysis

The LCS is analyzed to monitor the efficiency of the digestion/extraction procedure and analytical instrument operation. The ability of the laboratory to successfully analyze an LCS demonstrates that there are no analytical problems related to the digestion/sample preparation procedures and/or instrument operations. The LCS results outside QC limits are presented as an outlier in the attachments to the DUSRs (if applicable). Sporadic and marginal QC failures for multiple component methods do not indicate an analytical concern. If recoveries are high and the compounds are not detected in the samples, then no data qualification is required. All recoveries should be above 10% or the non-detect results flagged "UR," as rejected.

All LCS analyses were performed at the required frequency. Numerous LCS recoveries were high but no data qualification was required as the compounds were not detected in the associated samples. 1,2-dibromoethane was not recovered from the LCS associated with the dilution of sample DS-BH-06(20-20.7) and was qualified as rejected, "R." This sample was analyzed at a dilution because of high concentrations of benzene, toluene, ethylbenzene, and xylenes and, therefore, the rejection of 1,2-dibromoethane has no impact on the usability of the sample results for those compounds. Other results are qualified "UJ," estimated non-detect,

or "J," estimated with a positive or negative sign designating bias based on sporadic LCS failures.

Other QC Analysis

The following deviations from QC specifications not addressed elsewhere were noted:

- **Initial Calibration.** In a number of cases, where the RPD for a chemical was found to have exceeded the specified limit of 30%, the associated sample results were qualified as estimated, either J for positive results or UJ for non-detectable results.

- **Continuing Calibration.** In a number of cases where the percent difference for a chemical was found to have exceeded the specified limit of 25%, the associated sample results were qualified as estimated, either J for positive results or UJ for non-detectable results.

- **Internal Standards.** In instances where internal standard response was outside control limits, matrix effects were substantiated by reanalysis or dilution. Positive VOC results and some non-detect results in the sample with internal standard responses outside of control limits were qualified estimated (J or UJ).

- **Dilution.** Results for analytes reported with the "E" flag during the initial analyses were derived from the dilution analyses. The E flags were converted to "J" flags to indicate the sample results are estimated.

3.3.3 Data Review

EEEPC performed the data review and validation of samples in accordance with the work plan and QAPP (see Table 3-4). The data review tasks completed for this project include:

- **Completeness.** EEEPC performed a completeness check on all electronic data deliverables (EDDs) and compared the data with the hard copy deliverable to verify the data were reported consistently.

- **Compliance.** EEEPC processed EDDs submitted by the project laboratories, Chemtech and Columbia, to verify the data reported are compliant with the QAPP requirements. EEEPC performed an automated data validation of EDDs and generated reports of qualified data. EEEPC reviewed the reports, checked the hard copy reports and case narratives, verified the automated qualifiers assigned, reviewed calibration information, and developed a DUSR for each sample delivery group (SDG).

- **Reporting.** EEEPC assigned data qualifiers and flagged all reportable data. EEEPC generated summary tables of final qualified data and revised the data

tables per NYSDEC comments for inclusion in this report. Complete data tables are provided in Appendix C.

- **Data Management.** EEEPC developed a project-specific database with all validated data stored in Microsoft Access format. Data in several electronic formats are provided in Appendix C.

The data review was limited to the target compounds listed in the QAPP. In addition, the laboratory reported non-target compounds as tentatively identified compound (TICs) unknowns. The TICs are listed with the laboratory data in Appendix C. The TICs generally confirm the presence of petroleum-related contamination.

Table 3-4 Summary of Work Orders, Former Depot Street Dry Cleaner Site

Work Order	Lab Report Date	Lab ID	Data Review Co.
X1242	16-Mar-06	CCGE	EEEPC
X1018	08-Feb-06	CCGE	EEEPC
X1126	18-Apr-06	CCGE	EEEPC
X1136	18-Mar-06	CCGE	EEEPC
X1145	10-Feb-06	CCGE	EEEPC
X1203	27-Feb-06	CCGE	EEEPC
X1217	16-Mar-06	CCGE	EEEPC
X1218	12-Mar-06	CCGE	EEEPC
X1015	18-Mar-06	CCGE	EEEPC
X1222	21-Feb-06	CCGE	EEEPC
X1432	16-Mar-06	CCGE	EEEPC
X1218	14-March-06	CCGE	EEEPC
X1222	23-Feb-06	CCGE	EEEPC
X1242	3-April-06	CCGE	EEEPC
X1258	14-March-06	CCGE	EEEPC
R2737597	16-May-07	CASROC	EEEPC
R2737598	16-May-07	CASROC	EEEPC

The samples were grouped by the laboratories into SDGs of 20 samples. A DUSR was generated for each SDG reported and is included in Appendix C.

Any deviations from acceptable QC specifications are discussed in the DUSRs (see Appendix C). Qualifiers were added to the data to indicate potential concerns with data usability. These qualifiers were transferred to the data presented on summary tables in Section 4. For the site characterization data, the following qualifiers were added:

J - The qualifier indicates an estimated value because the associated QC data indicated a potential laboratory or matrix problem or interference. A "+"

sign indicates a positive bias and a "-" indicates a negative bias. In addition, J flags assigned by the laboratory indicate the results are below the PQL but above the instrument detection limit (IDL) or method detection limit (MDL).

U - The result is considered non-detected. The laboratory assigned this flag to analytes not present at detectable concentrations (above the IDL or MDL). The data validator assigned this flag when an analyte was considered non-detect due to blank contamination. If the result is above the PQL, the PQL is considered elevated.

UJ - The analyte was not detected above the reported sample quantitation limit.

However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R - The result is rejected due to significant QC sample results outside control limits. The results are not usable for site characterization and represent a data gap.

3.3.4 Data Usability Summary Report Findings

The data review is documented in the DUSRs provided in Appendix C. The reports were completed as specified in NYSDEC's *Guidance for the Development of DUSRs* (July 1999). Overall, the data quality was acceptable and the laboratory analysis and reporting procedures representative of appropriate methodology for the samples collected.

Reporting Limits

Based on the QC criteria, all of the data are usable for site characterization. However, comparison with screening criteria can be affected by elevated reporting limits. Groundwater samples DS-GW-03(16), DS-GW-03(25), and DS-GW-06, were analyzed at a high dilution due to the level of VOCs present. The reporting limits of the other compounds may not be comparable to the other samples and should be considered in data assessment. Groundwater samples DS-GW-06 though DS-GW-16 were received by Columbia at temperatures of 14° and 16° C instead of 2° and 6° C. The affected sample results are qualified as estimated, "UJ" or "J".

Four soils samples [DS-BH-01(15-16), DS-BH-01(26-27), DS-BH-01(36-37), and DS-BH-04(15-16)] were analyzed at dilutions due to the level of target compounds. However, the laboratory analyzed several samples at the medium level using only the methanol extract. The samples have elevated reporting limits, which reduce the comparability of the results to other results from other samples and the screening criteria. The reporting limits need to be considered as part of the data assessment. In some cases the laboratory attempted to re-analyze the

low-level sample, but the analysis was about two weeks past holding time and could not be used.

Soil vapor results were reported in micrograms per cubic meter ($\mu g/m^3$) as required by the NYSDOH Soil Vapor Guidance (New York State Department of Health 2005). However, the laboratory performed all calibration and reporting in parts per million by volume (ppbv). In the final report, the laboratory calculated $\mu g/m^3$ and printed the results on a separate sheet. The laboratory performed this calculation on the final ppbv results that were already rounded and reported to the correct significant figures. The laboratory did not correct the $\mu g/m^3$ to the correct significant figures and should have performed the calculation on the raw data. The effect is to make the soil vapor values appear to be more precise than the true value and also make the low concentration data appear to be similar to some reporting limits. EEEPC rounded the values reported in Table 4-2 in Section 4 to two significant figures. The laboratory data reports in Appendix C remain as reported by the laboratory.

4 Site Contamination Assessment

4.1 Introduction

This section presents the results of site characterization field activities in order to develop an understanding of the nature and extent of contamination at each site. The information was used to assess whether the PCE and MTBE detected at the Village of Canisteo municipal supply well no. 1 can be attributed to the Former Depot Street Dry Cleaner site. PCE and TCE are both indicative of dry cleaner sources and MTBE indicates a potential gasoline source. It is likely that MTBE will be found with compounds typically associated with petroleum products such as benzene, toluene, ethylbenzene, and xylenes (BTEX). For comparison of potential sources, the total BTEX concentration was determined and presented on the data summary tables.

4.2 Screening

Analytical results (see Table 4-1 though 4-3) were screened against the NYSDEC and NYSDOH standards and guidance values described below to determine if the contaminants of concern were present at concentrations sufficient to cause the contamination detected in the municipal wells. Groundwater analytical data were compared with the NYSDEC Class GA Ambient Water Quality Standards and Guidance Values (June 1998); and subsurface soils data were compared to the NYSDEC 6NYCRR Part 375 Environmental Remediation Program, Subpart 375-6: Remedial Program Soil Cleanup Objectives, Unrestricted Use (December 2006). Total BTEX results were compared with an average of the screening criteria. NYSDOH does not provide screening guidance values for VOCs in soil vapor.

The analytical results obtained from each site are summarized in the following sections.

4.3 Former Depot Street Dry Cleaner Site

4.3.1 Subsurface Soil

A total of four borings, DS-BH-01 through DS-BH-04, were installed on the former Depot Street Dry Cleaners site, and two borings, DS-BH-05 and DS-BH-06, were installed off-site across Depot Street, to the east (see Figure 4-1).

PCE and MTBE were detected in soil collected from two on-site borings and each off-site boring. PCE was detected at 10 ppb in soil collected from on-site boring DS-BH-02 (25 to 26 feet bgs) and MTBE was detected at 0.26 ppb in soil collected from on-site boring DS-BH-04 (26 to 27 feet bgs). Each boring is downslope of the former dry cleaner's building and on the northeast portion of the site. Additionally, PCE was detected in soil collected from off-site boring DS-BH-05 at concentrations ranging from 0.39 ppb (15 feet to 16 feet bgs) to 8.4 ppb (36 feet to 37 feet bgs) and also was detected at 6.3 ppb in soil collected from off-site boring DS-BH-06 (36 to 27 feet bgs) (see Table 4-1). None of the PCE results exceed the NYSDEC screening criterion of 1,300 ppb. Reporting limits for PCE and MTBE were elevated in the samples that contain high of levels of BTEX.

Soil collected from on-site borings did not contain concentrations of contaminants that exceeded NYSDEC screening criteria, with the exception of soil collected from DS-BH-03 and one benzene detection at the screening criterion in DS-BH-01. Total BTEX compounds, typically associated with petroleum products, exceeded NYSDEC screening criteria for the respective compounds in soil collected from each sampling depth within the boring. Total BTEX was detected at 230,600 ppb (230 parts per million [ppm]), 1,100,000 ppb (1,100 ppm), and 240,00 ppb (241 ppm) in soil collected from DS-BH-03 (8.6 to 9 feet bgs), DS-BH-03 (10 to10.5 feet bgs), and DS-BH-03 (15 to16 feet bgs), respectively. Isopropylbenzene and cyclohexane compounds also were found in DS-BH-03. Boring DS-BH-03 is on the southernmost tip of the property, where petroleum spill remediation activities are currently ongoing. Lesser concentrations of total BTEX compounds were detected in soil from on-site boring DS-BH-04 and DS-BH-01 (see Table 4-1). As noted in Section 3.3, the reporting limits for DS-BH-01 were evaluated and the results have limited comparability with the other boring results.

Of the two off-site borings, only soil collected from boring DS-BH-06 contained analytes at concentrations exceeding NYSDEC screening criteria. Total BTEX concentrations detected in off-site boring DS-BH-06 (20 to 20.7 feet bgs) exceeded NYSDEC screening criteria for each compound. The total BTEX concentration detected in the soil sample was 680,000 ppb. Additionally, total BTEX compounds were detected in soil collected from DS-BH-06 (30 to 31 feet bgs) and DS-BH-06 (36 to 37 feet bgs) at 550 ppb and 480 ppb, respectively (see Table 4-1). Isopropylbenzene and cyclohexane compounds also were found in DS-BH-06.

4.3.2 Groundwater

Groundwater samples were collected on-site and off-site using a SP15 GW sampler (see Section 3.2.3 and Figure 4-1).

MTBE and PCE, the contaminants of concern, were both detected at concentrations exceeding NYSDEC screening criteria in groundwater collected from on-site boring DS-GW-02. PCE was detected at concentrations exceeding NYSDEC

screening criteria in groundwater collected from off-site boring DS-GW-05, DS-GW-10, and DS-GW15.

