

**Final Site Characterization Report  
Band Box Cleaners  
Site Number 8-51-025  
Steuben County, New York**

**November 2006**

**Prepared for:**

**NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION**  
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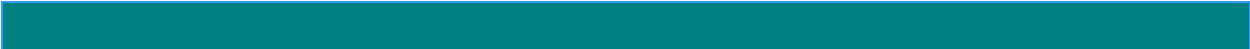
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# List of Acronyms



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
VOC	volatile organic compound



# 1

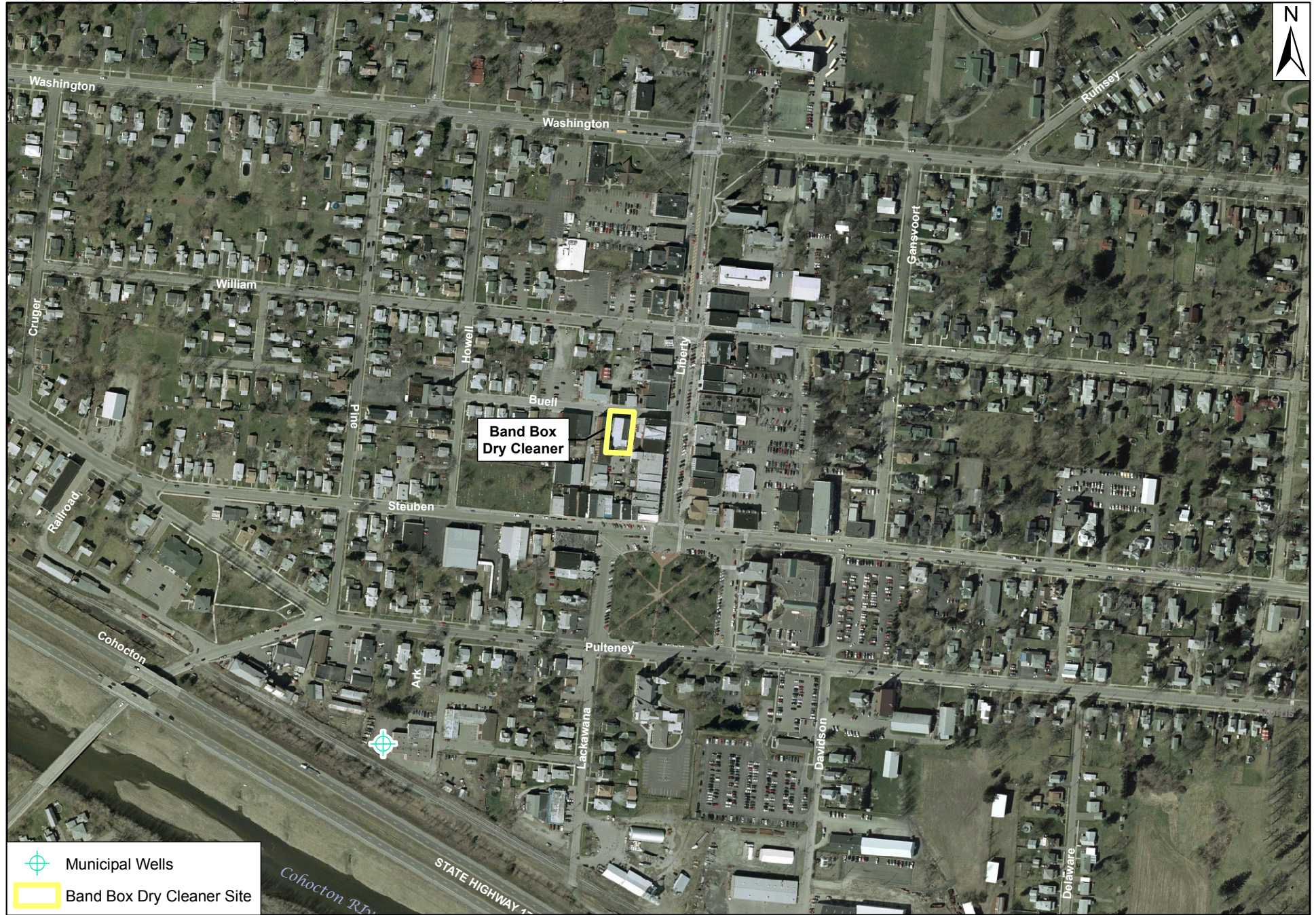
## Introduction

Pursuant to Work Assignment No. D003493-57 accepted on September 6, 2005, Ecology and Environment Engineering, P.C. (EEEEPC) 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 12 through 16, 2006, at the Band Box Cleaners (Site No. 8-51-025), located at 7 Buell Street in the Village of Bath, Steuben County, New York (see Figure 1-1).

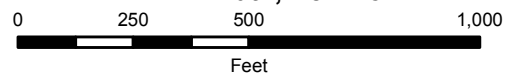
The objectives of the site characterization were to:

- 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 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  
Bath, New York**



# 2

## Background Information

### 2.1 Site Description and History

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

Band Box Cleaners, located at 7 Buell Street in the Village of Bath, New York, is an active dry-cleaning facility. The site is located in a mixed commercial and residential neighborhood approximately 1,000 feet north of the Village of Bath public supply well no. 4.

