Final Site Characterization Report
Canisteo Town Garage
Site Number 8-51-020
Steuben County, New York

November 2006

Prepared for:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
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Albany, New York 12233

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List of Acronyms

ADR	Automated Data Review
ASP	Analytical Services Protocol
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, xylenes
Chemtech	Chemtech Environmental Laboratory
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	(U.S.) Environmental Protection Agency
FTL	field team leader
GIS	geographic information system
HASP	Health and Safety Plan
ID	inner diameter
IDL	instrument detection limit
IDW	investigation-derived waste

List of Acronyms (Cont.)

LCS	laboratory control sample
MDL	method detection limit
mL	milliliter
MS/MSD	matrix spike/matrix spike duplicate
MTBE	methyl-tert butyl ether
NAD	North American Datum
NAVD	North American Vertical Datum
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PCE	tetrachloroethylene
PID	photoionization detector
ppbv	parts per billion by volume
ppb	parts per billion
ppm	parts per million
PQL	practical quantitation level
PRT	post-run tubing
PVC	polyvinyl chloride
QA	quality assurance
QA/QC	quality assurance/quality control
QAPP	Quality Assurance Project Plan
QC	quality control
RPD	relative percent difference
SDG	sample delivery group
TAGM	Technical Administrative Guidance Memorandum
TCE	trichloroethylene

List of Acronyms (Cont.)

TIC	tentatively identified compound
USGS	U.S. Geological Survey
UST	underground storage tank
VOC	volatile organic compound

1 Introduction

Pursuant to Work Assignment No. D003493-57 accepted on September 6, 2005, 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 from January 26 through 30, 2006, at the Canisteo Town Garage, 67 Depot Street in the Town 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 properties 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 DER's December 2002 draft guidance document "DER-10 Technical Guidance for Site Investigation and Remediation" (New York State Department of Environmental Conservation 2000).

Figure 1-1 Site Location Map
Canisteo, New York

0 250 500 1,000
Feet

2 Background Information

2.1 Site Descriptions and Histories

A brief site description and history for the site is provided below.

Canisteo Town Garage (Site No. 8-51-020) is located at 67 Depot Street in the Town of Canisteo, Steuben County, New York, in a rural neighborhood. The site is currently used by the town to maintain town vehicles. The town wellfield is to the north and adjacent to the site and a residential area is to the south and east. Recent sampling of the town wells has indicated that tetrachloroethylene (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 town, and supply well no. 2 is used as an emergency supply.

In 1992 the town removed a 1,000-gallon gasoline underground storage tank (UST). During removal activities, a sheen was observed on the water in the excavation. As a result, the site was referred to the NYSDEC spills program (spill No. 9112831) and the town excavated contaminated soil. On March 19, 1992, NYSDEC determined that no further action was required and the spill was officially closed on September 21, 1995.

2.2 Conceptual Site Model

The Town of Canisteo currently obtains groundwater from municipal wellfields for use in the public water systems. Recent sampling of the Canisteo town wells has indicated that PCE and MTBE are present in supply well no. 1. Supply well no.1 is the primary water source for the town.

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.

2.3 Subsurface Conditions

The Town of Canisteo is situated above valley-fill aquifers cut by pre-glacial streams, which were 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 6 and 9 feet below ground surface (bgs) and is unconfined (USGS 1984a; 1984b). Bedrock beneath the town 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, number 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 Canisteo Town Garage site. EEEPC also reviewed available files at the Steuben County Clerk's and Tax Assessor's offices.

A database search was performed by Environmental Data Resources, Inc. (EDR) for the site in accordance with ASTM E 1527-00, "Standard Practice for Environmental Site Assessments." The database search also included review of historical Sanborn® Fire Insurance maps (Sanborn Maps), historical topographic maps, city directories, and historic aerial photos. The information was presented in Appendix C of the work plan (Ecology and Environment Engineering, P.C. 2005). The data assisted 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. EEEPC is currently updating the master Quality Assurance Program Plan and will submit it for review under separate cover. 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

A site base map illustrating proposed sampling locations was created for the 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 sample locations has been included as Figure 3-1. In Section 4, groundwater flow direction contours are included on the base map and presented as Figure 4.1.

3.2 Field Investigation

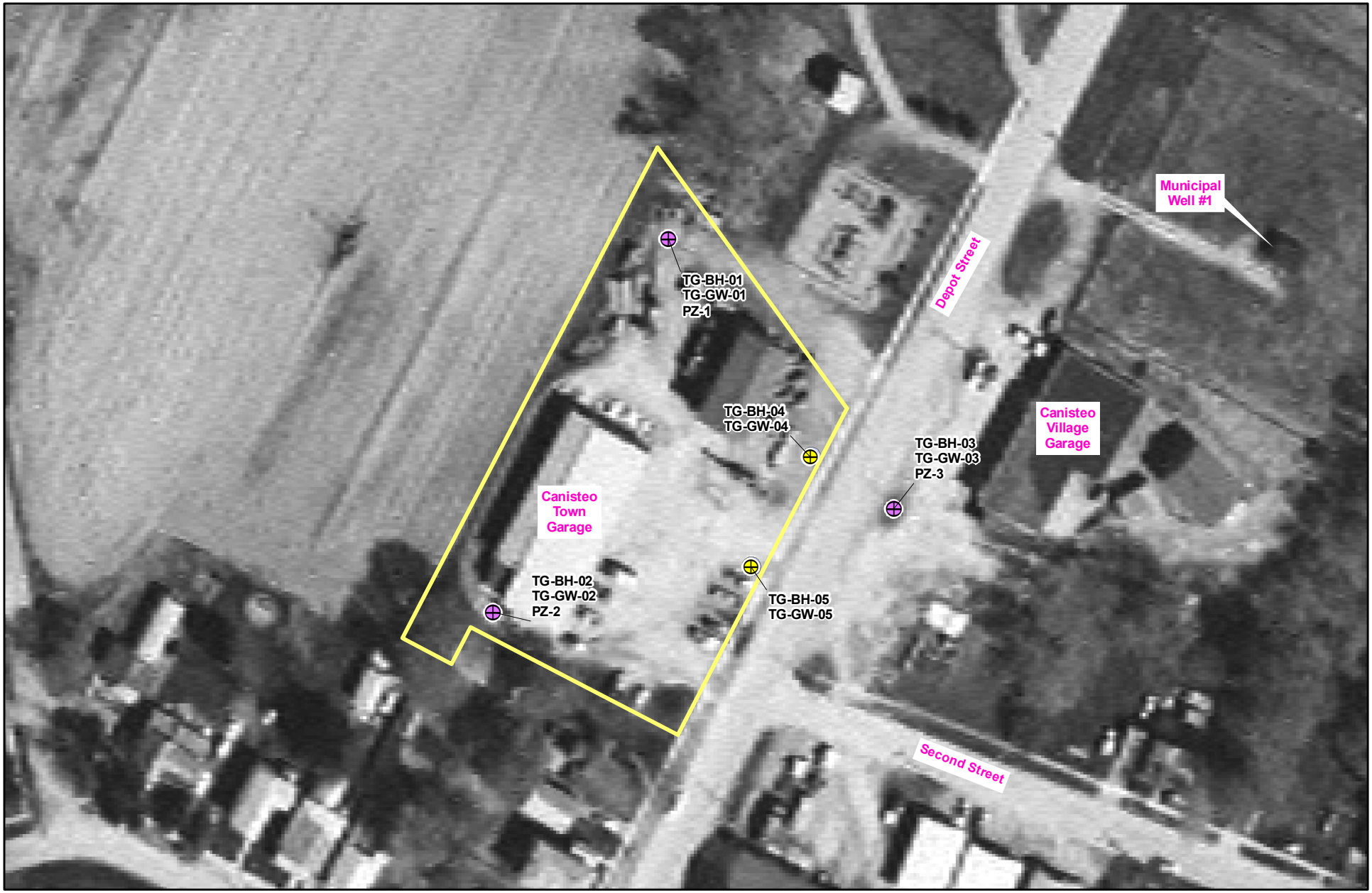
The site characterization conducted for the Canisteo Town Garage site included subsurface soil and groundwater investigations. Subsurface soil and groundwater samples were collected using direct push technology (DPT). Groundwater samples also were collected from existing wells when available. In addition to the environmental sampling effort, three piezometers were installed onsite to assist in evaluating groundwater flow direction. Fieldwork was conducted by one field team consisting of a field team leader (FTL) and a health and safety officer/sampler. A summary of the samples collected for the site and a list of sample identifications is provided in Table 3-1.