Groundwater collected from on-site borings DS-GW-02 and DS-GW-03 contained concentrations of other compounds that exceeded NYSDEC screening criteria. The compounds that exceeded criteria in groundwater collected from DS-GW-02 typically are associated with the dry cleaning industry (i.e., chlorinated solvents), and the compounds that exceeded criteria in samples collected from DS-GW-03 typically are associated with petroleum products.

Groundwater collected from DS-GW-02 (29 feet bgs) contained cis-1,2-DCE, trans-1,2-DCE, TCE, PCE, and MTBE at 9.9 ppb, 11 ppb, 6.8 ppb, 6.2 ppb, and 18 ppb, respectively. Additionally, groundwater collected from DS-GW-02 (40 feet bgs) contained PCE at 9.1 ppb. Each detected compound concentration exceeded the respective NYSDEC screening criteria (see Table 4-2). Boring DS-GW-02 is on the northeast portion of the site and downgradient from the former dry cleaner building.

Groundwater samples collected from DS-GW-03 (16 feet bgs) and DS-GW-03 (25 feet bgs) contained concentrations of total BTEX ranging from 15,000 ppb (25 feet) to 26,000 ppb (16 feet bgs). Each compound concentration exceeded the respective NYSDEC screening criteria. Additional compounds found in the soil samples (e.g., isopropylbenzene and cyclohexane) also were detected in the groundwater samples (see Table 4-2). Isopropylbenzene has a groundwater criterion of 5 ppb that was exceeded. Boring DS-BH-03 is on the southernmost tip of the property.

Groundwater samples collected from off-site boring DS-GW-05 contained compound concentrations that exceeded NYSDEC screening criteria for chlorinated compounds associated with the dry cleaning industry and BTEX compounds typically associated with petroleum products.

Groundwater samples collected from DS-GW-05 (30 feet bgs) contained cis-1,2-DCE, trans-1,2-DCE, TCE, and PCE at concentrations of 14 ppb, 20 ppb, 21 ppb and 7.4 ppb, respectively. Each compound concentration exceeded the respective NYSDEC screening criterion of 5 ppb. Samples collected deeper into the water column, from DS-GW-05 (40 feet bgs), contained BTEX compounds (i.e., ethylbenzene, toluene, and xylenes) at concentrations exceeding the NYSDEC screening criterion of 5 ppb for each compound. Xylenes were found at the highest concentration of a total 71 ppb. Additionally, groundwater collected from DS-GW-05 (40 feet bgs) contained TCE and PCE at concentrations of 8.1 ppb and 11 ppb, respectively. Each compound exceeded the respective NYSDEC screening criterion of 5 ppb (see Table 4-2).

Groundwater samples collected from DS-GW-16 (20 feet bgs) contained ethylbenzene and benzene at concentrations of 6.1 micrograms per liter (µg/L) and 1.8

µg/L, respectively. These concentrations exceed NYSDEC screening criteria. The well, DS-GW-16, is located south of the site in Patriot's Park which was the southernmost sample collected.

Groundwater samples collected from DS-GW-10 (32 feet bgs) and DS-GW-15 (16 feet bgs) contained PCE concentrations of 5.8 µg/L and 7 µg/L, respectively. The well, DS-GW-15, is located on 2nd Street which was the northernmost sample collected. The municipal supply well no. 1 is located approximately 450 feet northwest of well DS-GW-15.

One discrete groundwater sample was collected from existing monitoring well MW-1 using a PDB sampler (see Section 3.2.3.2). The groundwater sample contained total BTEX at a concentration of 240 ppb, with xylenes having the highest concentration; no benzene was detected. Isopropylbenzene was found at 10 ppb. Each compound exceeded the respective NYSDEC screening criteria (see Table 4-2a). Monitoring well MW-1 is east of the site, across Depot Street, and was installed by others as part of an active NYSDEC Spills Program remediation (see Figure 3-2).

Groundwater levels were measured in the three installed piezometers and existing well MW-1, as noted on Figure 3-2. Groundwater flow is toward the northeast at a horizontal gradient of 0.002 feet per foot. Flow is generally toward the municipal well, which is approximately 1,570 feet to the northeast.

4.3.3 Soil Vapor

Four soil vapor samples were collected during phase one of the investigation and an additional two samples were collected during phase two. Soil vapor samples were collected from a total of three on-site locations and three off-site locations using the PRT system described in Section 3.2.4 (see Figure 3-1).

Generally, total BTEX compounds were detected at concentrations greater than concentrations of PCE and TCE at each soil vapor sampling location (see Tables 4-3a and 4-3b). BTEX compounds were detected in soil vapor samples at concentrations ranging from < 1 $\mu g/m^3$ to 97 $\mu g/m^3$. PCE concentrations ranged from 2.7 $\mu g/m^3$ to 20 $\mu g/m^3$ and TCE concentrations ranged from 2.6 $\mu g/m^3$ to 12 $\mu g/m^3$. The detection and concentrations of these compounds in soil vapor generally correspond to detections of these compounds in the soil and groundwater.

NYSDOH does not provide screening guidance values for VOCs in soil vapor.

Table 4-1 Summary of Positive Results for Subsurface Soil Samples, Former Depot Street Dry Cleaner Site

Analyte	Screening Criteria [1]	DS-BH-01 (15-16) 01/24/2006	DS-BH-01 (26-27) 01/24/2006	DS-BH-01 (36-37) 01/24/2006	DS-BH-02 (10-11) 01/24/2006	DS-BH-02 (25-26) 01/24/2006	DS-BH-02-D (25-26) 01/24/2006	DS-BH-02 (36-37) 01/24/2006
Volatiles - SW8260B (µg/kg)								
1,2-Dibromoethane	NA	210 U	250 U	250 U	2.9 UJ	3.2 U	2.0 U	1.7 UJ
2-Butanone	120	1000 U	1200 U	1200 U	15 UJ	16 U	9.9 U	**5.9 J**
Benzene	60	**60 J**	250 U	250 U	2.9 UJ	3.2 U	2.0 U	1.7 UJ
cis-1,2-Dichloroethene	250	**210 J**	250 U	250 U	2.9 UJ	**2.8 J**	**2.2**	1.7 UJ
Cyclohexane	NA	210 U	250 U	250 U	2.9 UJ	3.2 U	2.0 U	1.7 UJ
Ethyl Benzene	1000	210 U	250 U	250 U	2.9 UJ	3.2 U	2.0 U	1.7 UJ
Isopropylbenzene	NA	210 U	250 U	250 U	2.9 UJ	3.2 U	2.0 U	1.7 UJ
m/p-Xylenes	260	420 U	500 U	500 U	5.9 UJ	**0.59 J**	4.0 U	**0.41 J**
Methyl tert-butyl Ether	930	210 U	250 U	250 U	2.9 UJ	3.2 U	2.0 U	1.7 UJ
Methylcyclohexane	NA	210 U	250 U	250 U	2.9 UJ	3.2 U	2.0 U	1.7 UJ
Methylene Chloride	50	210 U	250 U	250 U	2.9 UJ	3.2 U	2.0 U	1.7 UJ
o-Xylene	260	210 U	250 U	250 U	2.9 UJ	3.2 U	2.0 U	1.7 UJ
Styrene	NA	210 U	250 U	250 U	2.9 UJ	3.2 U	2.0 U	1.7 UJ
Tetrachloroethene	1300	210 U	250 U	250 U	2.9 UJ	3.2 U	2.0 U	**10 J-**
Toluene	700	210 U	250 U	250 U	2.9 UJ	3.2 U	2.0 U	**0.27 J**
Trichloroethene	470	210 U	250 U	250 U	2.9 UJ	3.2 U	2.0 U	1.7 UJ
Total BTEX (µg/kg)								
BTEX	500 [2]	**60**	ND	ND	ND	**0.6**	ND	**0.7**

Table 4-1 Summary of Positive Results for Subsurface Soil Samples, Former Depot Street Dry Cleaner Site

Analyte	Screening Criteria [1]	DS-BH-03 (8.6-9) 01/25/2006	DS-BH-03 (10-10.5) 01/25/2006	DS-BH-03 (15-16) 01/25/2006	DS-BH-04 (15-16) 01/25/2006	DS-BH-04 (26-27) 01/25/2006	DS-BH-04 (35-38) 01/25/2006	DS-BH-05 (15-16) 01/25/2006
Volatiles - SW8260B (µg/kg)								
1,2-Dibromoethane	NA	7500 UJ	7400 UJ	7300 UJ	810 UJ	2.1 UJ	2.8 UJ	2.3 U
2-Butanone	120	38000 UJ	37000 UJ	36000 UJ	4100 UJ	10 UJ	14 UJ	11 UJ
Benzene	60	**1900 J**	**7900 J-**	**1300 J**	810 UJ	2.1 UJ	**0.41 J**	2.3 UJ
cis-1,2-Dichloroethene	250	7500 UJ	7400 UJ	7300 UJ	810 UJ	2.1 UJ	2.8 UJ	2.3 U
Cyclohexane	NA	**28000 J-**	**66000 J-**	**10000 J-**	810 UJ	2.1 UJ	**11 J**	2.3 UJ
Ethyl Benzene	1000	**36000 J-**	**130000 J-**	**28000 J-**	810 UJ	**0.29 J**	**7.3 J-**	2.3 U
Isopropylbenzene	NA	**15000 J-**	**32000 J-**	**6800 J**	810 UJ	2.1 UJ	**1.2 J**	2.3 U
m/p-Xylenes	260	**140000 J-**	**570000 J-**	**150000 J-**	1600 UJ	**0.89 J**	**60 J**	4.6 UJ
Methyl tert-butyl Ether	930	7500 UJ	7400 UJ	7300 UJ	810 UJ	**0.26 J**	2.8 UJ	2.3 U
Methylcyclohexane	NA	**130000 J-**	**200000 J-**	**37000 J-**	810 UJ	2.1 UJ	**9.5 J**	2.3 UJ
Methylene Chloride	50	7500 UJ	7400 UJ	7300 UJ	810 UJ	2.1 UJ	2.8 UJ	2.3 U
o-Xylene	260	**39000 J-**	**200000 J-**	**41000 J-**	810 UJ	**0.36 J**	**17 J**	**0.34 J**
Styrene	NA	7500 UJ	7400 UJ	7300 UJ	810 UJ	**0.44 J**	**0.83 J**	2.3 U
Tetrachloroethene	1300	7500 UJ	7400 UJ	7300 UJ	810 UJ	2.1 UJ	**1.5 J**	**0.39 J**
Toluene	700	**9700 J-**	**150000 J-**	**21000 J-**	**140 J**	**0.34 J**	**5.2 J**	2.3 U
Trichloroethene	470	7500 UJ	7400 UJ	7300 UJ	810 UJ	2.1 UJ	2.8 UJ	2.3 U
Total BTEX (µg/kg)								
BTEX	500 [2]	**230000**	**1100000**	**240000**	**140**	**1.9**	**90**	**0.3**

Table 4-1 Summary of Positive Results for Subsurface Soil Samples, Former Depot Street Dry Cleaner Site

Analyte	Screening Criteria [1]	DS-BH-05 (27-28) 01/25/2006	DS-BH-05 (36-37) 01/25/2006	DS-BH-06 (20-20.7) 01/26/2006	DS-BH-06 (30-31) 01/26/2006	DS-BH-06 (36-37) 01/26/2006
Volatiles - SW8260B (µg/kg)						
1,2-Dibromoethane	NA	2.6 U	3.2 UJ	**6800 R**	2.5 U	560 U
2-Butanone	120	13 UJ	16 UJ	34000 UJ	13 UJ	2800 U
Benzene	60	2.6 UJ	3.2 UJ	**7400 J-**	2.8 UJ	560 U
cis-1,2-Dichloroethene	250	**1.8 J**	3.2 UJ	6800 UJ	2.5 U	560 U
Cyclohexane	NA	2.6 UJ	3.2 UJ	**86000 J-**	**250 J**	560 U
Ethyl Benzene	1000	2.6 U	3.2 UJ	**75000 J-**	**46**	**98 J**
Isopropylbenzene	NA	2.6 U	3.2 UJ	**20000 J-**	**11**	560 U
m/p-Xylenes	260	5.3 UJ	**12 J**	**400000 J-**	**340**	**220 J**
Methyl tert-butyl Ether	930	2.6 U	3.2 UJ	6800 UJ	2.5 U	560 U
Methylcyclohexane	NA	2.6 U	3.2 UJ	**210000 J-**	**200 J**	560 U
Methylene Chloride	50	2.6 U	3.2 UJ	6800 UJ	2.5 U	560 U
o-Xylene	260	2.6 U	**3.7 J**	**110000 J-**	**82**	**58 J**
Styrene	NA	2.6 U	3.2 UJ	**910 J**	2.5 U	560 U
Tetrachloroethene	1300	**1.8 J**	**8.4 J**	6800 UJ	2.5 U	**6.3 J (3)**
Toluene	700	2.6 U	3.2 UJ	**92000 J-**	**83**	**200 J**
Trichloroethene	470	**1.7 J**	3.2 UJ	6800 UJ	2.5 U	560 U
Total BTEX (µg/kg)						
BTEX	500 [2]	ND	**16**	**680000**	**550**	**480**