A review of available historical Sanborn<sup>®</sup> Fire Insurance maps (Sanborn Maps) indicated that the Courier Printing Shop occupied the property from 1904 to at least 1948. A database search of available city directories indicated that Band Box Cleaners has been in operation from at least 1966 through the present.

### 2.2 Conceptual Site Model

The Village of Bath currently obtains groundwater from municipal wellfields for use in the public water systems. Recent quarterly sampling of the Village of Bath municipal well no. 4 has indicated that low levels of TCE are present in the groundwater.

Based on collected data, contaminants originating from the site could have been dispersed into the groundwater and ultimately could have reached the impacted municipal well.

### 2.3 Subsurface Conditions

The Village of Bath 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 13 and 15 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, 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

EEEEPC 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

EEEEPC reviewed existing information made available by NYSDEC. 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 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

EEEEPC 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. Site Characterization Activities

#### 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. The 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

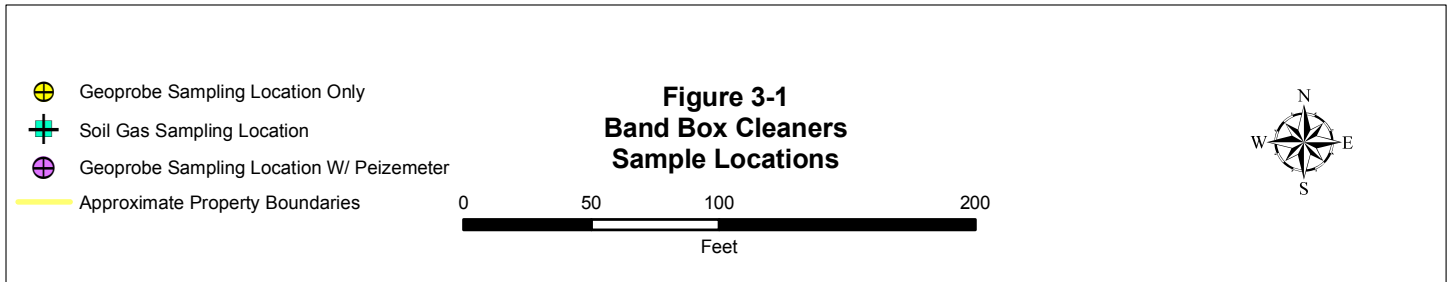
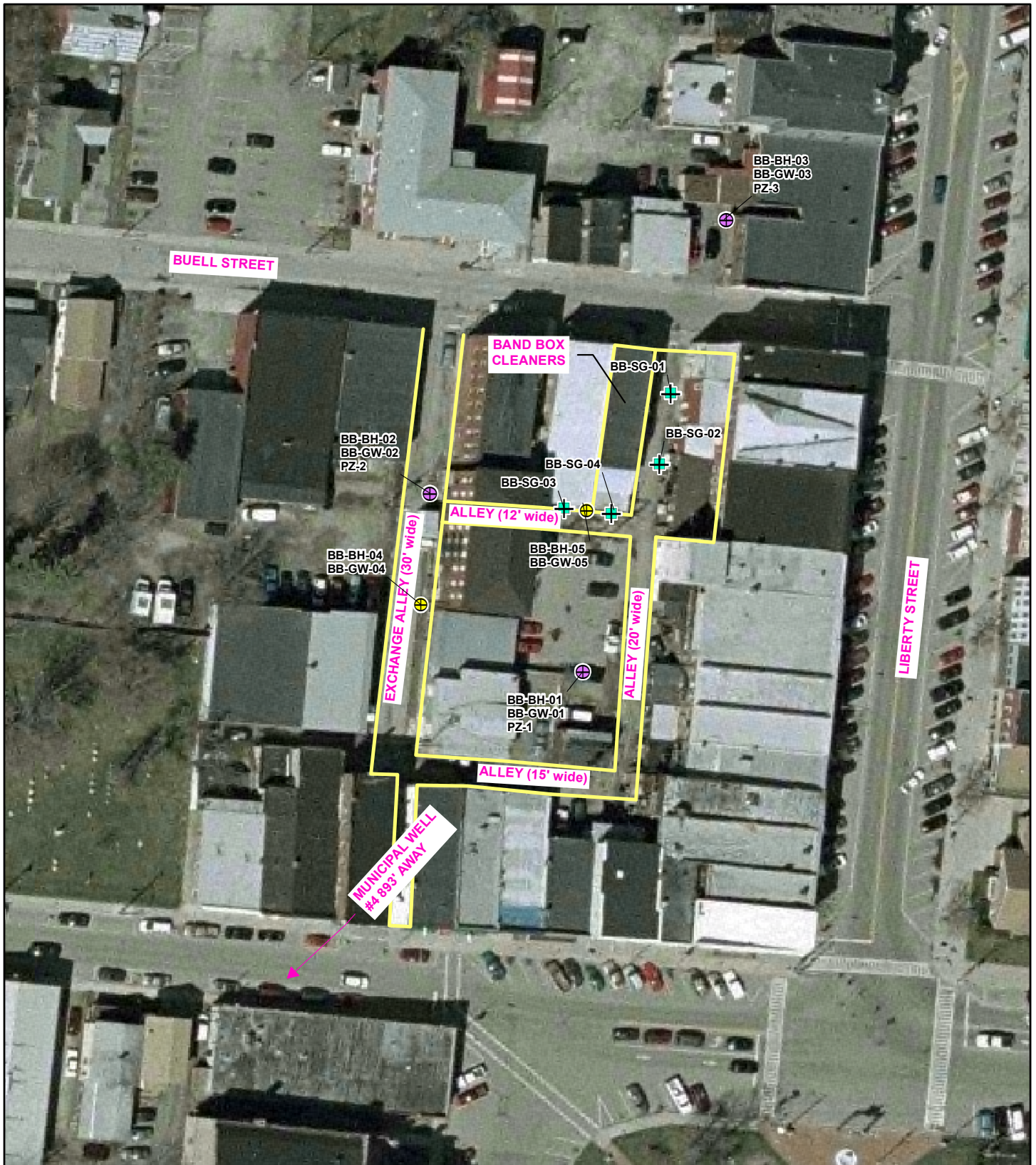
The site characterization conducted for the Steuben County site included subsurface soil, groundwater, and soil gas investigations. Subsurface soil, groundwater, and soil gas samples were collected using direct push technology (DPT). Groundwater samples also were collected from existing wells when available. 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 onsite and a list of sample identifications is provided in Table 3-1.