Table 3-1 Summary of Samples Collected, Steuben County, New York

			Sample Count and Sample IDs	
Site Name	Date Range Collected		Groundwater	Soil
Canisteo Town Garage	1/26/2006	1/31/2006	15	15
			TG-GW-01(16) (FD)	TG-BH-01(7.3-8.6)
			TG-GW-01(28)	TG-BH-01(25-26)
			TG-GW-01(40)	TG-BH-01(37-38)
			TG-GW-02(20)	TG-BH-02(12-13)
			TG-GW-02(29)	TG-BH-02(21-22)
			TG-GW-02(39)	TG-BH-02(35-36)
			TG-GW-03(19)	TG-BH-03(10-11)
			TG-GW-03(29)	TG-BH-03(25-26)
			TG-GW-03(39)	TG-BH-03(35-36)
			TG-GW-04(16)	TG-BH-04(10-11) (FD)
			TG-GW-04(28)	TG-BH-04(24-25)
			TG-GW-04(40)	TG-BH-04(36.5-37.5)
			TG-GW-05(19)	TG-BH-05(12-13)
			TG-GW-05(29)	TG-BH-05(21-22)
			TG-GW-05(39)	TG-BH-05(37-38)

Key:

(##) = Sample depth collected.
(FD) = Field duplicate collected at this location.
- = No sample collected.



Geoprobe Sampling Location

Geoprobe Sampling W/ Piezometer

Approximate Property Boundary

Figure 3-1
Canisteo Town Garage
Sample Locations

0 50 100 200
Feet

N
W E
S

Laboratory analysis of environmental samples was conducted by Chemtech Environmental Laboratory (Chemtech). Chemtech is certified by the NYSDOH Environmental Laboratory Approval Program (ELAP) for the U.S. Environmental Protection Agency (EPA) solid and hazardous waste methods and meets NYSDEC Analytical Services Protocol (ASP) deliverable requirements. (Tables 4-1a and 4-1b in Section 4, below, summarize the analytical results obtained from samples collected from the site for each medium.) 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 property line data. EEEPC also conducted a literature search to obtain surface water body 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 sites is present and to assess the subsurface soil conditions beneath the site.

A total of five boreholes were drilled at the site (see Figure 3-1). A copy of the boring logs is provided as Appendix A to 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 40 feet bgs. Groundwater was encountered at approximately 6 feet bgs at the Town Garage site.

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 above background. Subsurface soil samples were collected for analysis from zones exhibiting the highest PID reading. Elevated PID readings were only encountered at DS-BH-03 and -06; FL-BH02, -03 and -04; and BB-BH-02. In the remaining boreholes with no elevated PID readings, subsurface soils were collected from the bottom, middle, and top of the saturated soil zone. Three subsurface soil samples were collected per Geoprobe location and sent to the laboratory for VOC analysis using method SW8260. VOC samples were collected using a 5-gram soil plug transferred into two pre-tared vials. An additional sample was collected into methanol for potential higher concentration analysis.

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. Borings drilled through asphalt were patched with "cold patch" or equivalent.

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. (Tables 4-1a and 4-1b provide 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 Town of Canisteo municipal wells may have originated from the site.

Up to three vertical profiling groundwater samples were collected from each Geoprobe boring location for VOC analysis using method SW8260 (see Figure 3-1).

3.2.3.1 Vertical Profiling Groundwater Sample Collection

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. Vertical profile samples were collected at each borehole location. EEEPC collected up to three discrete groundwater samples using a check valve and dedicated tubing.

EEEPC encountered groundwater at depths ranging from 6 to 9 feet bgs at these locations. The SP15 GW sampler was driven close to the maximum depth of the corresponding borehole (see depths indicated in parentheses on Table 3-1) and the first groundwater sample was collected by EEEPC. The profiler was backed out into the middle of the water table 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. Groundwater sample depths were chosen based on the soil borehole screening results and sample collection depths. 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 (i.e., asphalt, gravel, topsoil, etc.).

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 Piezometer Installation and Water Level Survey

Once subsurface soil sampling was completed, three boreholes at the site 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 was 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 onsite in accordance with procedures described in the work plan. A summary of piezometer construction and groundwater elevation data is presented in Table 3-2.

3.2.4 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;
- 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 map which is presented as Figure 3-1.

Table 3-2 Summary of Piezometer Construction and Groundwater Elevation Data, Steuben County, New York

Piezometer Identification	Screened Interval (ft bgs)	Ground Elevation (ft above MSL)	Depth to Top of Screen (ft bgs)	Top of Screen Elevation (ft above MSL)	Top of Riser Elevation (ft above MSL)	Depth to Groundwater (ft below top of riser)	Groundwater Elevation (ft above MSL)
Canisteo Town Garage:							
TG-PZ-1	25 - 30	1123.89	25	1098.89	1123.76	7.6	1116.16
TG-PZ-2	21.6 - 26.6	1125.93	21.6	1104.33	1125.65	6.2	1119.43
TG-PZ-3	18 - 23	1124.69	18	1106.69	1124.49	8.4	1116.06

Key:

bgs = below ground surface.
ft = feet.
MSL = Mean sea level.
NA = Not available.

3.2.5 Air Monitoring

The site safety officer performed air monitoring during all intrusive site activities (subsurface soil borings and groundwater vertical profiling) 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/quality control (QA/QC) procedures utilized for the project are described in the QAPP, presented as Appendix B to the work plan. These procedures were implemented for all activities in the project. 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 in the data assessment summarized in Section 4. Laboratory data reports and the details of the data review are provided as pdf. files on a CD 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-milliliter (mL) glass vials with organic-free deionized water. They were handled like field samples; however, they were not opened once prepared. A total of three trip blanks were submitted for analysis from the Canisteo Town Garage site. One trip blank sample accompanied each shipment containing aqueous samples to be analyzed for VOCs. Low-level methylene chloride was detected in TG-TB-02 and TG-TB-03 from the Canisteo Town Garage site and acetone was detected in several of the laboratory method blanks. Methylene chloride and acetone are common laboratory contaminants. 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 are reported with the groundwater 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 1 per 20 field samples. Table 3-1 lists the original samples that were duplicated. Duplicate sample analytical data are presented in Table 4 of the Data Usability Summary Report (DUSR) 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.

Rinseate Samples

Rinseate 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 DUSR includes 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 DUSR.

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 that 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 Hold Time

Client Sample ID	Matrix	Method	Sample Date	Analysis Date	Analysis Type
TG-BH-02(12-13)	SO	8260B	01/30/2006 11:45	02/23/2006 16:11	RES
TG-BH-02(21-22)	SO	8260B	01/30/2006 12:00	02/23/2006 16:40	RES
TG-BH-04(36.5-37.5)	SO	8260B	01/26/2006 16:45	02/22/2006 20:13	RES

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 quantitation level (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 DUSR (if applicable).

All blanks were performed at the required frequency. 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.

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 quality control (QC) limits are presented as an outlier reported in the attachments to the DUSR (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 re-analyzed and matrix effects substantiated. Results have been flagged to reflect any bias as determined by surrogate recoveries (see the DUSR in Appendix C).

Matrix Spike and Matrix Spike Duplicate Analysis

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 DUSR (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 DUSR (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. 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 as-

sociated 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 data review and validation of Steuben Co. site samples in accordance with the work plan and QAPP. The data review tasks completed for this project include:

- **Automated Data Review (ADR) Set-up.** EEEPC set up the ADR software for all analytical parameters and QC criteria according to the QAPP. EEEPC provided the libraries to the project laboratory, Chemtech, for pre-validation of their electronic data deliverable (EDD) submittals.

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

- **Compliance.** EEEPC processed EDDs using the ADR software 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 ADR reports, checked the hard copy reports and case narratives, verified the automated qualifiers assigned by the program, 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 Appen-

dix C. The TICs generally confirm the presence of petroleum-related contamination.

The samples were grouped by the Chemtech laboratory into SDGs of 20 samples. The SDGs are listed in Table 3-4. A DUSR was generated for each SDG reported and is included in Appendix C.

Table 3-4 Summary of Work Orders

Lab Report Batch	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

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, below. 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.

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. Table 3-5 summarizes the qualified data records for the samples report. Only one sample result was rejected for an overall completeness above 99%.

Table 3-5 Summary of Sample Completeness

Sample Matrix	Lab Method ID	Unqualified	J	J-	J+	U	UJ	R
AIR	TO-15	53	62	21		347	353	
AQ	8260B	69	139	6	39	3422	1176	
SO	8260B	24	197	45	2	1681	2117	1

Reporting Limits

Based on the QC criteria, all of the data are usable for site characterization. However, the comparison with screening criteria can be affected by elevated reporting limits. The reporting limits of the other compounds may not be comparable to the other samples and should be considered in data assessment. About 10 soil samples also 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 affected samples are listed below and 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.

TG-BH-01(25-26)
TG-BH-01(37-38)
TG-BH-01(7.3-8.6)

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 the site. The information was used to assess whether the PCE and MTBE detected at the Town of Canisteo municipal supply well no. 1 can be attributed to the Canisteo Town Garage. PCE and TCE are both indicative of dry cleaner sources and methyl-tert butyl ether (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.

Screening

Analytical results (see Tables 4-1a and 4-1b) 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 Technical and Administrative Guidance Memorandum (TAGM) #4046 Soil Cleanup Objectives (January 1994). Total BTEX results were compared with an average of the screening criteria.

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

4.2 Canisteo Town Garage

4.2.1 Subsurface Soil

Four soil borings were installed on the Canisteo Town Garage site and one soil boring was installed off-site, across Depot Street to the east (see Figure 4-1).