Table 4-2a Summary of Positive Results for Phase One Groundwater Samples, Former Depot Street Dry Cleaner

Analyte	Screening Criteria [1]	DS-GW-01(20) 01/24/2006	DS-GW-01(30) 01/24/2006	DS-GW-01(40) 01/24/2006	DS-GW-02(18) 01/24/2006	DS-GW-02-D(18) 01/24/2006	DS-GW-02(29) 01/24/2006	DS-GW-02(40) 01/24/2006
Volatiles - SW8260B (µg/L)								
1,1-Dichloroethane	5	1.0 U	1.0 U	1.0 U	**0.56 J**	**0.58 J**	1.0 U	1.0 U
Acetone	50	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
Benzene	1	1.0 U	1.0 U	**0.33 J**	1.0 U	1.0 U	**0.61 J**	1.0 U
Chloromethane	5	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	5	**2.4**	1.0 U	**0.60 J**	**0.71 J**	**0.61 J**	**9.9**	**2.7 J+**
Cyclohexane	NA	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	**0.47 J**	1.0 U
Ethyl Benzene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Isopropylbenzene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m/p-Xylenes	5	1.0 U	1.0 U	**0.50 J**	1.0 U	1.0 U	1.0 U	1.0 U
Methyl tert-butyl Ether	10	**1.4**	1.0 U	1.0 U	**10 J+**	**10 J+**	**18**	**2.3 J+**
Methylcyclohexane	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	5	1.0 UJ	1.0 U	**1.1 J+**	**1.3 J+**	**1.3 J+**	**6.2**	**9.1 J+**
Toluene	5	1.0 U	1.0 U	**0.85 J**	1.0 U	1.0 U	1.0 U	**0.34 J**
trans-1,2-Dichloroethene	5	1.0 U	1.0 U	1.0 U	**0.57 J**	**0.52 J**	**11**	**1.1 J+**
Trichloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**6.8 J+**	**4.2 J+**
Vinyl chloride	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.6**	1.0 U
Total BTEX (µg/L)								
BTEX	4 [2]	ND	ND	**1.7**	ND	ND	**0.6**	**0.3**

Table 4-2a Summary of Positive Results for Phase One Groundwater Samples, Former Depot Street Dry Cleaner

Analyte	Screening Criteria [1]	DS-GW-03(16) 01/25/2006	DS-GW-03(25) 01/25/2006	DS-GW-04(20) 01/25/2006	DS-GW-04(30) 01/25/2006	DS-GW-04(40) 01/25/2006	DS-GW-05(20) 01/25/2006	DS-GW-05(30) 01/25/2006
Volatiles - SW8260B (µg/L)								
1,1-Dichloroethane	5	10 UJ	10 U	1.0 U	1.0 U	1.0 U	**0.58 J**	1.0 U
Acetone	50	50 UJ	50 UJ	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
Benzene	1	**1500**	**1700**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	5	10 UJ	**10 J+**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	5	10 UJ	10 U	1.0 U	1.0 U	1.0 U	**5.7**	**14**
Cyclohexane	NA	**330**	**210 J+**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethyl Benzene	5	**2600**	**1600**	1.0 U	1.0 U	1.0 U	**0.58 J**	**0.67 J**
Isopropylbenzene	5	**380 J**	**200 J+**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m/p-Xylenes	5	**11000**	**6600**	1.0 U	1.0 U	1.0 U	**3.3**	**2.6**
Methyl tert-butyl Ether	10	10 UJ	10 U	**1.5 J+**	**4.6**	1.0 U	**9.5**	**6.4**
Methylcyclohexane	NA	**610**	**380**	1.0 U	1.0 U	1.0 U	**0.88 J**	1.0 U
o-Xylene	5	**3900**	**2500**	1.0 U	1.0 U	1.0 U	1.0 U	**1.3**
Tetrachloroethene	5	10 UJ	10 U	**1.1 J+**	**1.2**	**1.1**	**2.1**	**7.4**
Toluene	5	**6500**	**2900**	1.0 U	1.0 U	1.0 U	**0.38 J**	**0.49 J**
trans-1,2-Dichloroethene	5	10 UJ	10 U	1.0 U	1.0 U	1.0 U	**2.5**	**20**
Trichloroethene	5	10 UJ	10 U	1.0 U	1.0 U	1.0 U	**2.7**	**21**
Vinyl chloride	2	10 UJ	10 U	1.0 U	1.0 U	1.0 U	1.0 U	**0.85 J**
Total BTEX (µg/L)								
BTEX	4 [2]	**26000**	**15000**	ND	ND	ND	**4.3**	**5.1**

Table 4-2a Summary of Positive Results for Phase One Groundwater Samples, Former Depot Street Dry Cleaner

Analyte	Screening Criteria [1]	DS-GW-05(40) 01/25/2006	DS-GW-06 (MW-1) 01/31/2006	DS-TB-01 01/24/2006	DS-TB-02 01/24/2006	DS-TB-03 01/25/2006
Volatiles - SW8260B (µg/L)						
1,1-Dichloroethane	5	1.0 U	10 U	1.0 U	1.0 U	1.0 U
Acetone	50	5.0 UJ	50 UJ	7.1 UJ	**10 J**	13 UJ
Benzene	1	1.0 U	10 U	1.0 U	1.0 U	1.0 U
Chloromethane	5	1.0 U	10 U	1.0 UJ	1.0 U	1.0 U
cis-1,2-Dichloroethene	5	**3.1 J+**	10 U	1.0 U	1.0 U	1.0 U
Cyclohexane	NA	1.0 U	**47**	1.0 U	1.0 U	1.0 U
Ethyl Benzene	5	**11 J+**	**26**	1.0 U	1.0 U	1.0 U
Isopropylbenzene	5	1.0 U	**10**	1.0 U	1.0 U	1.0 U
m/p-Xylenes	5	**53 J+**	**150**	1.0 U	1.0 U	1.0 U
Methyl tert-butyl Ether	10	1.0 U	10 U	1.0 U	1.0 U	1.0 U
Methylcyclohexane	NA	1.0 U	**120**	1.0 U	1.0 U	1.0 U
o-Xylene	5	**18 J+**	**53**	1.0 U	1.0 U	1.0 U
Tetrachloroethene	5	**11 J+**	10 U	1.0 U	1.0 U	1.0 U
Toluene	5	**5.2 J+**	**9.0 J**	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	5	**1.7 J+**	10 U	1.0 U	1.0 U	1.0 U
Trichloroethene	5	**8.1 J+**	10 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	2	1.0 U	10 U	1.0 U	1.0 U	1.0 U
Total BTEX (µg/L)						
BTEX	4 [2]	**87**	**240**	ND	ND	ND

Table 4-2b Summary of Positive Results for Phase Two Groundwater Samples, Former Depot Street Dry Cleaner Site

Analyte	Screening Criteria [1]	Sample ID: Date:	DS-GW-06 (16) 05/10/07	DS-GW-07 (16) 05/10/07	DS-GW-07/DUP (16)* 05/10/07	DS-GW-08 (16) 05/10/07	DS-GW-09 (16) 05/10/07	DS-GW-10 (16) 05/10/07	DS-GW-11 (16) 05/10/07
SW8260B (µg/L)									
2-Butanone (MEK)	50		5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ
Acetone	50g		5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ
Benzene	1		1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
Carbon Disulfide	60g		2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ
Chloroform	7		1 UJ	1 UJ	1 UJ	**0.53 J**	1 UJ	1 UJ	1 UJ
cis-1,2-Dichloroethene	5		1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	**0.92 J**	1 UJ
Cyclohexane	NA		5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ
Ethylbenzene	5		1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
Isopropylbenzene	NA		1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
m,p-Xylenes	NA		2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ
Methyl tert-Butyl Ether	10		1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
Methylcyclohexane	NA		1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
o-Xylene	5		1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
Tetrachloroethene (PCE)	5		1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	**5.8 J**	**0.37 J**
Toluene	5		1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
Trichloroethene (TCE)	5		**0.78 J**	1 UJ	1 UJ	1 UJ	1 UJ	**1.8 J**	1 UJ
Total BTEX (µg/L)									
BTEX	4 [2]		ND	ND	ND	ND	ND	ND	ND

Table 4-2b Summary of Positive Results for Phase Two Groundwater Samples, Former Depot Street Dry Cleaner Site

Analyte	Screening Criteria [1]	Sample ID: Date:	DS-GW-12 (16) 05/10/07	DS-GW-13 (24) 05/10/07	DS-GW-14 (16) 05/10/07	DS-GW-15 (32) 05/10/07	DS-GW-16 (20) 05/11/07	TRIP BLANK 2 05/10/07
SW8260B (µg/L)								
2-Butanone (MEK)	50		5 UJ	5 UJ	5 UJ	5 UJ	**4.2 J**	5 UJ
Acetone	50g		5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	**1.5 J**
Benzene	1		1 UJ	1 UJ	1 UJ	1 UJ	**1.8 J**	1 UJ
Carbon Disulfide	60g		2 UJ	2 UJ	2 UJ	2 UJ	**0.38 J**	2 UJ
Chloroform	7		1 UJ	1 UJ	**0.49 J**	1 UJ	1 UJ	1 UJ
cis-1,2-Dichloroethene	5		1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
Cyclohexane	NA		5 UJ	5 UJ	5 UJ	5 UJ	**15 J**	5 UJ
Ethylbenzene	5		1 UJ	1 UJ	1 UJ	1 UJ	**6.1 J**	1 UJ
Isopropylbenzene	NA		1 UJ	1 UJ	1 UJ	1 UJ	**4.6 J**	1 UJ
m,p-Xylenes	NA		2 UJ	2 UJ	2 UJ	2 UJ	**2.0 J**	2 UJ
Methyl tert-Butyl Ether	10		1 UJ	1 UJ	1 UJ	1 UJ	**9.3 J**	1 UJ
Methylcyclohexane	NA		1 UJ	1 UJ	1 UJ	1 UJ	**14 J**	1 UJ
o-Xylene	5		1 UJ	1 UJ	1 UJ	1 UJ	**0.52 J**	1 UJ
Tetrachloroethene (PCE)	5		1 UJ	1 UJ	**1.2 J**	**7 J**	1 UJ	1 UJ
Toluene	5		1 UJ	**0.38 J**	1 UJ	1 UJ	**1 J**	1 UJ
Trichloroethene (TCE)	5		1 UJ	1 UJ	1 UJ	**0.34 J**	1 UJ	1 UJ
Total BTEX (µg/L)								
BTEX	4 [2]		ND	**0.38 J**	ND	ND	**11.4 J**	ND

Table 4-2a and 4-2b Key Summary of Positive Results for Steuben County, New York, Former Depot St. Dry Cleaner

Table 4-2 Key:

Notes:

(1) Groundwater - NYSDEC, Technical and Operational Guidance #1.1.1: Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, 1998 Table 1, Class GA, Source of Drinking Water.

(2) Total BTEX uses the average screening criteria.

Sample collection dates are listed under the Sample Identifications.

Key:

J = Estimated.

J+ = Estimated high.

UJ = Estimated/Not detected.

µg/L = Microgram per liter.

NA = Not applicable.

ND = Not detected at the value reported.

U = Not detected at the value reported.

(#) = Indicates Collection Depth.

* = Sample is field duplicate of DS-GW-07 (16).

Bold = Analyte detected.

Bold/Highlighted = Result exceedes criteria.

BTEX = Benzene, Toluene, Ethylbenzene, and Xylene.

GW = Groundwater.

NYSDEC = New York State Department of Environmental Conservation.