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

Site Name	Date Range Collected		Sample Count and Sample IDs		
			Soil Gas	Groundwater	Soil
Band Box Cleaners	1/12/2006	1/16/2006	4	15	15
			BB-SG-01	BB-GW-01(20)	BB-BH-01(16-17)
			BB-SG-02	BB-GW-01(29)	BB-BH-01(26-27)
			BB-SG-03	BB-GW-01(39)	BB-BH-01(37-38)
			BB-SG-04	BB-GW-02(19) (FD)	BB-BH-02(16-17)
				BB-GW-02(29)	BB-BH-02(27-28) (FD)
				BB-GW-02(39)	BB-BH-02(37-38)
				BB-GW-03(20)	BB-BH-03(15-16)
				BB-GW-03(30)	BB-BH-03(26-27)
				BB-GW-03(40)	BB-BH-03(37-38)
				BB-GW-04(23)	BB-BH-04(18-19)
				BB-GW-04(33)	BB-BH-04(30-31)
				BB-GW-04(43)	BB-BH-04(37-38)
				BB-GW-05(20)	BB-BH-05(16-17)
				BB-GW-05(30)	BB-BH-05(27-28)
				BB-GW-05(40)	BB-BH-05(37-38)

Key:

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



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. 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 site is present and to assess the subsurface soil conditions beneath the site.

A total of five boreholes were drilled at the Band Box Cleaners 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. Borings at each location were completed to a depth of 40 feet bgs. Groundwater was generally encountered between 13 and 15 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 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.

### 3. Site Characterization Activities

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 through 4-1c in Section 4 below 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 Bath 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 all borehole locations. EEEPC collected up to three discrete groundwater samples using a check valve and dedicated tubing. Three samples were collected from each location.

EEEPC encountered groundwater at depths ranging from 13 to 15 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 the 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 Soil Gas Sampling**

The purpose of the soil gas 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 gas samples (see Table 3-1) were collected (at the locations shown on Figure 3-1) with a Geoprobe rig using the post-run tubing (PRT) system. The PRT system consisted of using a Geoprobe to drive a clean drive-point adaptor and new expendable point approximately 8 feet bgs (or 2 feet above the water table, whichever was shallower) and pulling the rods back 6 inches to create a void, allowing soil gas to migrate into the bottom of the drive-point adaptor. A clean, dedicated, and unused piece of 0.25-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 gas/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.

**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)
<b>Band Box Cleaners</b>							
BB-PZ-1	24.6 - 29.6	1102.95	24.6	1078.35	1102.90	14.37	1088.53
BB-PZ-2	24.8 - 29.8	1102.32	24.8	1077.52	1102.22	13.93	1088.29
BB-PZ-3	24.5 - 29.5	1102.04	24.5	1077.54	1101.92	13.49	1088.43

Key:

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

Sample canisters were fitted with controllers set to draw air 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 Chemtech for analysis.

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/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 soil gas sampling locations; and
- Establishment of the horizontal location of key site features.

Vertical control was established to the nearest  $\pm 0.1$  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  $\pm 0.5$  foot. The survey data was used to update the site base map which is presented as Figure 3-1.

### **3.2.6 Air Monitoring**

The site safety officer performed air monitoring during all intrusive site activities (subsurface soil borings, groundwater vertical profiling, and soil gas 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/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 four trip blanks were submitted for analysis from the Band Box Cleaners site. One trip blank sample accompanied each shipment containing aqueous samples to be analyzed for VOCs. No volatile compounds were detected in the trip blanks from the Band Box Cleaners Site. 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 each shipment containing soil gas samples to be analyzed for VOCs. One trip blank was submitted from the site. Benzene, 1,1,1-trichloroethene, methylene chloride, and toluene were detected in BB-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 canister was not opened once it had been prepared until it was opened at the laboratory for analysis, the level of contaminants detected indicates that a review of the canister cleaning procedure is recommended. Trip blanks are reported with the groundwater and soil gas 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.

### 3. Site Characterization Activities

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 DUSR (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. Most VOCs for soil gas analysis can be recovered from canisters near their original concentrations after storage of up to 30 days, as allowed by the method. If the method holding times are applied there are no air sample violations and therefore they are not listed below. Results for the affected samples are qualified “UJ” or “J.”