Table 4-1a Summary of Positive Results for Steuben County, New York, Canisteo Town Garage Subsurface Soils

Analyte	Screening Criteria (1)	TG-BH-01 (7.3-8.6) 01/26/2006	TG-BH-01 (25-26) 01/26/2006	TG-BH-01 (37-38) 01/26/2006	TG-BH-02 (12-13) 01/30/2006	TG-BH-02 (21-22) 01/30/2006	TG-BH-02 (35-36) 01/30/2006
Volatiles - SW8260B (ug/Kg)							
Benzene	60	210 U	460 U	250 U	3.5 UJ	2.9 UJ	3.0 UJ
Cyclohexane	NA	210 U	460 U	250 U	3.5 UJ	2.9 UJ	**2.0 J**
Ethyl Benzene	5500	210 U	460 U	250 U	3.5 UJ	2.9 UJ	**0.41 J**
m/p-xylenes	1200	410 U	920 U	500 U	**0.62 J**	5.7 UJ	6.0 UJ
Methylcyclohexane	NA	210 U	460 U	250 U	3.5 UJ	2.9 UJ	3.0 UJ
o-Xylene	1200	210 U	460 U	250 U	3.5 UJ	2.9 UJ	**0.57 J**
Styrene	NA	210 U	460 U	250 U	3.5 UJ	**0.31 J**	3.0 UJ
Tetrachloroethene	1400	210 U	460 U	250 U	3.5 UJ	2.9 UJ	3.0 UJ
Toluene	1500	210 U	460 U	250 U	**1.8 J**	2.9 UJ	**0.82 J**
Total BTEX (ug/Kg)							
BTEX	2000	ND	ND	ND	**2.4**	ND	**1.8**

Table 4-1a Summary of Positive Results for Steuben County, New York, Canisteo Town Garage Subsurface Soils

Analyte	Screening Criteria (1)	TG-BH-03 (10-11) 01/31/2006	TG-BH-03 (25-26) 01/31/2006	TG-BH-03 (35-36) 01/31/2006	TG-BH-04 (10-11) 01/26/2006	TG-BH-04-D (10-11) 01/26/2006
Volatiles - SW8260B (ug/Kg)						
Benzene	60	3.5 U	**0.52 J**	**0.59 J**	3.9 U	35 U
Cyclohexane	NA	3.5 U	2.6 U	2.7 U	3.9 U	35 U
Ethyl Benzene	5500	3.5 U	**0.34 J**	2.7 U	3.9 U	35 U
m/p-xylenes	1200	7.0 U	**0.72 J**	**0.50 J**	7.8 UJ	69 U
Methylcyclohexane	NA	3.5 U	2.6 U	2.7 U	8.4 U	35 U
o-Xylene	1200	3.5 U	**0.26 J**	2.7 U	3.9 U	35 U
Styrene	NA	3.5 U	**0.36 J**	2.7 U	3.9 U	35 U
Tetrachloroethene	1400	3.5 U	**0.46 J**	**0.49 J**	3.9 U	35 U
Toluene	1500	**0.37 J**	**0.76 J**	**0.98 J**	3.9 U	**5.7 J**
Total BTEX (ug/Kg)						
BTEX	2000	**0.4**	**2.6**	**2.1**	ND	**5.7**

Table 4-1a Summary of Positive Results for Steuben County, New York, Canisteo Town Garage Subsurface Soils

Analyte	Screening Criteria (1)	TG-BH-04 (24-25) 01/26/2006	TG-BH-04 (36.5-37.5) 01/26/2006	TG-BH-05 (12-13) 01/30/2006	TG-BH-05 (21-22) 01/30/2006	TG-BH-05 (37-38) 01/30/2006
Volatiles - SW8260B (ug/Kg)						
Benzene	60	2.4 U	2.4 UJ	3.1 UJ	3.1 UJ	3.1 UJ
Cyclohexane	NA	**2.8**	**0.71 J**	3.1 U	3.1 U	3.1 U
Ethyl Benzene	5500	2.4 U	2.4 UJ	3.1 U	3.1 U	3.1 U
m/p-xylenes	1200	4.9 UJ	**0.69 J**	**1.4 J**	**1.2 J**	**1.2 J**
Methylcyclohexane	NA	4.6 U	2.4 UJ	**2.5 J**	**2.6 J**	**2.4 J**
o-Xylene	1200	2.4 U	2.4 UJ	**0.38 J**	3.1 U	3.1 U
Styrene	NA	2.4 U	**0.36 J**	3.1 U	3.1 U	3.1 U
Tetrachloroethene	1400	2.4 U	2.4 UJ	3.1 U	3.1 U	3.1 U
Toluene	1500	2.4 U	**0.70 J**	**0.88 J**	**0.70 J**	**0.64 J**
Total BTEX (ug/Kg)						
BTEX	2000	ND	**1.4**	**2.7**	**1.9**	**1.8**

Table 4-1b Summary of Positive Results for Steuben County, New York, Canisteo Town Garage Groundwater

Analyte	Screening Criteria [1]	TG-GW-01(16) 01/26/2006	TG-GW-01-D(16) 01/26/2006	TG-GW-01(28) 01/26/2006	TG-GW-01(40) 01/26/2006	TG-GW-02(20) 01/30/2006	TG-GW-02(29) 01/30/2006
Volatiles - SW8260B (ug/L)							
Benzene	1	1.0 U	1.0 U	1.0 U	**0.33 J**	1.0 U	1.0 U
Chloromethane	5	1.0 U	1.0 U	1.0 UJ	**0.86 J**	1.0 U	1.0 U
Ethyl Benzene	5	1.0 U	1.0 U	**0.73 J**	**5.3**	1.0 U	1.0 U
Isopropylbenzene	5	1.0 U	1.0 U	1.0 U	**1.8**	1.0 U	1.0 U
m/p-Xylenes	5	**0.97 J**	**1.1**	**3.9**	**28**	1.0 U	1.0 U
Methyl tert-butyl Ether	10	**3.9**	**4.1**	**3.3**	1.0 U	1.0 U	**0.68 J**
Methylcyclohexane	NA	**0.86 J**	**0.97 J**	**1.8 J-**	**28**	1.0 U	1.0 U
Methylene Chloride	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	5	**0.35 J**	**0.37 J**	**1.4**	**9.5**	1.0 U	1.0 U
Tetrachloroethene	5	1.0 U	1.0 U	**1.1 J-**	1.0 U	1.0 U	1.0 U
Toluene	5	1.0 U	1.0 U	**0.57 J**	**3.6**	1.0 U	1.0 U
Total BTEX (ug/L)							
BTEX	4	**1.3**	**1.5**	**6.6**	**47**	ND	ND

Table 4-1b Summary of Positive Results for Steuben County, New York, Canisteo Town Garage Groundwater

Analyte	Screening Criteria [1]	TG-GW-02(39) 01/30/2006	TG-GW-03(19) 01/31/2006	TG-GW-03(29) 01/31/2006	TG-GW-03(39) 01/31/2006	TG-GW-04(16) 01/27/2006	TG-GW-04(28) 01/27/2006
Volatiles - SW8260B (ug/L)							
Benzene	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethyl Benzene	5	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
m/p-Xylenes	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methyl tert-butyl Ether	10	**2.9**	1.0 U	**0.40 J**	**0.88 J**	**0.38 J**	**2.0 J+**
Methylcyclohexane	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride	5	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
Tetrachloroethene	5	1.0 U	1.0 U	**1.4**	1.0 U	1.0 U	**1.4 J+**
Toluene	5	1.0 U	1.0 U	1.0 U	**0.30 J**	1.0 U	1.0 U
Total BTEX (ug/L)							
BTEX	4	ND	ND	ND	**0.3**	ND	ND

Table 4-1b Summary of Positive Results for Steuben County, New York, Canisteo Town Garage Groundwater

Analyte	Screening Criteria [1]	TG-GW-04(40) 01/27/2006	TG-GW-05(19) 01/30/2006	TG-GW-05(29) 01/30/2006	TG-GW-05(39) 01/30/2006	TG-TB-01 01/26/2006	TG-TB-02 01/30/2006
Volatiles - SW8260B (ug/L)							
Benzene	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethyl Benzene	5	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
m/p-Xylenes	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methyl tert-butyl Ether	10	**1.8**	1.0 U	**0.56 J**	**1.1**	1.0 U	1.0 U
Methylcyclohexane	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene Chloride	5	1.0 U	1.0 UJ	1.0 UJ	1.0 U	1.0 U	**1.2**
o-Xylene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	5	**1.6**	1.0 U	**1.6**	1.0 U	1.0 U	1.0 U
Toluene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Total BTEX (ug/L)							
BTEX	4	ND	ND	ND	ND	ND	ND

Table 4-1b Summary of Positive Results for Steuben County, New York, Canisteo Town Garage Groundwater

Analyte	Screening Criteria [1]	TG-TB-03 01/30/2006
Volatiles - SW8260B (ug/L)		
Benzene	1	1.0 U
Chloromethane	5	1.0 U
Ethyl Benzene	5	1.0 U
Isopropylbenzene	5	1.0 U
m/p-Xylenes	5	1.0 U
Methyl tert-butyl Ether	10	1.0 U
Methylcyclohexane	NA	1.0 U
Methylene Chloride	5	**1.2**
o-Xylene	5	1.0 U
Tetrachloroethene	5	1.0 U
Toluene	5	1.0 U
Total BTEX (ug/L)		
BTEX	4	ND

Table 4-1 Key Summary of Positive Results for Steuben County, New York, Canisteo Town Garage

Comprehensive Table Key:

(1a) Soils - NYSDEC, Technical and Administrative Guidance and Memorandum, # 4046, Revised Jan. 24, 1994 Determination of Soil Cleanup Objectives and Cleanup Levels.