Table 4-3a Summary of Positive Results for Phase One Soil Vapor Samples, Former Depot Street Dry Cleaner Site

Analyte	DS-SG-01 01/27/2006	DS-SG-02 01/27/2006	DS-SG-03 01/27/2006	DS-SG-04 01/27/2006	DS-SG-TB-01 01/27/2006
Volatiles - TO-15 (µg/m^3)					
Benzene	**6.4 J-**	**4.5 J-**	**9.2 J-**	**20 J-**	**0.38 J-**
Chloromethane	0.82 UJ	0.82 UJ	**1.5 J-**	0.82 UJ	0.20 UJ
Dichlorodifluoromethane	**3.8 J**	**570 J**	**3.4 J**	**140 J**	0.49 UJ
Ethyl Benzene	**1.7 J**	1.7 UJ	**2.8 J**	**6.2 J-**	0.43 UJ
m/p-Xylene	**5.7 J**	**5.0 J**	**7.5 J**	**18 J-**	0.87 UJ
Methylene Chloride	2.8 UJ	2.8 UJ	2.8 UJ	5.8 UJ	**1.2 J-**
o-Xylene	**2.1 J**	1.7 UJ	**3.3 J**	**7.1 J-**	0.43 UJ
Styrene	1.7 UJ	1.7 UJ	1.7 UJ	**3.1 J-**	0.43 UJ
Tetrachloroethene	**6.0 J**	**2.7 J**	2.7 UJ	**11 J-**	**3.7 J-**
Toluene	**13 J**	**11 J**	**17 J**	**46 J-**	**0.53 J-**
Trichloroethene	**2.6 J-**	**12 J-**	**12 J-**	2.1 UJ	0.54 UJ
Trichlorofluoromethane	2.2 UJ	**240 J-**	2.2 UJ	**26 J**	0.56 UJ
Total BTEX (µg/m^3)					
BTEX	**29**	**20**	**40**	**97**	**0.91**

Table 4-3b Summary of Positive Results for Phase Two Soil Vapor Samples, Former Depot Street Dry Cleaner Site

Analyte	Sample ID: / Date:	DS-SG-05 05/10/07	DS-SG-06 05/10/07
Volatile Compounds by TO-15 (µg/m^3)			
1,1,1-Trichloroethane (TCA)		1.8 U	**0.27 J**
1,1,2,2-Tetrachloroethane		0.47 U	0.38 U
1,1,2-Trichloroethane		1.8 U	1.5 U
1,1,2-Trichlorotrifluoroethane		**0.71**	**0.77**
1,1-Dichloroethane (1,1-DCA)		1.4 U	1.1 U
1,1-Dichloroethene (1,1-DCE)		1.3 U	1.1 U
1,2,4-Trichlorobenzene		22 U	18 U
1,2-Dibromoethane (EDB)		0.52 U	0.42 U
1,2-Dichlorobenzene		4.1 U	3.3 U
1,2-Dichloropropane		1.6 U	1.3 U
1,4-Dichlorobenzene		4.1 U	3.3 U
Benzene		**9.1**	**5.8**
Bromodichloromethane		0.45 U	0.37 U
Bromoform		3.5 U	2.8 U
Bromomethane		1.3 U	1.1 U
Carbon Tetrachloride		0.43 U	0.35 U
Chlorobenzene		1.6 U	1.3 U
Chloroethane		1.8 U	1.5 U
cis-1,2-Dichloroethene		**0.75 J**	**0.49 J**
Chloroform		1.4 U	1.1 U
Chloromethane		1.3 U	1.1 U
cis-1,3-Dichloropropene		3.1 U	2.5 U
Dichlorodifluoromethane (CFC 12)		3.4 U	2.7 U
Dichloromethane (Methylene Chloride)		**0.32 J**	**2.1**
Dichlorotetrafluoroethane		4.7 U	3.8 U
Ethylbenzene		**4.3**	**1.8 J**
Hexachlorobutadiene		3.6 U	2.9 U
m,p-Xylenes		**19**	**7.9 J**
Methyl tert-Butyl Ether		2.4 U	2.0 U
o-Xylene		**8.0**	**2.7**
Styrene		**0.66 J**	**0.85 J**
Tetrachloroethene (PCE)		**6.5**	**20**
Toluene		**18**	**10**
trans-1,2-Dichloroethene		1.3 U	1.1 U
trans-1,3-Dichloropropene		1.5 U	1.2 U
Trichloroethene (TCE)		0.36 U	0.30 U
Trichlorofluoromethane (CFC 11)		**1.6 J**	**1.3 J**
Vinyl Chloride		1.7 U	1.4 U
Total BTEX (µg/m^3)			
BTEX		58.4	28.2

Table 4-3a and 4-3b Key Summary of Positive Results for Phase Two Soil Vapor Samples, Former Depot Street Dry Cleaner Site

Table 4-3 Key:

Notes:

Soil vapor results were rounded and reported to two signfiicant figures. The raw laboraotry data in Appendix C was incorrectly reported.

Sample collection dates are listed under the Sample Identifications.

Key:

J = Estimated.

J- = Estimated low.

UJ = Estimated/Not detected.

$\mu g/m^3$ = Microgram per cubic meter.

NA = Not applicable.

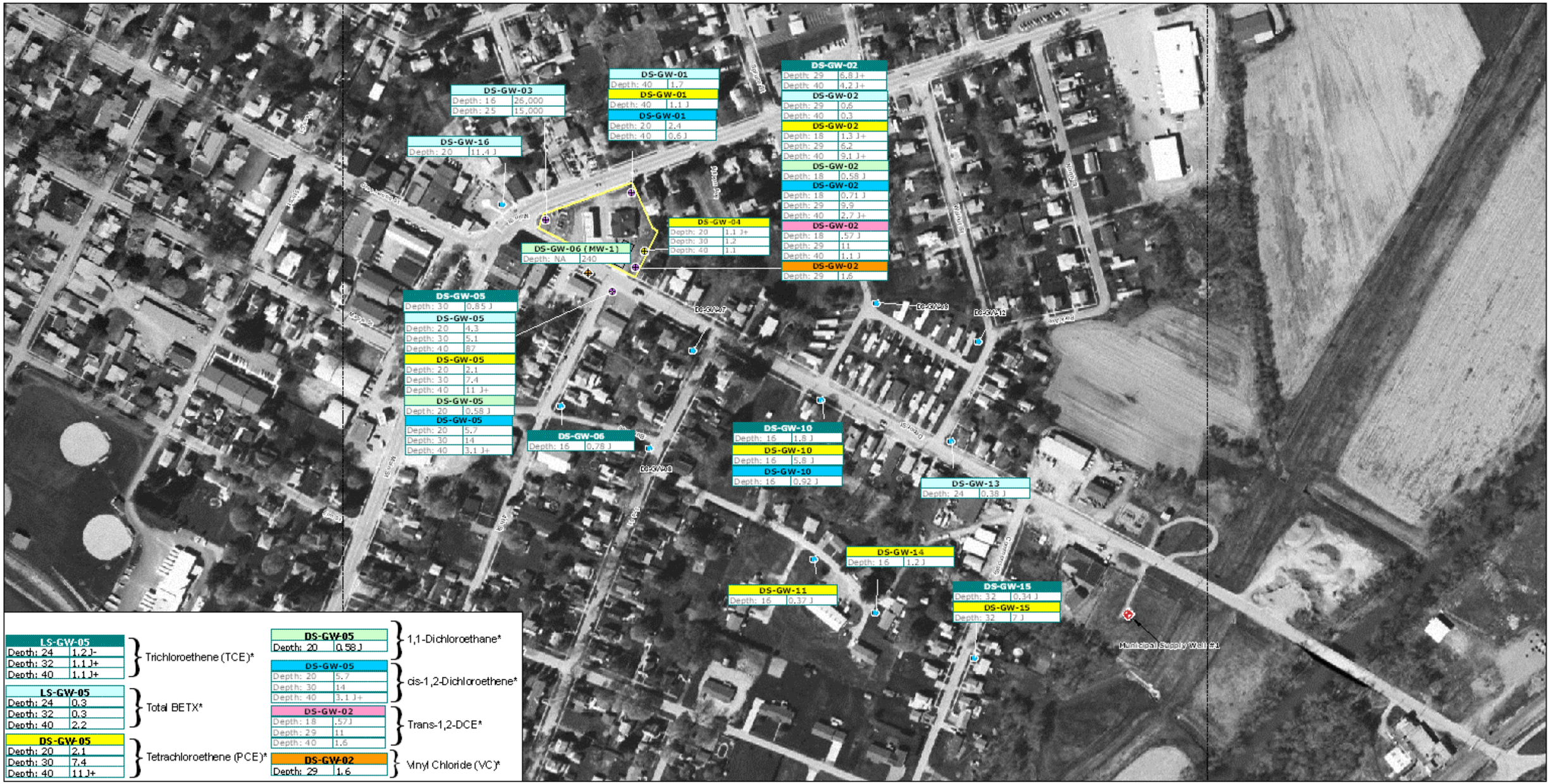
BTEX = Benzene, Toluene, Ethylbenzene, and Xylene.

NYSDEC = New York State Department of Environmental Conservation.

SG = Soil Vapor.

TB = Trip Blank.

Bold = Analyte detected.



Municipal Well #1

Existing Monitoring Well (MW-1) Sampled

Phase 1 Sample Locations (2006)

Soil and Groundwater Sample Location

Soil and Groundwater Sample Location W/ Piezometer

Phase 2 Sample Locations (2007)

Groundwater Sampling Location

Approximate Property Boundary

Key:
J = Estimated
J- = Estimated low
J+ = Estimated high
Note: BTEX = Benzene, Ethylbenzene
Toluene and Xylene
* All concentrations are presented in parts per billion

0 50 100 200 300 400 500
Feet

Figure 4-1
Former Depot Street Dry Cleaner
Chlorinated Hydrocarbon and Total BTEX
Detections in Groundwater

5 Conclusions

5.1 General Conclusions

Soil, groundwater, and soil vapor samples collected during this site characterization investigation contained VOCs typically associated with both the dry cleaning industry and gasoline storage. The highest concentrations in the samples were generally from BTEX and PCE.

The following is a summary of conclusions derived from the site characterization:

- MTBE and PCE were detected in soil and groundwater collected from the northeast portion of the former Depot Street Dry Cleaners site and from off-site borings downgradient and to the east at concentrations generally less than10 ppb.

- PCE degradation products (i.e., TCE and DCE) were detected in groundwater collected from the northeast portion of the site and from the downgradient off-site borings.

- A localized area of petroleum-related contaminants (BTEX) was detected in groundwater, soil, and soil vapor from the southernmost portion of the site and off-site sampling locations to the south. The southernmost portion of the property is currently undergoing active remediation by NYSDEC.

- Analytical results indicate that MTBE and PCE potentially may have migrated to the municipal well field. However, the contaminants detected in the municipal well can not conclusively be attributed to activities conducted on-site.

6 References

Ecology and Environment Engineering, P.C. 2005. *Final Technical Work Plan for Site Characterization of Sites in Canisteo and Bath, Steuben County, New York*. Lancaster, New York.

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_____. 1984b. *Geohydrology of the Valley-fed Aquifer in the Bath Area, Lower Cohocton River, Steuben County, New York.* Water Resources Investigation Report 85-4095.