**Table 3-3 Summary of Samples Exceeding Hold Time**

Client Sample ID	Matrix	Method	Sample Date	Analysis Date	Analysis Type
BB-BH-01(26-27)MS	SO	8260B	01/12/2006 12:30	01/17/2006 12:17	RES
BB-BH-01(26-27)MSD	SO	8260B	01/12/2006 12:30	01/17/2006 12:43	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. 1,1,1-trichloroethene was detected in the soil gas 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 gas samples.

### **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 sam-

ples), 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 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.

### 3. Site Characterization Activities

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. dry cleaner sites 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, re-viewed 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.



### 3. Site Characterization Activities

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

### 3. Site Characterization Activities

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. About 10 soils samples were analyzed at dilutions due to the level of target compounds.

Soil gas results were reported in  $\mu\text{g}/\text{m}^3$  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  $\mu\text{g}/\text{m}^3$  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  $\mu\text{g}/\text{m}^3$  to the correct significant figures and should have performed the calculation on the raw data. The effect is to make the soil gas 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 4-1c in Section 4 below 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 TCE detected at the Village of Bath municipal well no. 4 can be attributed to the Band Box Cleaners site. 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 through 4-1c) 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. In addition, soil gas sample results were evaluated in accordance with NYSDOH's guidelines for volatile chemicals in air presented in *Draft Guidance for Evaluating Soil Vapor Intrusion* (New York State Department of Health 2005).

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

### 4.2 Band Box Cleaners

#### 4.2.1 Subsurface Soil

Five borings were installed around the Band Box Cleaners site (see Figure 4-1).

## 4. Site Contamination Assessment

Although TCE (contaminant detected in municipal well no.4) was not detected in soil collected from the Band Box Cleaners site, VOCs generally associated with petroleum products (i.e., gasoline) were detected in soil collected from the site.

However, no VOCs were detected in soil at concentrations exceeding the respective NYSDEC screening criteria (see Table 4-1a).

BTEX was detected in soil collected from BB-BH-03 at concentrations that increased with increasing depth. Concentrations of total BTEX ranged from 13 ppb in soil collected from 15 feet to 16 feet bgs to 83 ppb in soil collected from 37 feet to 38 feet bgs. Boring BB-BH-03 is north of the Band Box Cleaners building, across Buell Street (see Figure 4-1).