(1b) 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.

Note: Sample collection Dates are listed under the Sample Identifications

J = Estimated.

J- = Estimated low.

J+ = Estimated high.

U = Not detected at the value reported.

NA = Not applicable.

ND = Not detected at the value reported.

ug/Kg = Microgram per kilogram.

ug/L = Microgram per liter.

UJ = Estimated/Not detected.

Bold = Analyte detected.

Bold/Highlighted = Result exceedes criteria.

BTEX = Benzene, Toluene, Ethylbenzene, and Xylene.

NYSDEC = New York State Department of Environmental Conservation.

BH = Borehole.

GW = Groundwater.

TB = Trip Blank.

(?) = Indicates Collection Depth.

Soil samples collected from the on-site borings did not contain detectable concentrations of PCE or MTBE, the contaminants detected in the Town of Canisteo municipal supply well no. 1. In addition, soil samples collected from the on-site and off-site borings did not contain analytes at concentrations greater than NYSDEC screening criteria.

Trace concentrations (<0.50 part per billion [ppb]) of PCE were detected in soil samples collected from the off-site boring TG-BH-03. PCE was detected at 0.46 ppb in the soil sample collected from TG-BH-03 (25 to 26 ft bgs) and at 0.49 ppb in the soil sample collected from TG-BH-03 (35 to 36 ft bgs) (see Table 4-1a). The detected concentrations of PCE in soil collected from boring TG-BH-03 are much less than the 1,400 ppb NYSDEC screening criteria for the compound.

BTEX compounds were detected in soil samples collected from each boring, with the exception of TG-BH-01. As noted in Section 3.3, the reporting limits for these borings were evaluated and the results have limited comparability with the other boring results. Since BTEX compounds were detected in the groundwater for TG-BH-01, it is likely that the elevated reporting limits did affect data usability. The total BTEX concentrations were all less than 6 ppb (see Table 4-1a).

4.2.2 Groundwater

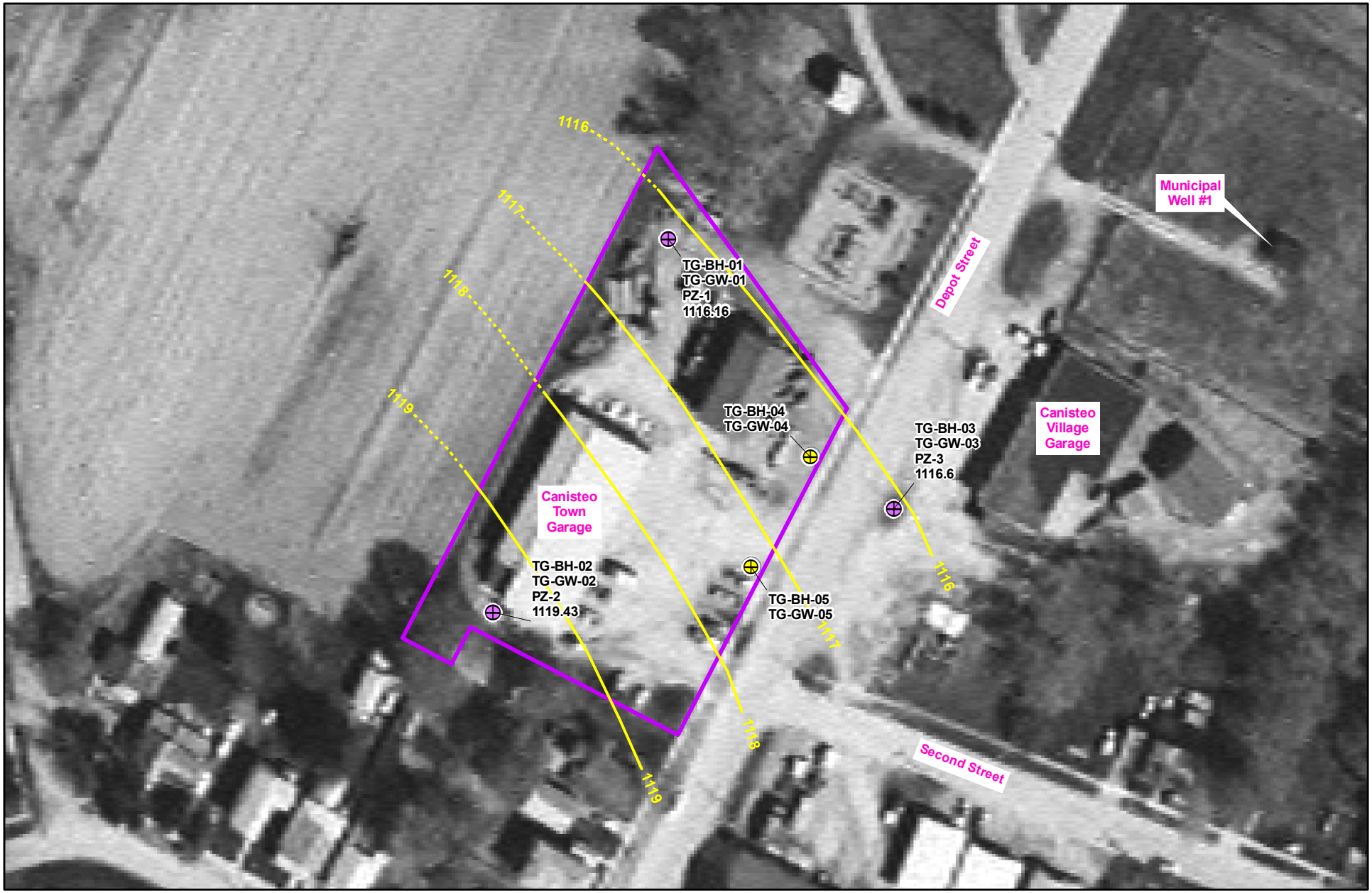
Groundwater samples were collected from each on-site and off-site boring location using an SP15 GW sampler (see Section 3.2.3.1). No contaminants of concern were detected at concentrations above screening criteria, although ethylbenzene and xylenes (likely related to the leaking underground storage tank described in Section 2.1) were detected at concentrations above screening criteria.

MTBE was detected in groundwater samples collected from each location at concentrations ranging from 0.38 ppb at TG-GW-04 (16 ft bgs) to 3.9 ppb at TG-GW-01 (16 ft bgs)(see Table 4-1b). The detected MTBE concentrations did not exceed the 10 ppb NYSDEC screening criteria for MTBE.

PCE was detected in groundwater samples collected from off-site boring TG-GW-03 and from each on-site location except TG-GW-02. PCE concentrations ranged from 1.4 ppb to 1.6 ppb (see Table 4-1b). The NYSDEC screening criterion for PCE is 5 ppb.

Groundwater collected from on-site location TG-GW-01 contained ethylbenzene and xylenes, typically associated with petroleum products, at concentrations exceeding the respective NYSDEC screening criteria. The concentrations of ethylbenzene and total xylenes detected in groundwater collected from TG-GW-01 (40 ft bgs) were 5.3 ppb and 37.5 ppb, respectively. The NYSDEC screening criteria for each compound is 5 ppb.

\L:\Buffalo\Steuben_County_RIFS\Maps\MXD\Groundwater_Contour_Maps\Figure4-1a_Canisteo_Site_GWC.mxd 7/12/2006



Geoprobe Sampling Location

Geoprobe Sampling w/ Piezometer

Approximate Property Boundary

Groundwater Elevation Contour
(Dashed when inferred)

Figure 4-1
Canisteo Town Garage
Sample Locations and Groundwater Contours

0 50 100 200
Feet

N
W E
S

Groundwater levels were measured in the three installed piezometers as noted on Figure 4-1. The groundwater flow direction is generally toward the northeast at a horizontal gradient of 0.015 feet per foot. Flow is toward the municipal well, which is approximately 280 feet to the northeast.

5 Conclusions

5.1 General Conclusions

Groundwater and soil collected from the site contain compounds indicative of petroleum products, particularly gasoline (i.e., MTBE). The MTBE compound was generally detected at greater concentrations than chlorinated compounds typically associated with the dry cleaning industry. Chlorinated solvent concentrations were generally detected at concentrations < 5 ppb, which are substantially below levels representative of a source area (i.e., 1 part per million [ppm]). In addition, data obtained from the site characterization has not conclusively attributed municipal well contamination to the site.

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

- MTBE and PCE, the contaminants detected in the Town of Canisteo municipal supply well no.1, were not detected in soil collected from the Town Garage site and only trace concentrations (<0.5 ppb) of PCE were detected in soil collected from the off-site boring.

- MTBE and PCE were detected in groundwater collected from both on-site and off-site borings at concentrations generally less than 4 ppb and 2 ppb, respectively.