A Boring Logs

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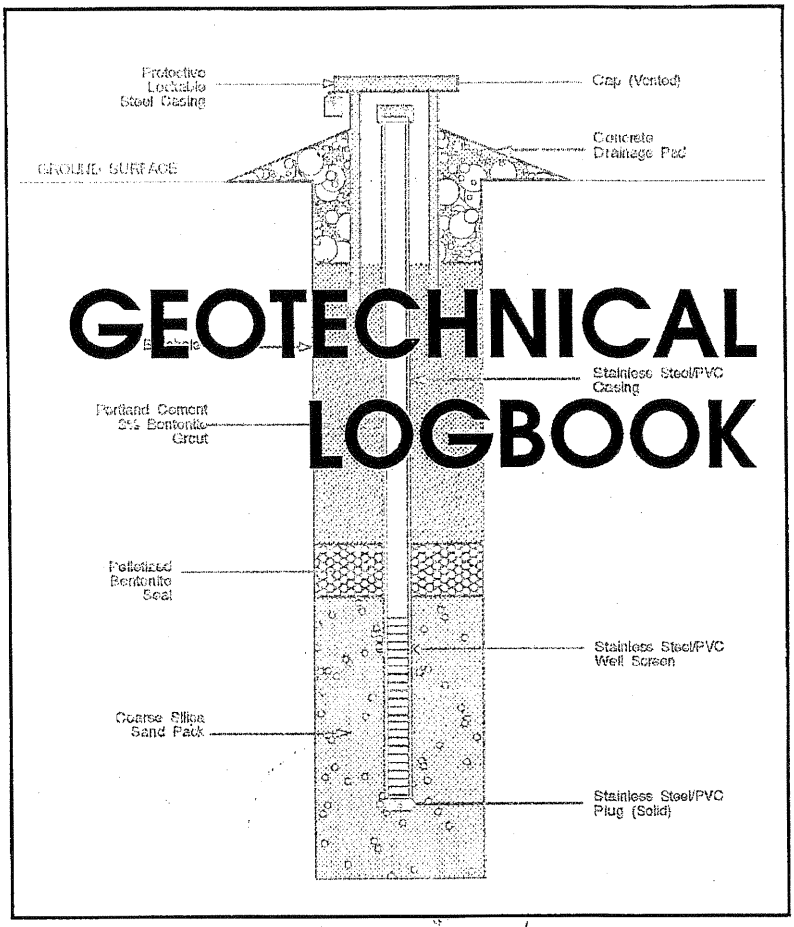


GEOTECHNICAL LOGBOOK

PROJECT NUMBER: 000699NV3203

CLIENT/SITE NAME: NYSDEC / Former Depot St. Dry Cleaner

DRILLING COMPANY: Zebra

DATE OF FIELD ACTIVITIES: 1/24/00

HOLES LOGGED IN BOOK: DS-BH-01 thru DS-BH-06
PZ-1, PZ-2
DS-GW-01 thru DS-GW-05

CLIENT: NYSDEC

JOB NUMBER: 699NY32.03

SITE NAME: Former Depot St Dry Cleaner

DRILLER: Zebra

LOCATION: CITY/TOWN: ~~Los~~ Canisteo, NY

STATE: NY

PROJECT MANAGER: Bob Meyers

FIELD TEAM LEADERS: Stephanie Reynolds Smith /

SITE SAFETY OFFICER(S): Jim Mays /

TEAM MEMBERS: _____

_____

JOB START/FINISH DATE: 1/24/06 / 1-31-06

BOOK 1 OF 1

E&E CORPORATE: (716) 684-8060 FAX (716) 684-0844

E&E EMERGENCY RESPONSE CENTER: (716) 684-8940

E&E ANALYTICAL SERVICE CENTER: (716) 685-8080 FAX (716) 685-0852

E&E EQUIPMENT SERVICE CENTER: (716) 685-8080 FAX (716) 685-0852

FEDERAL EXPRESS TOLL FREE: (800) 238-5355

AIRBORNE EXPRESS: (716) 685-5040

PROJECT/CLIENT CONTACT(S)	AFFILIATION	PHONE

For inquires regarding the distribution, scope, and/or organization of the Geotechnical Logbook please contact: Manager, Environmental Services Division, Buffalo Corporate Office. Your comments and suggestions are welcomed and will be considered in future revisions.

Borehole Record for BH01/PZ-1

- Drilling Log
- Narrative Lithologic Description
- Well Development Record
- Well Development -- Parameter Measurements
- Investigation - Derived Waste Inventory Sheet

BOREHOLE NO. BH-03

BOREHOLE NO. BH-02

DRILLING LOG FOR DS-BH-01 PZ-1

Project Name Steuben Co. Site Characteriz.

Site Location Former Depot St Dry Cleaners Canisteo, NY

Date Started/Finished 1/24/06

Drilling Company Zebra

Driller's Name Dan Pino

Geologist's Name S. Reynolds Smith

Geologist's Signature

Rig Type (s) Geoprobe - 6620 DT

Drilling Method (s) Direct Push

Bit Size (s) 2 1/8" OD Auger Size (s) NA

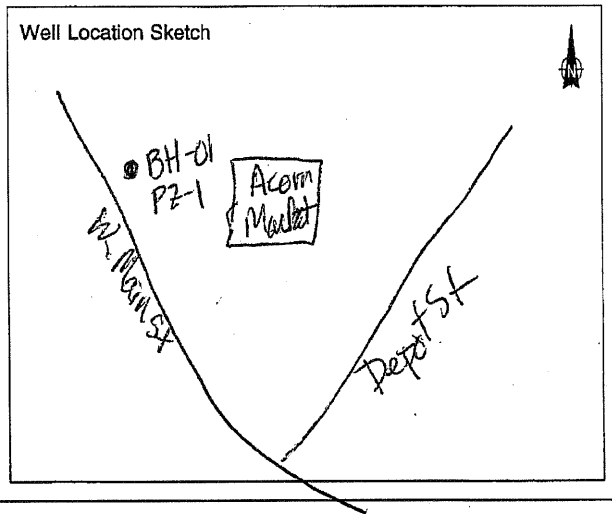
Auger/Split Spoon Refusal NA

Total Depth of Borehole Is 40

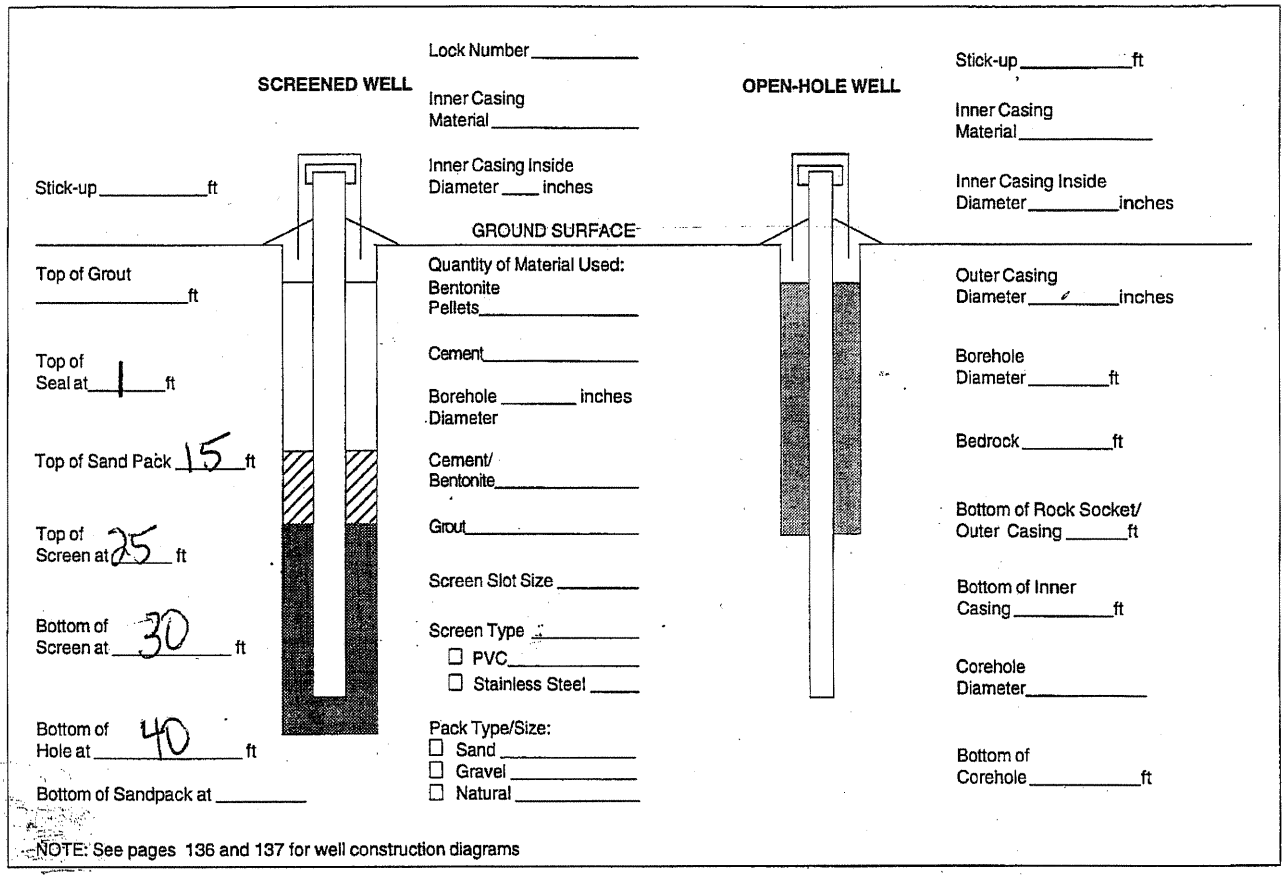
Total Depth of Corehole Is NA

Water Level (TOIC)		
Date	Time	Level(Feet)

Well Location Sketch



Depth(Feet)	Sample Number	Blows on Sampler	Soil Components Rock Profile CL SL S GR	Penetration Times	Run Number	Core Recovery	RQD	Fracture Sketch	HNu/OVA (ppm)	Comments
1					1	4.4			0	
2										
3										
4										
5				0850						
6										
7					2	4.7			0	
8										
9										
10				0852						
11										
12					3	2.8			0	
13										
14										
15				0855						



NOTE: See pages 136 and 137 for well construction diagrams

Depth-ft.	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content: Dry	Moist	Wet
1	0-4.4 Dark brown grading to brown then yellowish brown clayey silt, moist grading to dry, organic rich top 0.3	○	⊗	○
2		⊗	○	○
3		○	○	○
4		○	○	○
5	5-8.6 Yellowish brown silty clay, dry-moist	○	○	○
6		○	○	○
7	8.6-9.7 Brown fine sand with some F-C gravel, moist, trace silt+clay	○	○	○
8		○	○	○
9		○	○	○
10	10-12.8 Brown rounded F-VC gravel w/ little fine sand+silt, trace clay. wet 10.0-10.8	○	○	○
11		○	○	○
12	Moist 10.8-12.8	○	○	○
13				
14		○	○	○
15		○	○	○

BOREHOLE NO. BH-02

BOREHOLE NO. BH-03

Depth(feet)	Sample Number	Blows on Sampler	Soil Components CL SL S GR	Rock Profile	Penetration Times	Run Number	Core Recovery	RQD	Fracture Sketch	HNu/OVA (ppm)	Comments
16											0915 Collect DS-BH-01 (15-16) Wet at 15
17						4	4.0			0	
18											
19											
20					1905						
21											
22											
23						5	3.1			0	
24											
25					0920						
26											0940 Collect DS-BH-01 (26-27)
27											
28						6	2.4			0	
29											
30					0937						
31											
32											
33						7	1.2			0	
34											
35					0950						
36											1030 Collect DS-BH-01 (~~26-27~~ 36-37)
37						8	2.2			0	
38											
39											
40					1020						
41											
42											
43											
44											
45											

Depth(feet).	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content: Dry	Moist	Wet
16	15-15.7 Gravel w/ few fine sand, wet. Gravel is F-C, subrounded	○	○	⊗
17		○	○	⊗
18	15.7-17.7 F-M sand, brown, some F-C gravel, saturated	○	○	⊗
19		○	○	⊗
20	17.7-19 Gravel as at 15-15.7	○	○	⊗
21	20-23.1 Gravel, brown, rounded, some F-M sand, trace clay, saturated	○	○	⊗
22		○	○	⊗
23		○	○	⊗
24		○	○	⊗
25		○	○	⊗
26	25-27.4 Gravel, as above	○	○	⊗
27		○	○	⊗
28		○	○	⊗
29		○	○	⊗
30		○	○	○
31	30-31.2 Gravel, well rounded, brown, gravel F-VC, few fine sand, wet	○	○	○
32		○	○	○
33		○	○	○
34		○	○	○
35	35-37.2 Gravel, as above, wet	○	○	○
36		○	○	○
37	BOH = 40 ft	○	○	○
38		○	○	○
39		○	○	○
40		○	○	○
41		○	○	○
42		○	○	○
43		○	○	○
44		○	○	○
45		○	○	○

BOREHOLE NO. BH-02

BOREHOLE NO. BH-03

Borehole Record for DS-BH02/PZ-2

- Drilling Log
- Narrative Lithologic Description
- Well Development Record
- Well Development -- Parameter Measurements
- Investigation - Derived Waste Inventory Sheet