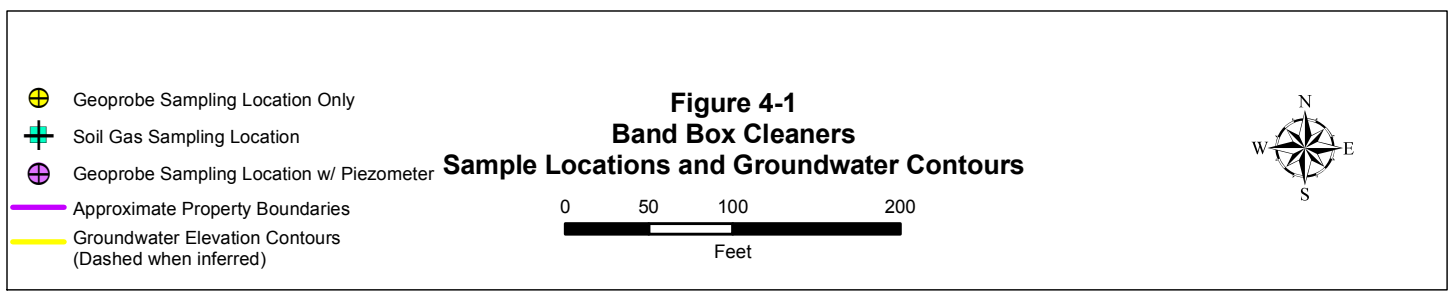
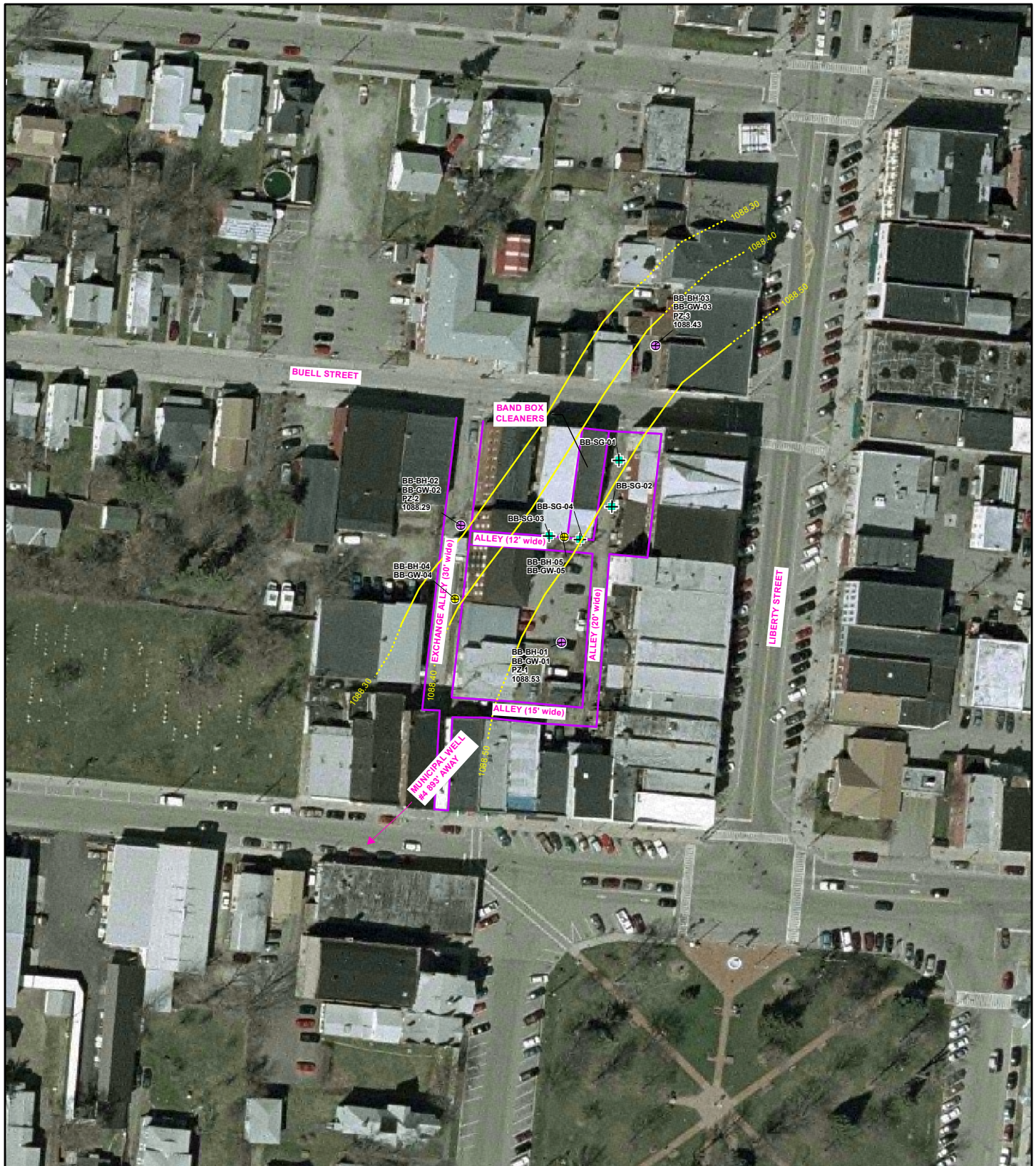
Soil samples collected from remaining boreholes BB-BH-01, BB-BH-02, BB-BH-04, and BB-BH-05 contained total BTEX concentrations at depths ranging from 16 feet to 19 feet bgs. Total BTEX concentrations detected in soil collected from the borings ranged from only 0.89 ppb at BB-BH-04 (16 to 17 ft bgs) to 6.9 ppb at BB-BH-05. None of the detected concentrations exceeded NYSDEC screening criteria (see Table 4-1a).

### 4.2.2 Groundwater

Groundwater samples were collected from each boring surrounding the Band Box Cleaners site using an SP15 GW sampler (Section 3.2.3.1).

Although groundwater samples collected from the Band Box Cleaners site did not contain detectable concentrations of TCE, trace concentrations (< 5 ppb) of contaminants typically associated with petroleum products were detected in groundwater collected from BB-GW-01, BB-GW-03, BB-GW-4, and BB-GW-05 (see Table 4-1b). Only groundwater collected from BB-GW-05 exhibited an exceedance of NYSDEC screening criteria (see Table 4-1b). Groundwater collected from BB-GW-05 (40 ft bgs) contained benzene at 1.2 ppb, which exceeded the NYSDEC screening criteria of 1 ppb for the compound, but the 1.2 ppb value flagged J+, estimated with a positive bias. BB-GW-05 is adjacent to the southern wall of the Band Box Cleaners building (see Figure 4-1).

Groundwater levels were measured in the three installed piezometers and existing well MW-1, as noted on Figure 4-1. Groundwater flow at the site is toward the northwest at a horizontal gradient of 0.003 feet per foot. Regional groundwater flow is probably toward the Cohocton River, which is toward the south-southwest. The low magnitude of the groundwater gradient indicates that localized variation in groundwater flow direction would be easily affected. Factors that could influence the localized direction of groundwater flow include buildings, building foundations, and pavement. These man-made structures could have a large impact on local infiltration rates and flow directions.