- Based on the analytical results, municipal well contaminants can not conclusively be attributed to activities conducted on-site and likely originate from an as yet unidentified source(s).

6 References

Ecology and Environment Engineering, P.C. (EEEPC). 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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_____. 1998. *Division of Water Technical and Operational Guidance Series (1.1.1): Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.* NYSDEC Division of Water: Albany, New York.

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_____. 2000. *Draft DER-10 Technical Guidance for Site Investigation and Remediation*. NYSDEC Division of Environmental Remediation: Albany, New York.

U.S. Geological Survey (USGS). 1984a. *Geohydrology of the Surficial Aquifer in the Hornell Area in Steuben and Alleghany Counties, New York.* Water Resources Investigations Report 89-4053.

_____. 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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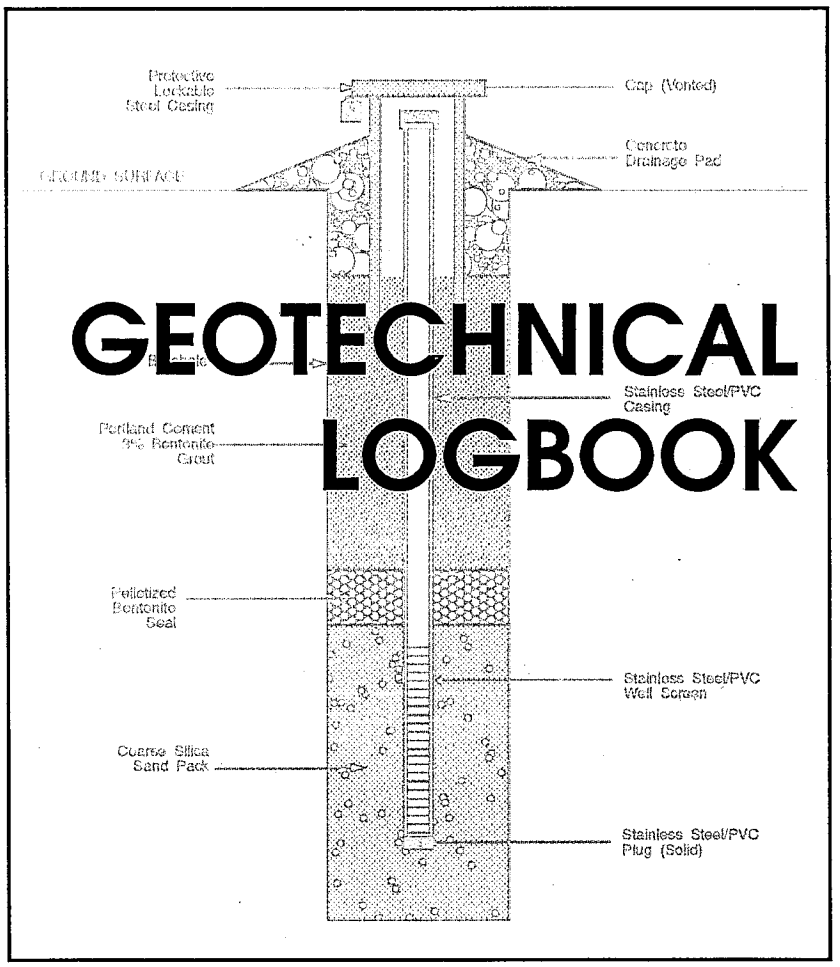

GEOTECHNICAL LOGBOOK

PROJECT NUMBER: 000699.NV32.02

CLIENT/SITE NAME: NYSDEC / Canisteo Town Garage

DRILLING COMPANY: Zebra

DATE OF FIELD ACTIVITIES: 1/26/06 to 1-31-06

HOLES LOGGED IN BOOK: TG-BH01 thru TG-BH05
PZ-1 thru PZ-3
GW-01 thru BW-05

CLIENT: NYSDEC

JOB NUMBER: 699.NY32.02

SITE NAME: Canisteo Town Garage

DRILLER: Zebra

LOCATION: CITY/TOWN: Canisteo

STATE: NY

PROJECT MANAGER: Robert Meyers

FIELD TEAM LEADERS: Stephanie Reynolds Smith /

SITE SAFETY OFFICER(S): James Mays /

TEAM MEMBERS: _____

_____

JOB START/FINISH DATE: 1/26/06 / 1-31-06

BOOK 1 OF 1

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

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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 TG-BH-01/PZ-1

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

DRILLING LOG FOR TG-BH-01/PZ-1

Project Name Steuben Co. Site Characterization

Site Location Canisteo Town Garage
Canisteo NY

Date Started/Finished 1/26/06

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) 2¼" OD Auger Size (s) NA

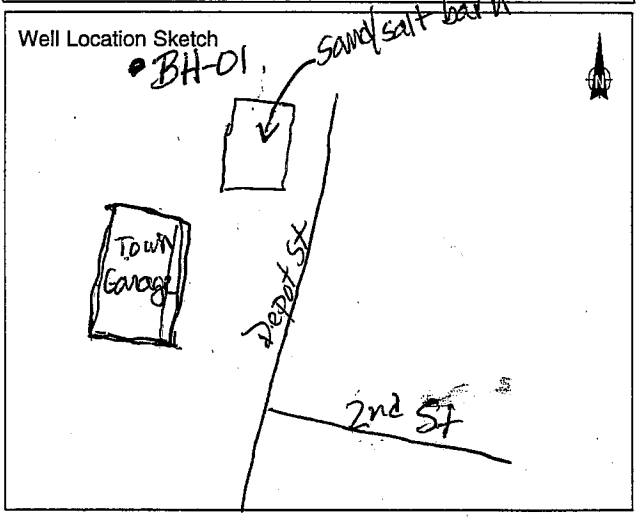
Auger/Split Spoon Refusal NA

Total Depth of Borehole Is 40

Total Depth of Corehole Is NA

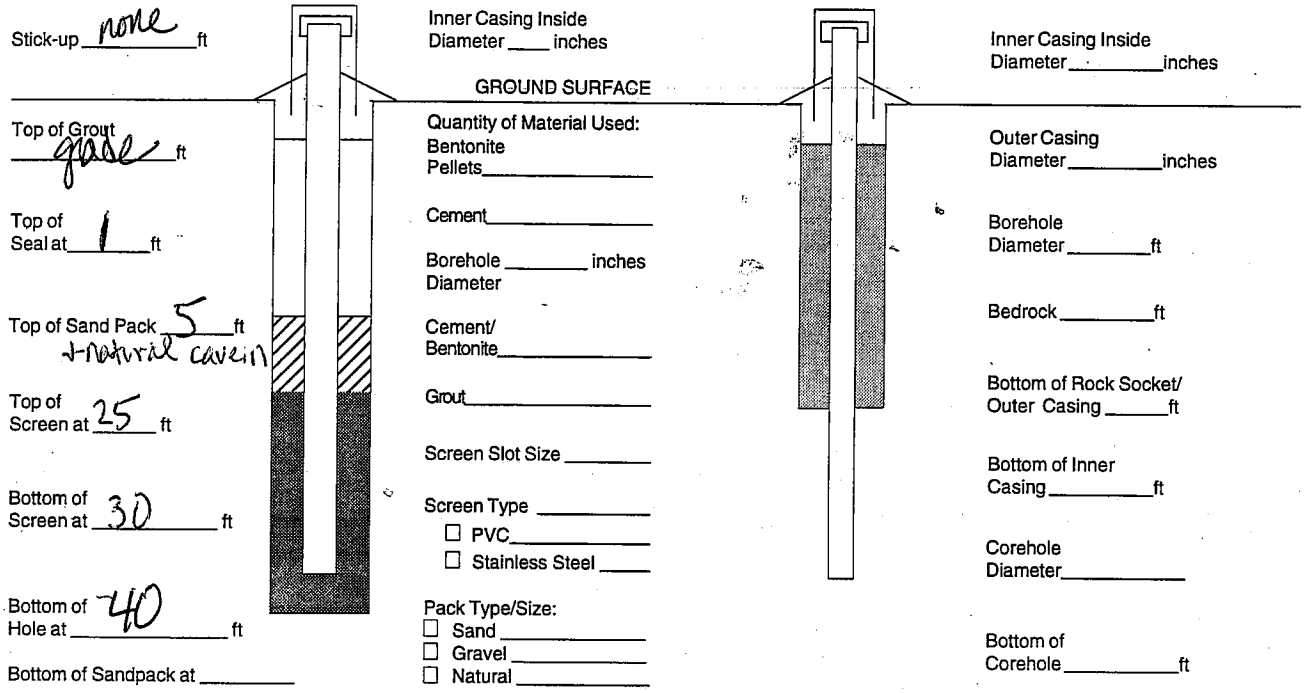
Water Level (TOIC)		
Date	Time	Level(Feet)

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				1024						
2					1	3.6			0	
3										
4										
5										
6										1040 Collect TG-BH-01(7.3-8.6) MS/MSD wet at 7.3
7										
8					2	3.6			0	
9				1032						
10										
11										
12					3	3.4			0	
13										
14										
15				1053						