BOREHOLE NO. BH-02

DRILLING LOG FOR DS-BH-02/PZ-2

Project Name Steuben Co. Site Characterizations

Site Location Former Depot Street Dry Cleaners Canisteo, NY

Date Started/Finished 1/24/06

Drilling Company Zebra

Driller's Name D-Pino

Geologist's Name S. Reynolds Smith

Geologist's Signature

Rig Type (s) Geoprobe 6620 DT

Drilling Method (s) Direct Push

Bit Size (s) 2 1/8" OD Auger Size (s) NA

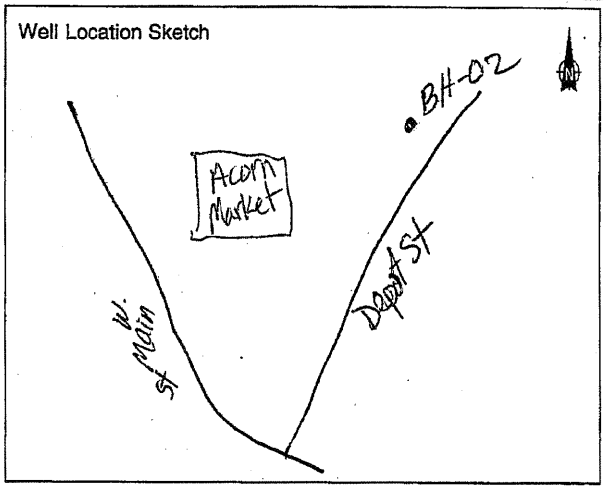
Auger/Split Spoon Refusal NA

Total Depth of Borehole is 40

Total Depth of Corehole is NA

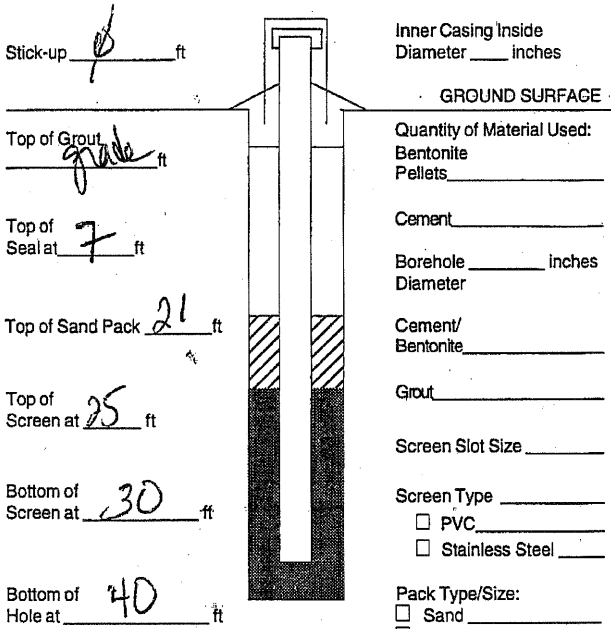
Water Level (TOIC)		
Date	Time	Level(Feet)

Well Location Sketch



Depth(Feet)	Sample Number	Blows on Sampler	Soil Components Rock Profile CL SL S GR	Penetration Times	Run Number	Core Recovery ft	RQD	Fracture Sketch	PID HNu/~~OVA~~ (ppm)	Comments
1				1244						
2					1	2.3			0	
3										
4				1245						
5										
6										
7					2	4.5			0	
8										
9				1251						
10										
11										Collect DS-BH-02 (10-11) @ 13:05 wet at 10' bgs
12					3	2.3			0	
13										
14										
15				1257						

PZ-2



Lock Number _____

Inner Casing Material _____

Inner Casing Inside Diameter ____ inches

Quantity of Material Used:
Bentonite Pellets _____
Cement _____
Borehole _____ inches Diameter
Cement/ Bentonite _____
Grout _____

Screen Slot Size _____

Screen Type _____
☐ PVC _____
☐ Stainless Steel ____

Pack Type/Size:
☐ Sand _____
☐ Gravel _____
☐ Natural _____

Stick-up _____ ft

Inner Casing Material _____

Inner Casing Inside Diameter _____ inches

Outer Casing Diameter _____ inches

Borehole Diameter _____ ft

Bedrock _____ ft

Bottom of Rock Socket/ Outer Casing _____ ft

Bottom of Inner Casing _____ ft

Corehole Diameter _____

Bottom of Corehole _____ ft

NOTE: See pages 136 and 137 for well construction diagrams

Depth-ft.	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content: Dry	Moist	Wet
1	0-0.8 ~~Dave~~ Topsoil: dark brown silty/fine sand, organic rich, moist	○	○	○
2		○	○	○
3	0.8-2.3 Fill Orange bricks, wood, fine whitish tan sand, moist-dry	○	○	○
4		○	○	○
5	5-6.2 Fill, as above	○	○	○
6		○	○	○
7	6.2-6.8 Brown clayey silt, moist	○	○	○
8	6.8-9.5 Yellowish brown silty clay, moist	○	○	○
9	9.0-9.5 Little coarse gravel, moist-wet	○	○	○
10		○	○	○
11	10-12.3 Brown F-VC rounded gravel, some fine sand + gravel, wet	○	○	○
12		○	○	○
13				
14		○	○	○
15		○	○	○

BOREHOLE NO. BH-03

Depth(feet)	Sample Number	Blows on Sampler	Soil Components CL SL S GR	Rock Profile	Penetration Times	Run Number	Core Recovery ft	RQD	Fracture Sketch	PID HNu/~~OVA~~ (ppm)	Comments
16											
17						4	5				
18										0	
19											
20					1317						
21											
22							1.5				
23						5				0	
24											
25					1324						
26											1340 collect DS-BH-02(25-26) & dup
27						6	1.5			0	
28											
29											
30					1337						
31											
32											
33						7	1.5			0	
34											
35					1352						
36											1415
37						8	2			0	collect DS-BH-02(36-37)
38											
39											
40					1413						
41											
42											
43											
44											
45											

Depth(feet).	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content: Dry	Moist	Wet
16	15-19 M-C Sand w/ some F-C gravel, fully saturated, brown			
17				
18	19-20 Well rounded F-C gravel, few F sand, wet, brown			
19				
20				
21	20-21.5 Gravel as above			
22				
23				
24				
25	25-30 Gravel as above			
26				
27				
28				
29				
30				
31	30-31.5 Gravel, as above			
32				
33				
34				
35				
36	35-37 Gravel, as above			
37				
38				
39	BOH 40' BGS			
40				
41				
42				
43				
44				
45				

BOREHOLE NO. BH-03

Borehole Record for DS-BH-03/PZ-3

- Drilling Log
- Narrative Lithologic Description
- Well Development Record
- Well Development -- Parameter Measurements
- Investigation - Derived Waste Inventory Sheet

DRILLING LOG FOR DS-BH-03

Project Name Steuben Co. Site Characterization

Site Location Frmr Depot St Dry Cleaners
Canisteo, NY

Date Started/Finished 1/25/06 to 1-31-06

Drilling Company Zebra

Driller's Name D. Pino

Geologist's Name S. Reynolds Smith

Geologist's Signature

Rig Type (s) Geoprobe Pole 20DT

Drilling Method (s) Direct Push

Bit Size (s) 2 1/8" OD Auger Size (s) NA

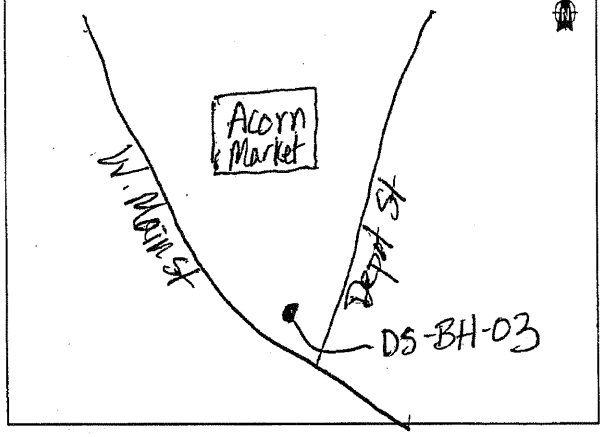
Auger/Split Spoon Refusal NA

Total Depth of Borehole Is 25

Total Depth of Corehole Is NA

Water Level (TOIC)		
Date	Time	Level(Feet)

Well Location Sketch



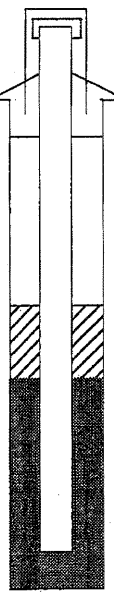
Depth(Feet)	Sample Number	Blows on Sampler	Soil Components Rock Profile CL SL S GR	Penetration Times	Run Number	Core Recovery ft	RQD	Fracture Sketch	PID HNu/~~OVA~~ (ppm)	Comments
1				0752						
2									0	
3					1	4.1				
4				0753						
5										
6									0	oil odor
7									0	0809 Collect DS-BH-01 (8.6-9)
8					2	4.7			0	
9									292	
10				0759					200	
11									1354	0815 Collect DS-BH-01 (10-10.5)
12						3.7			100	150 borehole
13					3	NRVD			86	Background = B2
14									100	
15				0805						

BOREHOLE NO. BA-04

PZ-3

Flushmount

SCREENED WELL



Stick-up ~2.6' ft GGS

Top of Grout Grade ft

Top of Seal at 1 ft

Top of Sand Pack 7 ft

Top of Screen at 12 ft

Bottom of Screen at 17 ft

Bottom of Hole at 17 ft

Bottom of Sandpack at _____

Lock Number _____

Inner Casing Material _____

Inner Casing Inside Diameter 1 inches

GROUND SURFACE

Quantity of Material Used:

Bentonite Pellets _____

Cement _____

Borehole ~2¼" inches Diameter

Cement/ Bentonite _____

Grout _____

Screen Slot Size .010"

Screen Type _____

☒ PVC _____

☐ Stainless Steel _____

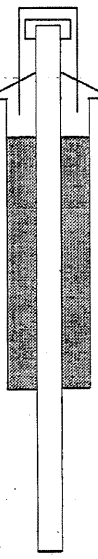
Pack Type/Size:

☒ Sand 0

☐ Gravel _____

☐ Natural _____

OPEN-HOLE WELL



Stick-up _____ ft

Inner Casing Material _____

Inner Casing Inside Diameter _____ inches

Outer Casing Diameter _____ inches

Borehole Diameter _____ ft

Bedrock _____ ft

Bottom of Rock Socket/ Outer Casing _____ ft

Bottom of Inner Casing _____ ft

Corehole Diameter _____

Bottom of Corehole _____ ft

NOTE: See pages 136 and 137 for well construction diagrams

Depth-ft.	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content: Dry	Moist	Wet
1	0-1.9 Brown fine silty sand, moist, organic rich	○	⊗	○
2	1.9-2.9 Brown clayey silt, moist	○	⊗	○
3	2.9-3.7 Yellowish brown silty clay, moist	○	⊗	○
4	3.7-4.1 Brown clayey silt, moist, trace black particles	○	⊗	○
5	4.1-8.1 Brown silt, as above	○	○	○
6		○	○	○
7	8.1-8.7 Black clayey silt, moist	○	○	○
8	8.7-10 Gray w/ orange staining, silt w/ some fine sand	○	⊗	○
9	Highest ppm hits on PID at ~~8.6-8.7~~ ~8.6-8.7	○	○	○
10		○	○	○
11	10-12.3 Gray clayey fine sand, moist	○	○	○
12	12.3-12.5 Dark gray fine sand stringer, moist	○	○	○
13	12.5-13.7 Brown to gray F-VC gravel, little fine sand + silt, black staining at 13.4,			
14	becoming moist - wet at 13.8	○	○	○
15		○	○	○

Depth(feet)	Sample Number	Blows on Sampler	Soil Components CL SL S GR	Rock Profile	Penetration Times	Run Number	Core Recovery	RQD	Fracture Sketch	PID HNu/~~OVA~~ (ppm)	Comments
16							0965			438	
17						4				657	0845 collect DS-BH-02(15-16)
18										890	
19							3.3				
20					0828						
21										2	
22										17	
23						5	0.4			1.5	
24										1.0	
25					0840					2.5	
26											
27											
28											
29											
30											
31											
32											
33											
34											
35											
36											
37											
38											
39											
40											
41											
42											
43											
44											
45											

Depth(feet).	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content: Dry	Moist	Wet
16	15-20 Brown w/ some orange & black stains, F-VC gravel, little fine sand & silt, wet	○	○	○
17		○	○	○
18		○	○	○
19		○	○	○
20		○	○	○
21	20-22.4 Gravel, gray/brown, F-VC gravel, little fine sand/silt, wet	○	○	○
22		○	○	○
23		○	○	○
24	BOH 25' bgs	○	○	○
25	Fill hole with bentonite	○	○	○
26		○	○	○
27		○	○	○
28		○	○	○
29		○	○	○
30		○	○	○
31		○	○	○
32		○	○	○
33		○	○	○
34		○	○	○
35		○	○	○
36		○	○	○
37		○	○	○
38		○	○	○
39		○	○	○
40		○	○	○
41		○	○	○
42		○	○	○
43		○	○	○
44		○	○	○
45				