**Table 4-1a Summary of Positive Results for Steuben County, New York, Band Box Cleaners Subsurface Soils**

Analyte	Screening Criteria <sup>(1)</sup>	BB-BH-01 (16-17) 01/12/2006	BB-BH-01 (26-27) 01/12/2006	BB-BH-01 (37-38) 01/12/2006	BB-BH-02 (16-17) 01/13/2006	BB-BH-02 (27-28) 01/13/2006	BB-BH-02-D (27-28) 01/13/2006
<b>Volatiles - SW8260B (ug/Kg)</b>							
2-Butanone	300	15 U	17 UJ	17 UJ	10 UJ	16 UJ	<b>2.6 J</b>
Benzene	60	2.9 U	3.4 UJ	3.4 UJ	2.1 UJ	3.3 UJ	3.6 UJ
Carbon disulfide	2700	2.9 U	3.4 UJ	3.4 UJ	2.1 UJ	3.3 UJ	<b>1.5 J</b>
Cyclohexane	NA	<b>6.7</b>	<b>2.8 J</b>	3.4 UJ	2.1 UJ	3.3 UJ	<b>5.1 J-</b>
Ethyl Benzene	5500	2.9 U	3.4 UJ	3.4 UJ	2.1 UJ	3.3 UJ	3.6 UJ
m/p-Xylenes	1200	<b>1.5 J</b>	6.8 UJ	6.7 UJ	<b>1.7 J</b>	6.5 UJ	7.2 UJ
Methylcyclohexane	NA	2.9 U	3.4 UJ	3.4 UJ	<b>5.8 J-</b>	3.3 UJ	3.6 UJ
Methylene Chloride	100	<b>11</b>	<b>2.4 J</b>	<b>2.9 J</b>	2.1 UJ	3.3 UJ	<b>3.2 J</b>
o-Xylene	1200	2.9 U	3.4 UJ	3.4 UJ	2.1 UJ	3.3 UJ	3.6 UJ
Styrene	NA	2.9 U	3.4 UJ	3.4 UJ	2.1 UJ	3.3 UJ	3.6 UJ
Toluene	1500	<b>1.4 J</b>	3.4 UJ	3.4 UJ	2.1 UJ	3.3 UJ	3.6 UJ
<b>Total BTEX (ug/Kg)</b>							
BTEX	2000 <sup>(2)</sup>	<b>2.9</b>	ND	ND	<b>1.7</b>	ND	ND

**Table 4-1a Summary of Positive Results for Steuben County, New York, Band Box Cleaners Subsurface Soils**

Analyte	Screening Criteria <sup>(1)</sup>	BB-BH-02 (37-38) 01/13/2006	BB-BH-03 (15-16) 01/17/2006	BB-BH-03 (26-27) 01/17/2006	BB-BH-03 (37-38) 01/17/2006	BB-BH-04 (18-19) 01/16/2006
<b>Volatiles - SW8260B (ug/Kg)</b>						
2-Butanone	300	16 UJ	39 U	14 UJ	<b>11 J</b>	13 UJ
Benzene	60	3.3 UJ	<b>1.5 J</b>	2.9 UJ	3.1 UJ	2.7 UJ
Carbon disulfide	2700	3.3 UJ	7.8 U	2.9 UJ	3.1 UJ	2.7 UJ
Cyclohexane	NA	<b>23 J-</b>	7.8 U	2.9 UJ	3.1 UJ	2.7 UJ
Ethyl Benzene	5500	3.3 UJ	7.8 U	2.9 UJ	<b>7.9 J</b>	2.7 UJ
m/p-Xylenes	1200	6.6 UJ	<b>4.7 J</b>	5.7 UJ	<b>45 J</b>	<b>0.60 J</b>
Methylcyclohexane	NA	3.3 UJ	7.8 U	2.9 UJ	3.1 UJ	2.7 UJ
Methylene Chloride	100	3.3 UJ	7.8 U	2.9 UJ	3.1 UJ	2.7 UJ
o-Xylene	1200	3.3 UJ	<b>1.3 J</b>	2.9 UJ	<b>26 J</b>	2.7 UJ
Styrene	NA	3.3 UJ	7.8 U	2.9 UJ	<b>0.44 J</b>	2.7 UJ
Toluene	1500	3.3 UJ	<b>5.0 J</b>	<b>0.36 J</b>	<b>3.3 J</b>	<b>0.29 J</b>
<b>Total BTEX (ug/Kg)</b>						
BTEX	2000 <sup>(2)</sup>	ND	<b>13</b>	<b>0.4</b>	<b>83</b>	<b>0.9</b>

**Table 4-1a Summary of Positive Results for Steuben County, New York, Band Box Cleaners Subsurface Soils**

Analyte	Screening Criteria <sup>(1)</sup>	BB-BH-04 (30-31) 01/16/2006	BB-BH-04 (37-38) 01/16/2006	BB-BH-05 (16-17) 01/16/2006	BB-BH-05 (27-28) 01/16/2006	BB-BH-05 (37-38) 01/16/2006
<b>Volatiles - SW8260B (ug/Kg)</b>						
2-Butanone	300	14 UJ	16 UJ	13 UJ	16 U	16 UJ
Benzene	60	2.7 UJ	3.1 UJ	<b>0.58 J</b>	3.1 U	3.1 UJ
Carbon disulfide	2700	2.7 UJ	3.1 UJ	2.6 UJ	3.1 U	3.1 UJ
Cyclohexane	NA	2.7 UJ	3.1 UJ	<b>12 J-</b>	3.1 U	3.1 UJ
Ethyl Benzene	5500	2.7 UJ	3.1 UJ	<b>0.29 J</b>	3.1 U	3.1 UJ
m/p-Xylenes	1200	5.4 UJ	6.3 UJ	<b>2.1 J</b>	6.3 U	6.3 UJ
Methylcyclohexane	NA	2.7 UJ	3.1 UJ	<b>2.6 J-</b>	3.1 U	3.1 UJ
Methylene Chloride	100	<b>34 J</b>	<b>15 J</b>	<b>69 J</b>	3.1 U	3.1 UJ
o-Xylene	1200	2.7 UJ	3.1 UJ	<b>0.56 J</b>	3.1 U	3.1 UJ
Styrene	NA	2.7 UJ	3.1 UJ	2.6 UJ	3.1 U	3.1 UJ
Toluene	1500	2.7 UJ	3.1 UJ	<b>3.4 J</b>	3.1 U	3.1 UJ
<b>Total BTEX (ug/Kg)</b>						
BTEX	2000 <sup>(2)</sup>	ND	ND	<b>6.9</b>	ND	ND