PZ-1



NOTE: See pages 136 and 137 for well construction diagrams

Depth-ft.	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content: Dry	Moist	Wet
1	0–1.6 Topsoil (brown silt) with gravel + asphalt, organic rich top 0.1	X		
2				
3	1.6–2.4 Brown clayey silt, moist		X	
4	2.4–3.6 ~~Yellowish~~ Brown clayey silt, moist		X	
5			X	
6	5–8.6 Brown fine sandy silty clay grading to fine clayey sand, moist wet to 7.3, wet 7.3–8.6			X
7			X	
8				X
9				X
10				X
11	10–10.6 Brown clayey fine sand, wet			X
12	10.6–~~13.4~~ 12.7 Gray fine sand, few clay, ~~trace~~ slight wet			X
13	12.7–13.4 Gray fine sand, some F-C gravel, well rounded, wet			X
14				X
15				X

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											
17						4	2.9'				
18										0	
19											
20				I	1055						
21											
22						5	0				
23											
24											
25					1102						
26											1125
27						6	2.5			0	collect
28											TG-BH-01(25-26)
29											
30					1121						
31											
32						7	1.6			0	
33											
34											
35					1140						
36											1200
37						8	3.2			0	collect
38											TG-BH-01(37-38)
39											
40					1157						
41											
42											
43											
44											
45											

Depth(feet).	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content: Dry	Moist	Wet
16	15-17.9 Difficult to tell how much/what is slough/cave in from above	○	○	②
17		○	○	○
18	15-17.2 Gray grading to brown F-C well rounded gravel, little fine sand, wet	○	○	○
19		○	○	○
20	17.2-17.3 Orangish brown medium sand, wet	○	○	○
21	17.3-17.9 Gray fine sand, wet	○	○	○
22	20-25 No Recovery	○	○	○
23		○	○	○
24		○	○	○
25		○	○	○
26	25-25.3 Gray sand/gravel as at 12.7-13.4, wet	○	○	○
27	25.3-27.5 Brown F-C rounded gravel some fine sand, wet	○	○	○
28		○	○	○
29		○	○	○
30		○	○	○
31	30-31.6 Gravel as above, wet	○	○	✓
32		○	○	○
33		○	○	○
34		○	○	○
35		○	○	○
36	35-38.2 Brown well rounded gravel (F-C), some F-C sand, wet	○	○	○
37		○	○	○
38		○	○	○
39		○	○	○
40	B.O.H. @ 40	○	○	○
41		○	○	○
42		○	○	○
43		○	○	○
44		○	○	○
45		○	○	○

BOREHOLE NO. BH-02

BOREHOLE NO. BH-03

Borehole Record for TG-BH-02

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

DRILLING LOG FOR TG-BH-02/PZ-02

Project Name Steuben Co. Site Characterization

Site Location Canisteo Town Garage
Canisteo NY

Date Started/Finished 1-30-06

Drilling Company Zebra

Driller's Name Dom Pino

Geologist's Name Robert Meyers

Geologist's Signature Robert A Meyers

Rig Type (s) GProbe 6620DT

Drilling Method (s) Direct Push-Geoprobe

Bit Size (s) 2½" OD Auger Size (s) NA

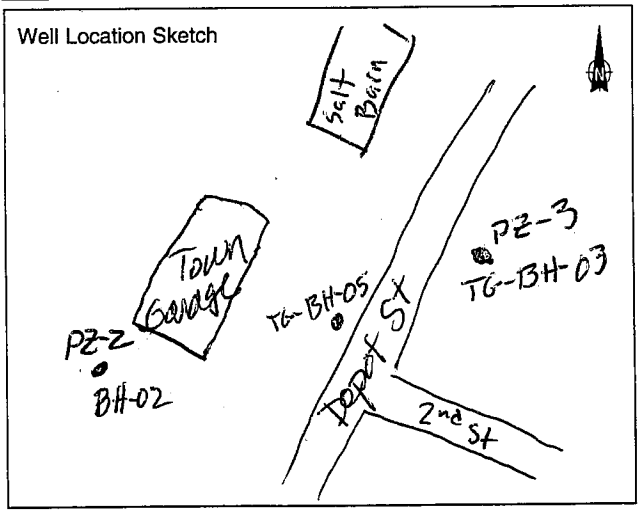
Auger/Split Spoon Refusal NA

Total Depth of Borehole Is 40'

Total Depth of Corehole Is —

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	PID HNu/OVA (ppm)	Comments
1				1123						
2					1	2.6'			0 ppm	
3										
4				1124						
5				1126						
6										
7					2	1.9'			0 ppm	
8										
9				1127						
10				1136						1145 collect TG-BH-02 (12'-13')
11										
12					3	4.9'			0 ppm	
13										
14										
15				1137						

PZ-2

Flushmount **SCREENED WELL**

Stick-up -0.3' ft

Top of Grout Grade ft

Top of Seal at 2 ft

Top of Sand Pack 10 ft

Top of Screen at 21.6' ft

Bottom of Screen at 26.6 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 ≈2½" inches Diameter

Cement/ Bentonite _____

Grout _____

Screen Slot Size .010"

Screen Type 1" PVC

☒ PVC .010"

☐ 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'-0.8', Dark brown silt loam (Topsoil), silt & rounded	○	⊗	○
2	Fine-Med. Gravel, tr. sand. 0.8'-1.6' Rounded gravel	○	⊗	○
3	w/little silt & sand. 1.6'-2.6' Silty Gray/brown Clay,	○	⊗	○
4	?	○	⊗	○
5		○	⊗	○
6	5'-6.9', Moist Gray/brown Silty Clay, Plastic	○	⊗	○
7		○	⊗	○
8		○	⊗	○
9		○	⊗	⊗
10		○	⊗	⊗
11	10'-14.9' Highly Plastic light Gray Clay, with Heavy iron	○	○	⊗
12	Staining from 10'-13', Mod. Staining 13'-14.9', Wet	○	○	⊗
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	RQD	Fracture Sketch	PID ~~HNu/OVA~~ (ppm)	Comments
16					1144						
17						4	5'			0ppm	
18											
19											
20					1145						
21					1154						1200 Collect TG-BH-02-(21'-22')
22						5	3.1'				
23										0ppm	
24											
25					1155						
26					1210						
27						6	2.6'				
28										0ppm	
29											
30					1211						
31					1226						
32						7	2.6'				
33										0ppm	
34											
35					1227						
36					1242						
37						8	2.9'				
38										0ppm	
39											
40					1244						
41											
42											
43											
44											
45											

Depth(feet).	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content: Dry	Moist	Wet
16	15-18.7', Saturated Clay as above	○	○	⊗
17		○	○	⊗
18		○	○	⊗
19	18.7'-19.4', Organic layer (Peat)	○	○	⊗
20	19.4'-20', Rounded f-c Gravel w/little Sand & Silt	○	○	⊗
21	20'-23.1 Gravel as above w/little VF-Coarse Sand,	○	○	⊗
22	Silt & Tr. Clay & Fine Cobbles.	○	○	⊗
23		○	○	⊗
24		○	○	⊗
25		○	○	⊗
26	25'-27.6', Gravel as above	○	○	⊗
27		○	○	⊗
28		○	○	⊗
29		○	○	⊗
30		○	○	⊗
31	30'-32', Same as above	○	○	⊗
32		○	○	⊗
33	32' to 32.6', VF tan Sand w/little Silt.	○	○	⊗
34		○	○	⊗
35		○	○	⊗
36	35'-38.2' Gravel (Rounded) w/little silt	○	○	⊗
37	& VF-Coarse Sand	○	○	⊗
38	B 0.1 @ 40'	○	○	⊗
39		○	○	⊗
40		○	○	⊗
41		○	○	○
42		○	○	○
43		○	○	○
44		○	○	○
45		○	○	○

BOREHOLE NO. BH-03

Borehole Record for TG-BH03/PZ-3

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

BOREHOLE NO. BH-04

BOREHOLE NO. BH-05

DRILLING LOG FOR TG-BH-03/PZ-3

Project Name: Steuben Co. Site Characterizations

Site Location: Canisteo Town Garage, Canisteo NY

Date Started/Finished: 1-31-06

Drilling Company: Zebra

Driller's Name: Dom Pino

Geologist's Name: Robert Meyers

Geologist's Signature: Robert A Meyers

Rig Type (s): Geoprobe 6620 DT

Drilling Method (s): Direct Push

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

Auger/Split Spoon Refusal: —

Total Depth of Borehole Is: 40'

Total Depth of Corehole Is: NA

Water Level (TOIC)		
Date	Time	Level(Feet)

Well Location Sketch

See TG-BH-02 Log

Depth(Feet)	Sample Number	Blows on Sampler	Soil Components Rock Profile CL SL S GR	Penetration Times	Run Number	Core Recovery	RQD	Fracture Sketch	PID ~~HNu/OVA~~ (ppm)	Comments
1				0750						
2					1	2.1'			0ppm	
3										
4										
5				0750						
6				0754						
7					2	4.1'			0ppm	
8										
9										
10				0754						
11				0753						0801 Collect TG-BH-03 (10-11)
12										
13					3	5'			0ppm	Water @ 10' bgs
14										
15				0759						