Borehole Record for BH-04

- Drilling Log
- Narrative Lithologic Description
- Well Development Record
- Well Development -- Parameter Measurements
- Investigation - Derived Waste Inventory Sheet

DRILLING LOG FOR BH-04

Project Name Steuben Co. Site Characterizations

Site Location Former Depot St Site Dry Cleaners, Canisteo, NY

Date Started/Finished 1/25/06

Drilling Company Zebra

Driller's Name D. Pino

Geologist's Name S. Reynolds Smith

Geologist's Signature [signature]

Rig Type (s) Geoprobe 6620DT

Drilling Method (s) Direct Push

Bit Size (s) 2 1/8" OD Auger Size (s) _____

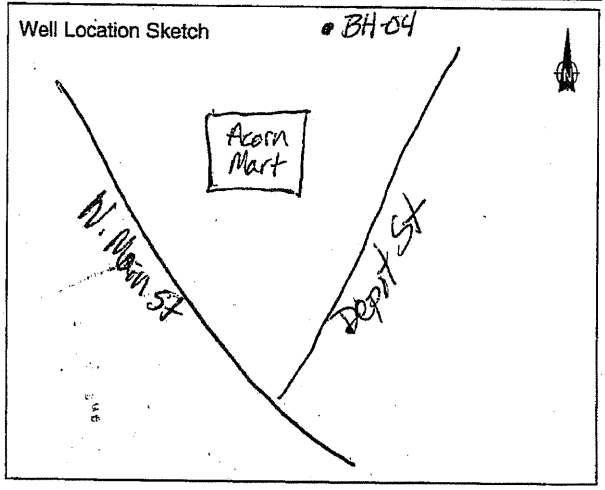
Auger/Split Spoon Refusal NA

Total Depth of Borehole Is 40

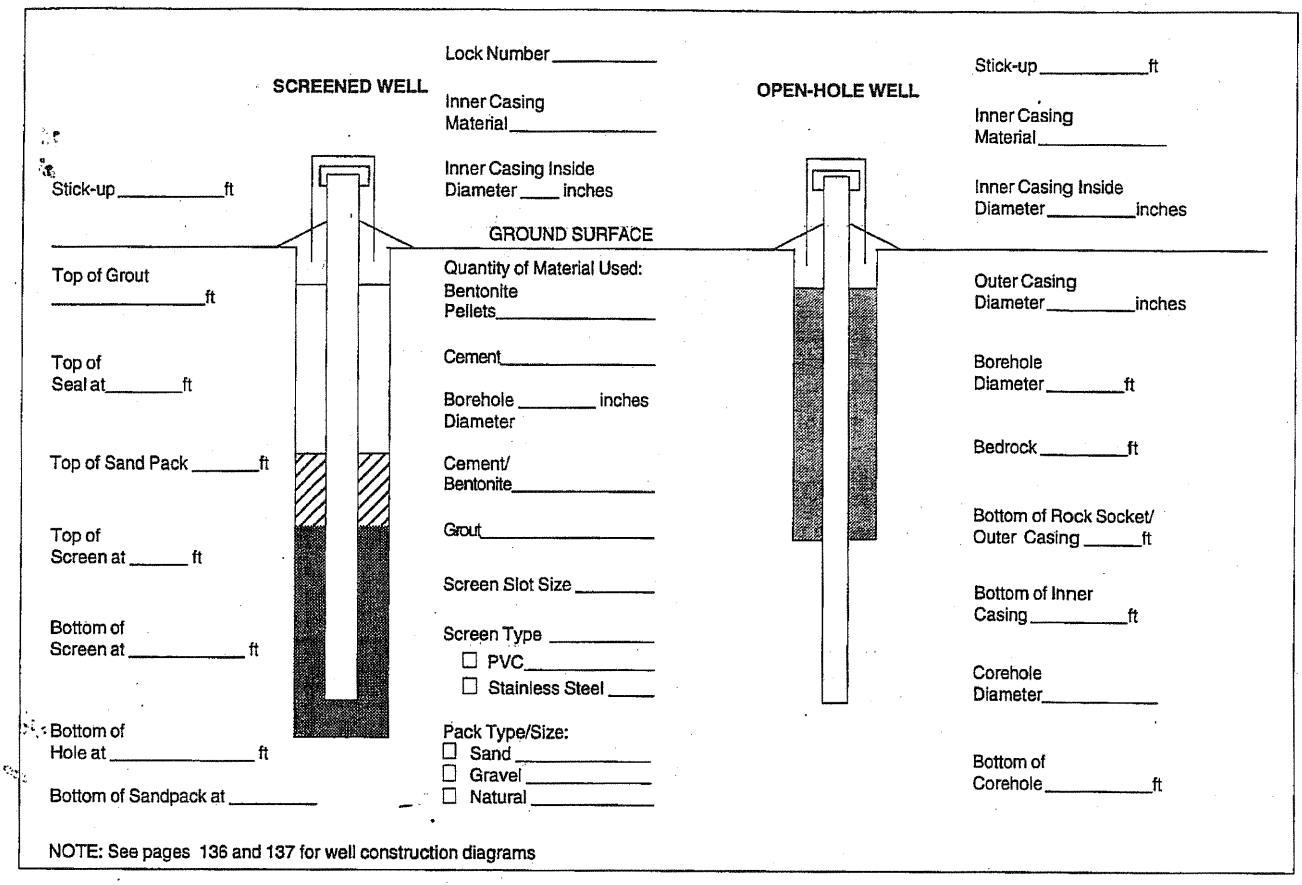
Total Depth of Corehole Is NA

Water Level (TOIC)		
Date	Time	Level(Feet)

Well Location Sketch



Depth(Feet)	Sample Number	Blows on Sampler	Soil Components Rock Profile CL SL S GR	Penetration Times	Run Number	Core Recovery ft	RQD	Fracture Sketch	PID HNu/~~OVA~~ (ppm)	Comments
1				0921						
2					1	1			0	
3										
4				0928						
5										
6										
7					2	4.5			0	
8										
9										
10										
11										
12					3	3.8			0	
13										
14										
15										



NOTE: See pages 136 and 137 for well construction diagrams

Depth-ft.	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content: Dry	Moist	Wet
1	2nd attempt			
2	0-1 Brown clayey silt, moist & becoming wet at 0.7			
3	3rd attempt: 1.8' Recovery PID=0 09:40			
4	0-0.6 Black asphalt			
5	0.6-0.9 Brown fine sand, moist-dry			
6	0.9- Yellowish brown fine sandy			
7	4th attempt 09:50 3.8' Recovery PID=0			
8	0-2 Fill including orange brick, white solid asphalt, brown silty soil			
9	2-3.8 Brown grading to yellowish brown fine sand/silt, trace clay, dry-moist			
10	5-5.4 Brown clayey silt, dry-moist			
11	5.4-9.5 Yellowish brown silty clay, dry-moist			
12	10-11.3 clay, as above			
13	11.3-12.4 yellowish brown fine sand moist			
14	12.4-13.8 Yellowish brown F-VC gravel w/ little fine sand, moist & becoming wet at 13.6			
15				

Depth(feet)	Sample Number	Blows on Sampler	Soil Components CL SL S GR	Rock Profile	Penetration Times	Run Number	Core Recovery	RQD	Fracture Sketch	HNu/OVA (ppm)	Comments
16							3.0				Collect DS-BH-04 (15-16) 10:20
17											
18						4	~~5~~ 4			0	
19					1007						
20											
21											
22										0	
23						5	1.8				
24											
25					1029						
26											1035, Collect DS-BH-04 (26-27)
27							2.3				
28						6				0	
29											
30					1031						
31											
32											1108 collect (35-38)
33						7	1.3			0	DS-BH-04 ~~(37-38)~~ DUP, MS/MSD
34											
35					1046						
36											
37						8	2.7			0	
38											
39											
40					1106						
41											
42											
43											
44											
45											

Depth(feet).	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content: Dry	Moist	Wet
16	15-17 Brown F-VC gravel, rounded gravel, trace grading to some F-M sand, wet			
17				
18	17-19.6 Brown M-C Sand, some F-C rounded gravel, wet			
19				
20				
21	20-21.8, Brown F-VC gravel, rounded, little F sand/silt, wet			
22				
23				
24				
25				
26	25-27.3 Gravel, as above			
27				
28				
29				
30				
31	30-31.3 Gravel, as above			
32				
33				
34				
35	35-37.7 Gravel, as above			
36				
37	BOH = 40' bgs			
38				
39				
40				
41				
42				
43				
44				
45				

Borehole Record for DS-BH05

- Drilling Log
- Narrative Lithologic Description
- Well Development Record
- Well Development -- Parameter Measurements
- Investigation - Derived Waste Inventory Sheet

DRILLING LOG FOR DS-BH05/PZ-4

Project Name Steuben Co. Site Characterizations

Site Location Former Depot St Dry Cleaners
Canisteo, NY

Date Started/Finished 1/25/06

Drilling Company Zebra

Driller's Name D. Pino

Geologist's Name S. Reynolds Smith

Geologist's Signature [signature]

Rig Type (s) Geoprobe 6620 DT

Drilling Method (s) Direct Push

Bit Size (s) 2 1/8" OD Auger Size (s) NA

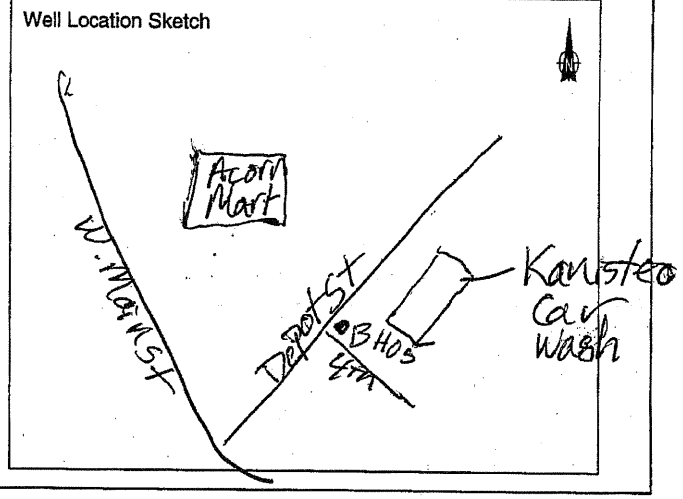
Auger/Split Spoon Refusal NA

Total Depth of Borehole Is 40'

Total Depth of Corehole Is NA

Water Level (TOIC)		
Date	Time	Level(Feet)

Well Location Sketch



Depth(Feet)	Sample Number	Blows on Sampler	Soil Components Rock Profile CL SL S GR	Penetration Times	Run Number	Core Recovery	RQD	Fracture Sketch	HNu/OVA (ppm)	Comments
1				1420						
2					1	4.0			0	
3										
4										
5				1425						
6										
7										
8					2	5			0	
9										
10				1431						
11										
12					3	3.4				
13									0	
14										
15				1436						

PZ-4

SCREENED WELL

Flushmount

Stick-up 0.3 ft BGS

Top of Grout Grade ft

Top of Seal at 1 ft

Top of Sand Pack 3 ft

Top of Screen at 12 ft

Bottom of Screen at 17 ft

Bottom of Hole at 17 ft

Bottom of Sandpack at 17

Lock Number NA

Inner Casing Material _____

Inner Casing Inside Diameter 1 inches

GROUND SURFACE

Quantity of Material Used:
Bentonite Pellets _____

Cement _____

Borehole ~2¼" inches Diameter

Cement/ Bentonite _____

Grout _____

Screen Slot Size .010"

Screen Type slotted

☒ PVC _____

☐ Stainless Steel ____

Pack Type/Size:
☒ Sand 0
☐ Gravel _____
☐ Natural _____

OPEN-HOLE WELL

Stick-up _____ ft

Inner Casing Material _____

Inner Casing Inside Diameter _____ inches

Outer Casing Diameter _____ inches

Borehole Diameter _____ ft

Bedrock _____ ft

Bottom of Rock Socket/ Outer Casing _____ ft

Bottom of Inner Casing _____ ft

Corehole Diameter _____

Bottom of Corehole _____ ft

NOTE: See pages 136 and 137 for well construction diagrams

Depth-ft.	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content: Dry	Moist	Wet
1	0-~~1.4~~ 2.3 Brown silty soil (fill), wood fragments, asphalt, moist-dry	○	○	○
2		○	○	○
3	~~1.4~~ 2.3 - 3.8 yellowish brown clayey sand, moist to dry	○	○	○
4		○	○	○
5	3.8 - 5 Brown clayey silt, moist-dry	○	○	○
6	5 - 6.5 Silt as above	○	○	○
7	6.5 - 10 yellowish brown & silty/ fine sandy clay moist-dry	○	○	○
8		○	○	○
9		○	○	○
10	10 — 11.4 Yellowish brown clayey fine sand	○	○	○
11	Moist-dry ~~becau~~ becoming moist at 11.1	○	○	○
12	11.4 — 13.4 Brown F-VC gravel, little F-C sand	○	○	○
13	moist	○	○	○
14		○	○	○
15		○	○	○