**Table 4-1b Summary of Positive Results for Steuben County, New York, Band Box Cleaners Groundwater**

Analyte	Screening Criteria <sup>(1)</sup>	BB-GW- 01(20)	BB-GW- 01(29)	BB-GW- 01(39)	BB-GW- 02(19)	BB-GW-02- D(19)	BB-GW- 02(29)	BB-GW- 02(39)
		01/12/2006	01/12/2006	01/12/2006	01/13/2006	01/13/2006	01/13/2006	01/13/2006
<b>Volatiles - SW8260B (ug/L)</b>								
2-Butanone	50	5.0 U	5.0 U	<b>3.3 J</b>	5.0 U	5.0 U	5.0 U	5.0 U
Benzene	1	1.0 U	<b>0.31 J</b>	<b>0.78 J</b>	1.0 U	1.0 U	1.0 U	1.0 U
m/p-Xylenes	5	1.0 U	<b>0.34 J</b>	<b>0.92 J</b>	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	5	1.0 U	1.0 U	<b>0.35 J</b>	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	5	1.0 U	<b>0.58 J</b>	<b>1.4 J+</b>	1.0 U	1.0 U	1.0 U	1.0 U
<b>Total BTEX (ug/L)</b>								
BTEX	4 <sup>(2)</sup>	ND	<b>1.2</b>	<b>3.4</b>	ND	ND	ND	ND

**Table 4-1b Summary of Positive Results for Steuben County, New York, Band Box Cleaners Groundwater**

Analyte	Screening Criteria <sup>(1)</sup>	BB-GW- 03(20)	BB-GW- 03(30)	BB-GW- 03(40)	BB-GW- 04(23)	BB-GW- 04(33)	BB-GW- 04(43)	BB-GW- 05(20)
		01/17/2006	01/17/2006	01/17/2006	01/16/2006	01/16/2006	01/16/2006	01/16/2006
<b>Volatiles - SW8260B (ug/L)</b>								
2-Butanone	50	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 UJ	5.0 UJ
Benzene	1	1.0 U	1.0 U	<b>0.52 J</b>	1.0 UJ	1.0 U	<b>0.52 J</b>	1.0 UJ
m/p-Xylenes	5	1.0 U	1.0 U	<b>0.44 J</b>	1.0 UJ	1.0 U	1.0 UJ	1.0 UJ
o-Xylene	5	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 UJ	1.0 UJ
Toluene	5	1.0 U	1.0 U	<b>0.82 J</b>	1.0 UJ	1.0 U	<b>0.50 J</b>	1.0 UJ
<b>Total BTEX (ug/L)</b>								
BTEX	4 <sup>(2)</sup>	ND	ND	<b>1.8</b>	ND	ND	<b>1</b>	ND

**Table 4-1b Summary of Positive Results for Steuben County, New York, Band Box Cleaners Groundwater**

Analyte	Screening Criteria <sup>(1)</sup>	BB-GW- 05(30)	BB-GW- 05(40)	BB-TB-01	BB-TB-02	BB-TB-03	BB-TB-04
		01/16/2006	01/16/2006	01/12/2006	01/13/2006	01/16/2006	01/17/2006
<b>Volatiles - SW8260B (ug/L)</b>							
2-Butanone	50	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Benzene	1	<b>0.55 J</b>	<b>1.2 J+</b>	1.0 U	1.0 U	1.0 U	1.0 U
m/p-Xylenes	5	1.0 UJ	<b>0.93 J</b>	1.0 U	1.0 U	1.0 U	1.0 U
o-Xylene	5	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	5	<b>0.53 J</b>	<b>1.4 J+</b>	1.0 U	1.0 U	1.0 U	1.0 U
<b>Total BTEX (ug/L)</b>							
BTEX	4 <sup>(2)</sup>	<b>1.1</b>	<b>3.5</b>	ND	ND	ND	ND