BOREHOLE NO. BH-04

BOREHOLE NO. BH-05

PZ-3

SCREENED WELL

Flushmount

Stick-up -0.22 ft

Top of Grout Grade ft

Top of Seal at 1 ft

Top of Sand Pack 12 ft

Top of Screen at 18 ft

Bottom of Screen at 23' ft

Bottom of Hole at 40' ft

Bottom of Sandpack at _____

*Caved in to 23' BGS

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 1" dia.
☐ 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'-1.8', Fill Materials (Gravel Parking lot), brick Frags, gravel & Clay	○	⊗	○
2		○	⊗	○
3	1.8'-2.1', Silty brown Clay, slightly Plastic	○	⊗	○
4		○	⊗	○
5		○	⊗	○
6	5'-8.2', Clay as above w/ iron staining	○	⊗	○
7		○	⊗	○
8		○	⊗	○
9	8.2'-9.1', Clayey Med. Gray Silt & VF-Sand	○	⊗	⊗
10		○	⊗	⊗
11	10'-11.4', Saturated Brown Silt/Clay	○	○	⊗
12	11.4'-13.2', Gray/Brown VF-Coarse Sand & Silt with some Gravel (Fine-Med.)	○	○	⊗
13		○	○	⊗
14	13.2'-15', Gravel, rounded Fine-Coarse with some Sand, silt & Tr. clay	○	○	⊗
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					0809						Gravel Flowed out of sleeve
17											
18						4	0.8'			0ppm	
19											
20					0810						
21					0816						
22											
23						5	2.65'			0ppm	
24											
25					0817						
26					0836						0840 Collect TG-BH-03 (25-26')
27											
28						6	3.9			0ppm	
29											
30					0837						
31					0851						
32											
33						7	2.2'			0ppm	
34											
35					0852						
36					0914						0917 Collect TG-BH-03 (35-36)
37											
38							3.8'			0ppm	
39											
40					0915						
41											
42											
43											
44											
45											

BOREHOLE NO. BH-04

Depth(feet).	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content: Dry	Moist	Wet
15	15'-20', Gravel as above	○	○	⊗
16		○	○	⊗
17		○	○	⊗
18		○	○	⊗
19		○	○	⊗
20	20'-22.65', Gravel, Fine-Coarse, Primarily Rounded	○	○	⊗
21	with some Silt & VF-C Sand	○	○	⊗
22		○	○	⊗
23		○	○	⊗
24		○	○	⊗
25	25'-28.9' Gravel as above with little Silt & Sand	○	○	⊗
26		○	○	⊗
27		○	○	⊗
28		○	○	⊗
29		○	○	⊗
30	30'-32.2', Gravel as above	○	○	⊗
31		○	○	⊗
32		○	○	⊗
33		○	○	⊗
34		○	○	⊗
35	35'-38.8', Gravel as above	○	○	⊗
36		○	○	⊗
37		○	○	⊗
38	B.O.H @ 40'	○	○	⊗
39		○	○	⊗
40		○	○	○
41		○	○	○
42		○	○	○
43		○	○	○
44		○	○	○
45				

Borehole Record for TG-BH04

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

BOREHOLE NO. BH-05

BOREHOLE NO. ____

BOREHOLE NO. ____

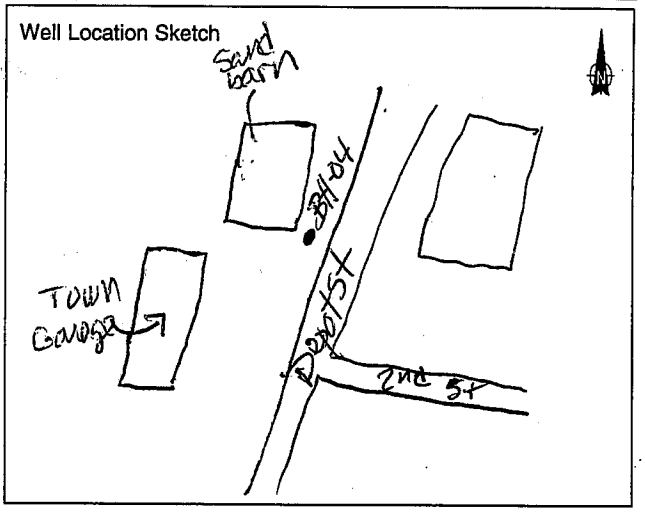
BOREHOLE NO. ____

DRILLING LOG FOR TG-BH04

Project Name Steuben Co. Site Characterization
Site Location Canisteo Town Garage
Canisteo, NY
Date Started/Finished 1/26/06
Drilling Company Zebra
Driller's Name D. Pind
Geologist's Name S. Reynolds Smith
Geologist's 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
Total Depth of Corehole Is NA

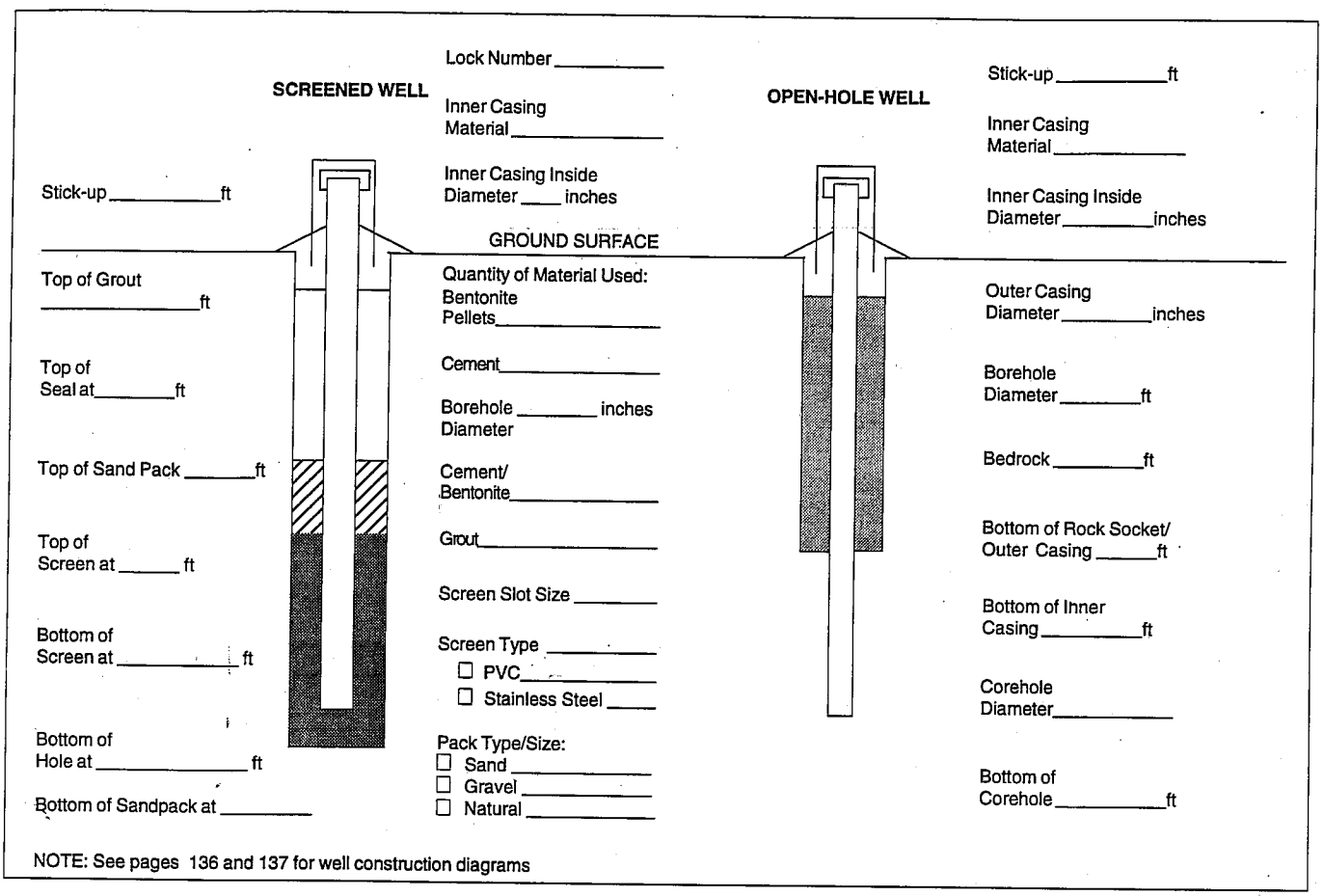
Water Level (TOIC)		
Date	Time	Level(Feet)

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				1510						
2									0	
3				1	1	5				
4										
5				1512						
6										
7									0	
8					2	4.9				
9										
10				1517						
11										1540 collect TG-BH-04(10-11) + Duplicate
12					3	5				
13									0	
14										
15										Wet at 10' bgs

1535



NOTE: See pages 136 and 137 for well construction diagrams

Depth-ft.	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content: Dry	Moist	Wet
1	0-2 Gravel & brown silty soil, dry-moist		X	
2	2-3.2 Dark brown clayey silt dry-moist		X	
3	3.2-4.3 Brown clayey silt dry-moist		X	
4	4.3-5 Brown fine sandy/silty clay, dry-moist		X	
5				
6	5-10 Brown clay as above orange & gray			X
7	mottling at 9.4-10. Wet 5-5.3 Moist 5.3-10		X	
8				
9				
10	10-~~12~~ 12.6 Brown clay, as above, wet			X
11	12.6-16 Light gray fine sandy clay grading to			X
12	dark gray clayey fine sand, wet			X
13				X
14				X
15				X

BOREHOLE NO. BH-05

BOREHOLE NO.