Depth(feet)	Sample Number	Blows on Sampler	Soil Components CL SL S GR	Rock Profile	Penetration Times	Run Number	Core Recovery	RQD	Fracture Sketch	HNu/OVA (ppm)	Comments
16											1455
17											collect
18						4	4.4			0	DS-BH05(15-16)
19					1445						
20											
21											
22						5	2.7			0	
23											
24					1459						
25											
26											1515 collect
27						6	3.4			0	DS-BH-05(27-28)
28											
29											
30					1510						
31											
32						7	2.9			0	
33											
34											
35					1524						
36											collect
37						8	2.6			0	DS-BH-05(36-37)
38											1547
39											
40					1540						
41											
42											
43											
44											
45											

Depth(feet).	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content: Dry	Moist	Wet
16	15-19.4 F-C gravel, brown, some F-C sand	○	○	⊗
17	soupy from 17.1-18.5 (high sand + water content)	○	○	○
18		○	○	○
19		○	○	○
20		○	○	○
21	20-21.5 Gravel, as above wet	○	○	○
22	21.5-22.4 Gray F-C sand, trace clay,	○	○	○
23	wood fragments & some black coloring, wet	○	○	○
24		○	○	○
25	22.4-22.7 Gravel as above 20-21	○	○	○
26	25-30.1 Rounded brown gravel (F-C), little F-C sand, wet	○	○	○
27		○	○	○
28		○	○	○
29		○	○	○
30		○	○	○
31	30-32.9 Brown F-C gravel, rounded, some F-C	○	○	○
32	sand, wet	○	○	○
33		○	○	○
34		○	○	○
35		○	○	○
36	35-37.6 Gravel, as above	○	○	○
37		○	○	○
38		○	○	○
39		○	○	○
40	BOH 40' BGS	○	○	○
41		○	○	○
42		○	○	○
43		○	○	○
44		○	○	○
45		○	○	○

Borehole Record for DS-BH-06

- Drilling Log
- Narrative Lithologic Description
- Well Development Record
- Well Development -- Parameter Measurements
- Investigation - Derived Waste Inventory Sheet

BOREHOLE NO. _____

BOREHOLE NO. _____

DRILLING LOG FOR DS-BH-06

Project Name Steuben Co. Site Characterization

Site Location Former Depot Street Dry Cleaners, Canisteo, NY

Date Started/Finished 1/26/06

Drilling Company Zebra

Driller's Name Dom Pino

Geologist's Name S. Reynolds Smith

Geologist's Signature [signature]

Rig Type (s) Geoprobe 6620DT

Drilling Method (s) Direct Push

Bit Size (s) 2 1/8" OD Auger Size (s) NA

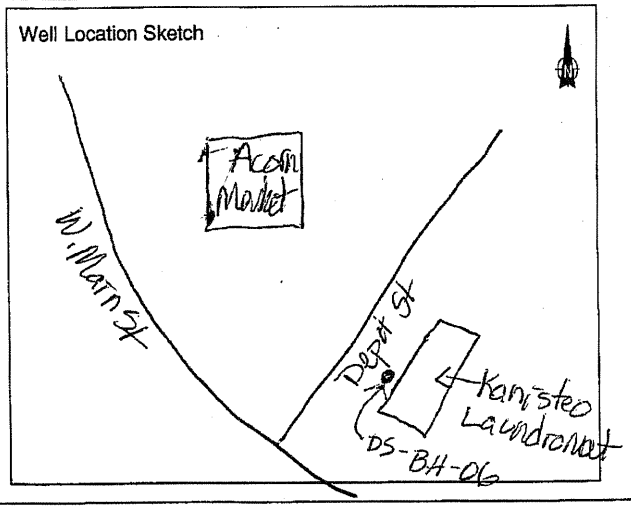
Auger/Split Spoon Refusal NA

Total Depth of Borehole Is 40

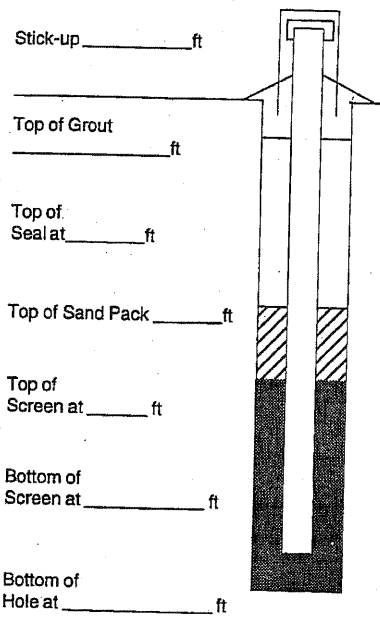
Total Depth of Corehole Is NA

Water Level (TOIC)		
Date	Time	Level(Feet)

Well Location Sketch



Depth(Feet)	Sample Number	Blows on Sampler	Soil Components Rock Profile CL SL S GR	Penetration Times	Run Number	Core Recovery	RQD	Fracture Sketch	HNu/OVA (ppm)	Comments
1				0753						
2					1	2.1			0	
3										
4				0800						
5										
6										
7					2	3.2			0	
8										
9				0805						
10										
11										
12					3	3.7			0	
13										
14										
15				0814						



SCREENED WELL

Stick-up _____ ft

Top of Grout _____ ft

Top of Seal at _____ ft

Top of Sand Pack _____ ft

Top of Screen at _____ ft

Bottom of Screen at _____ ft

Bottom of Hole at _____ ft

Bottom of Sandpack at _____

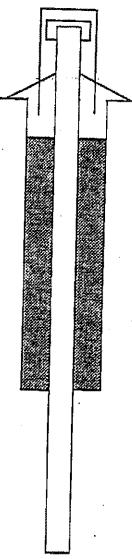
Lock Number _____

Inner Casing Material _____

Inner Casing Inside Diameter ____ inches

GROUND SURFACE

Quantity of Material Used:
Bentonite Pellets _____
Cement _____
Borehole _____ inches Diameter
Cement/ Bentonite _____
Grout _____
Screen Slot Size _____
Screen Type _____
☐ PVC _____
☐ Stainless Steel ____
Pack Type/Size:
☐ Sand _____
☐ Gravel _____
☐ Natural _____



OPEN-HOLE WELL

Stick-up _____ ft

Inner Casing Material _____

Inner Casing Inside Diameter _____ inches

Outer Casing Diameter _____ inches

Borehole Diameter _____ ft

Bedrock _____ ft

Bottom of Rock Socket/ Outer Casing _____ ft

Bottom of Inner Casing _____ ft

Corehole Diameter _____

Bottom of Corehole _____ ft

NOTE: See pages 136 and 137 for well construction diagrams

Depth-ft.	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content: Dry	Moist	Wet
1	0-2.1 Fill: brown silty soil, orange bricks, gravel, dry	●	○	○
2		○	○	○
3		○	○	○
4		○	○	○
5		○	○	○
6	5-6 yellowish brown fine sandy silty clay, moist	○	○	○
7	6-7.3 Brown clayey silt, moist	○	○	○
8	7.3-8.2 Yellowish brown silty clay, orange-mottling, moist	○	○	○
9		○	○	○
10		○	○	○
11	10-13.3 Yellowish brown fine sandy clay, some orange mottling, moist	○	○	○
12		○	○	○
13	13.3-13.7 Yellowish brown ~~fine~~ F-M gravel with fine sand, moist	○	○	○
14		○	○	○
15		○	○	○

BOREHOLE NO

Depth(feet)	Sample Number	Blows on Sampler	Soil Components CL SL S GR	Rock Profile	Penetration Times	Run Number	Core Recovery	RQD	Fracture Sketch	HNu/OVA (ppm)	Comments
16										2/5	Color Wetest 15
17						4	2.8			13	~~0825~~ BZ=0
18										28	~~collect~~ ~~DS-BH-06(17-18)~~
19											
20					0820						
21										54 →	sheen DownHole=0
22										2	
23						5	3.8			1.8	BZ=0
24										0.5	0835 collect DS-BH-06(20-20.7)
25					0833						
26										3	BZ=0
27										0.4	
28						6	2.6			1.3	
29											
30					0846						
31											
32										0	0902 collect
33						7	2.2				DS-BH-06(30-31)
34											
35					0858						
36											0925
37						8	2.3				collect
38										0	DS-BH-06(36-37)
39											
40					0920						
41											
42											
43											
44											
45											

Depth(feet).	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content: Dry	Moist	Wet
16	15-17.8 Brown, changing to gray/brown at 16.6 rounded gravel w/ some fine sand wet, odor (smells sort of like sewage)	○	○	○
17		○	○	○
18		○	○	○
19		○	○	○
20		○	○	○
21	20-23.8 Very saturated brown fine sand grading to rounded F-C gravel w/ some fine sand, wet sheen + 54ppm at 20-20.5, odor	○	○	○
22		○	○	○
23		○	○	○
24		○	○	○
25		○	○	○
26	25-27.6 Brown F-C gravel, rounded, little fine sand/silt, wet	○	○	○
27		○	○	○
28		○	○	○
29		○	○	○
30		○	○	○
31	30-32.2 Gravel, as above, wet	○	○	○
32		○	○	○
33		○	○	○
34		○	○	○
35		○	○	○
36	35-33.2 Gravel, as above.	○	○	○
37		○	○	○
38		○	○	○
39		○	○	○
40	BOH @ 40' bgs	○	○	○
41		○	○	○
42		○	○	○
43		○	○	○
44		○	○	○
45		○	○	○

BOREHOLE NO. ____

BOREHOLE NO. ____

B Photo Logs

Date: 1/24/06	Subject: Direct-Push activities at the Canisteo Town Garage Site boring TG-BH-03
Photographer: Robert Meyers	

Date: 1/24/06	Subject: Direct-Push activities at the Canisteo Town Garage Site boring TG-BH-04
Photographer: Stephanie Reynolds Smith	

Date: 1/24/06	Subject: Direct-Push activities at the Canisteo Town Garage Site boring TG-BH-01
Photographer: Stephanie Reynolds Smith	

Time/Date: 1/26/06	Subject: Direct-Push activities at the Former Depot Street Dry Cleaner Site boring DS-BH-06
Photographer: Stephanie Reynolds Smith	

Date: 1/26/06	Subject: Direct-Push activities at the Former Depot Street Dry Cleaner Site boring DS-BH-02
Photographer: Stephanie Reynolds Smith	

Date: 1/23/06	Subject: Direct-Push activities at the Former Liberty Street Dry Cleaners Site boring LS-BH-06
Photographer: Robert Meyers	

Date: 1/23/06	Subject: Direct-Push activities at the Former Liberty Street Dry Cleaners Site boring LS-BH-05
Photographer: Robert Meyers	

Date: 1/23/06	Subject: Direct-Push activities at the Former Liberty Street Dry Cleaners Site boring LS-BH-01
Photographer: Robert Meyers	

Date: 1/23/06	Subject: Direct-Push activities at the Former Liberty Street Dry Cleaners Site boring LS-BH-03
Photographer: Robert Meyers	

Date: 1/17/06	Subject: Direct-Push activities at the Band Box Cleaners Site boring BB-BH-03
Photographer: Jim Mays	

Date: 1/16/06	Subject: Direct-Push activities at the Band Box Cleaners Site boring BB-BH-04
Photographer: Jim Mays	

Date: 1/13/06	Subject: Direct-Push activities at the Band Box Cleaners Site boring BB-BH-02
Photographer: Jim Mays	

Date: 1/11/06	Subject: Direct-Push activities at the Former Loohns Cleaners Site boring FL-BH-03
Photographer: Jim Mays	

Date: 1/11/06	Subject: Direct-Push activities at the Former Loohns Cleaners Site boring FL-BH-03
Photographer: J. Mays	

Date: 1/9/06	Subject: Direct-Push activities at the Former Loohns Cleaners Site boring FL-BH-01
Photographer: Jim Mays	

Date: 1/4/06	Subject: Typical soil gas sample collection set-up
Photographer: Stephanie Reynolds Smith	

C Laboratory and Data Usability Summary Reports

See enclosed CD