BOREHOLE NO.

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											
17										0	
18						4	3.6				
19											
20					1542						
21											1600 Collect TG-BH-04 (24-25)
22											
23						5	5			0	
24											
25					1558						
26											
27						6	2.5				
28										0	
29											
30					1608						
31											
32											
33						7	3.5			0	
34											
35					1622						
36											
37						8	2.8			0	1645 Collect TG-BH-04 (36.5-37.5)
38											
39											
40											
41											
42					1640						
43											
44											
45											

Depth(feet).	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content: Dry / Moist / Wet
16	15-18.1 Gray F-M sand with some clay, wet	
17	18.1-18.6 Gray fine sand w/ some F-C gravel,	
18	wet, gravel well sanded	
19		
20		
21	20-20.3 Gray fine clayey sand, wet	
22	20.3-22.3 Brown F-M sand, wet	
23	22.3-25 Brown F-C gravel with little F-M sand,	
24	wet, gravel sanded, wet	
25		
26	25-27.5 Gravel, as above, wet	
27		
28		
29		
30		
31	30-33.5 Brown F-C gravel, well rounded w/ little F-C sand	
32	~~INTERSRE~~ interspersed with layers (up to 0.9') of	
33	F-M sand, wet	
34		
35		
36	35-37.8 Gravel/sand layers, as above, wet	
37		
38		
39		
40		
41	BOH at 40' bgs	
42		
43		
44		
45		

Borehole Record for TG-BH-05

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

BOREHOLE NO. _____ BOREHOLE NO. _____ BOREHOLE NO. _____

DRILLING LOG FOR TG-BH-05

Project Name Steuben Co. Site Characterizations

Site Location Canisteo Town Garage
Canisteo NY

Date Started/Finished 1-30-06

Drilling Company Zebra

Driller's Name Dom Pino

Geologist's Name Robert Myers

Geologist's Signature Robert a Myers

Rig Type (s) Geoprobe 6620 DT

Drilling Method (s) Direct Push

Bit Size (s) 2½" OD Auger Size (s) NA

Auger/Split Spoon Refusal —

Total Depth of Borehole Is 40'

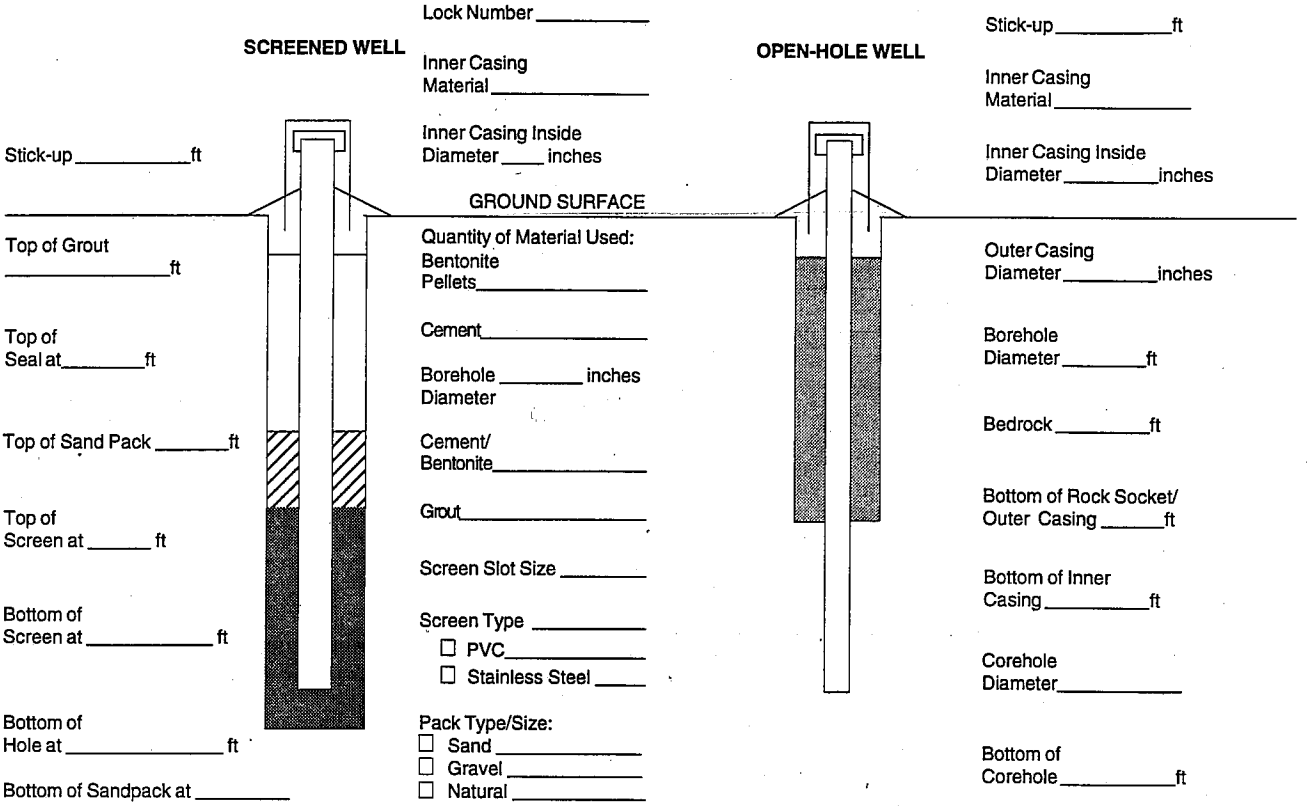
Total Depth of Corehole Is

Water Level (TOIC)		
Date	Time	Level(Feet)

Well Location Sketch

See BH-02 Log

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				1445						
2					1	4.3'			0ppm	
3										
4				1446						
5				1449						
6										
7					2	5.0'			0ppm	
8										
9				1450						
10				1451						
11										1510 Collect
12					3	5.0'				TG-BH-05 (12-13)
13									0ppm	
14										
15				1452						



NOTE: See pages 136 and 137 for well construction diagrams

Depth-ft.	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content: Dry	Moist	Wet
1	0'-1.6', Fill Material, Gravel & Silt	○	⊗	○
2	1.6'-4.3', Silty Clay, Moderately Plastic, light brown	○	⊗	○
3	to med. brown/gray	○	⊗	○
4		○	⊗	○
5		○	⊗	○
6	5' to 10', Brown/Gray Silty Clay, as above, with	○	⊗	○
7	heavy iron staining	○	⊗	○
8		○	⊗	○
9		○	⊗	○
10		○	⊗	○
11	10'-15', light Gray, Highly Plastic CLAY with few	○	⊗	⊗
12	VF to Med. Sand. Water @ 11.3' BGS	○	○	⊗
13		○	○	○
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					1459						
17											
18						4	5.0'			0ppm	
19											
20					1500						
21					1512						
22											1520 Collect TG-BH-05 (21-23)
23						5	2.3'			0ppm	
24											
25					1513						
26					1523						
27											
28						6	2.9'			0ppm	
29											
30					1524						
31					1536						
32											
33						7	2.4'			0ppm	
34											
35					1537						
36					1551						1555 Collect TG-BH-05 (37-38)
37											
38						8	3.1'			0ppm	
39											
40					1552						
41											
42											
43											
44											
45											

Depth(feet).	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content: Dry	Moist	Wet
16	15'-18.8', Gray Clay as above	○	○	⊗
17		○	○	⊗
18		○	○	⊗
19	18.8'-~~20'~~ 19.05' Organic Peat	○	○	⊗
20	19.05' to 19.25' Med. Gray Silt	○	○	⊗
21	19.25' to 20', Rounded Fine-C Gravel, Saturated	○	○	⊗
22	20' to 22.3', Rounded fine-Coarse ~~Grvl~~ Gravel with little V.F.-C Sand & Silt.	○	○	⊗
23		○	○	⊗
24		○	○	⊗
25		○	○	⊗
26	25'-27.9' Same Gravel as above	○	○	⊗
27		○	○	⊗
28		○	○	⊗
29		○	○	⊗
30		○	○	⊗
31	30' to 32.4' Gravel as above	○	○	⊗
32		○	○	⊗
33		○	○	⊗
34		○	○	⊗
35		○	○	⊗
36	35' to 36.6' Same as above	○	○	⊗
37	36.6' to 38.1', VF Tan Sand & Silt	○	○	⊗
38		○	○	⊗
39		○	○	⊗
40		○	○	⊗
41	B.O.H @ 40' BGS	○	○	○
42		○	○	○
43		○	○	○
44		○	○	○
45		○	○	○

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 Report

See enclosed CD