**Table 4-1c Summary of Positive Results for Steuben County, New York, Band Box Cleaners Soil Gas**

	<b>BB-SG-01</b>	<b>BB-SG-02</b>	<b>BB-SG-03</b>	<b>BB-SG-04</b>	<b>BB-SG-TB-01</b>
<b>Analyte</b>	<b>01/17/2006</b>	<b>01/17/2006</b>	<b>01/17/2006</b>	<b>01/17/2006</b>	<b>01/17/2006</b>
<b>Volatiles - TO-15 (ug/m3)*</b>					
1,1,1-Trichloroethane	5.4 UJ	2.8 U	5.4 UJ	5.4 UJ	<b>3.4</b>
Benzene	<b>10</b>	<b>9.3</b>	3.2 U	3.2 UJ	<b>0.38</b>
Chloromethane	<b>0.25 J</b>	0.20 U	2.0 U	2.0 U	0.20 U
cis-1,2-Dichloroethene	4.0 U	<b>1.5</b>	4.0 U	4.0 U	0.40 U
Dichlorodifluoromethane	5.0 UJ	<b>2.7 J</b>	5.0 U	5.0 UJ	0.49 U
Ethyl Benzene	<b>1.5 J</b>	<b>3.3</b>	4.3 U	<b>0.43 J</b>	0.43 U
m/p-xylenes	<b>11</b>	<b>22</b>	8.7 U	<b>1.9 J</b>	0.87 U
Methylene Chloride	7.0 U	2.5 U	7.0 U	7.0 U	<b>1.8</b>
o-Xylene	<b>2.9 J</b>	<b>7.2</b>	4.3 U	<b>0.61 J</b>	0.43 U
Tetrachloroethene	<b>4.8 J</b>	<b>36</b>	6.8 U	6.8 U	0.68 U
Toluene	<b>28</b>	<b>31</b>	3.8 UJ	<b>6.6</b>	<b>0.49</b>
Trichloroethene	5.4 U	<b>2.4</b>	5.4 U	5.4 U	0.54 U
<b>Total BTEX (ug/m<sup>3</sup>)</b>					
<b>BTEX</b>	<b>54</b>	<b>73</b>	ND	<b>9.5</b>	ND

## Table 4-1 Key Summary of Positive Results for Steuben County, New York, Band Box Cleaners

### Comprehensive Table Key:

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

<sup>(1b)</sup> 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.

<sup>(2)</sup> Total BTEX uses the average screening criteria.

<sup>(\*)</sup> Soil gas results were rounded and reported to two significant figures. The raw laboratory data in Appendix C was incorrectly reported.

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.

ug/m<sup>3</sup> = Microgram per cubic meter.

UJ = Estimated/Not detected.

**Bold** = Analyte detected.

**Bold/Highlighted** = Result exceeds criteria.

BTEX = Benzene, Toluene, Ethylbenzene, and Xylene.

NYSDEC = New York State Department of Environmental Conservation.

BH = Borehole

GW = Groundwater

SG = Soil Gas.

TB = Trip Blank.

(?) = Indicates Collection Depth.

**4.2.3 Soil Gas**

Soil gas samples were collected from two locations in the alley east of the Band Box Cleaners building, BB-SG-01 and BB-SG-02, and from two locations adjacent to the building to the south, BB-SG-3 and BB-SG-04 (see Figure 4-1). Soil gas samples were collected using the PRT system described in Section 3.2.4.

PCE was detected in soil gas collected from locations BB-SG-01 and BB-SG-02 at  $4.8 \mu\text{g}/\text{m}^3$  and  $36 \mu\text{g}/\text{m}^3$  respectively. Soil gas collected from BB-SG-02 also contained TCE and 1,2-DCE at  $2.4 \mu\text{g}/\text{m}^3$  and  $1.5 \mu\text{g}/\text{m}^3$ , respectively (see Table 4-1c). The PCE and TCE concentrations detected in soil gas on-site are less than the NYSDOH screening guidance values of  $100 \mu\text{g}/\text{m}^3$  and  $5 \mu\text{g}/\text{m}^3$  respectively.

In addition, soil gas samples collected from BB-SG-01, BB-SG-02 and BB-SG-04 contained total BTEX concentrations at  $54 \mu\text{g}/\text{m}^3$ ,  $73 \mu\text{g}/\text{m}^3$ , and  $9.5 \mu\text{g}/\text{m}^3$ , respectively. The BTEX concentrations detected in soil gas correlate well with BTEX concentrations detected in soil and groundwater.

# 5

## Conclusions

### 5.1 General Conclusions

Groundwater, soil, and soil gas collected from the site contained compounds indicative of petroleum products, particularly gasoline (i.e., BTEX). The BTEX compounds were 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:

- TCE was not detected in soil or groundwater collected from the Band Box Cleaners site. However, PCE and its degradation products (including TCE) were detected in soil gas collected from the eastern perimeter of the site.
- A localized area of petroleum-related contamination was detected in soil and groundwater collected north of the site, across Buell Street, and in soil gas collected east of the site behind an active gas station.
- Because groundwater generally flows southwesterly (inferred from on-site piezometer measurements), it is unlikely that contaminants from the site would potentially migrate to the municipal wellfield located southwest of the site.

# 6

## References

- Ecology and Environment Engineering, P.C. (EEEEPC). 2005. *Final Technical Work Plan for Site Characterization of Sites in Canisteo and Bath, Steuben County, New York*. Lancaster, New York.
- New York State Department of Environmental Conservation (NYSDEC). 1994. *Technical and Administrative Guidance Memorandum (TAGM) No. 4046, Determination of Soil Cleanup Objectives and Soil Cleanup Levels*. NYSDEC Division of Hazardous Waste Remediation: Albany, New York.
- \_\_\_\_\_. 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.
- \_\_\_\_\_. July 1999. *Guidance for the Development of DUSRs*.
- \_\_\_\_\_. 2000. *Draft DER-10 Technical Guidance for Site Investigation and Remediation*. NYSDEC Division of Environmental Remediation: Albany, New York.
- New York State Department of Health (NYSDOH). 2005. *Draft Guidance for Evaluating Soil Vapor Intrusion in the State of New York*, prepared by the Department of Health, 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.



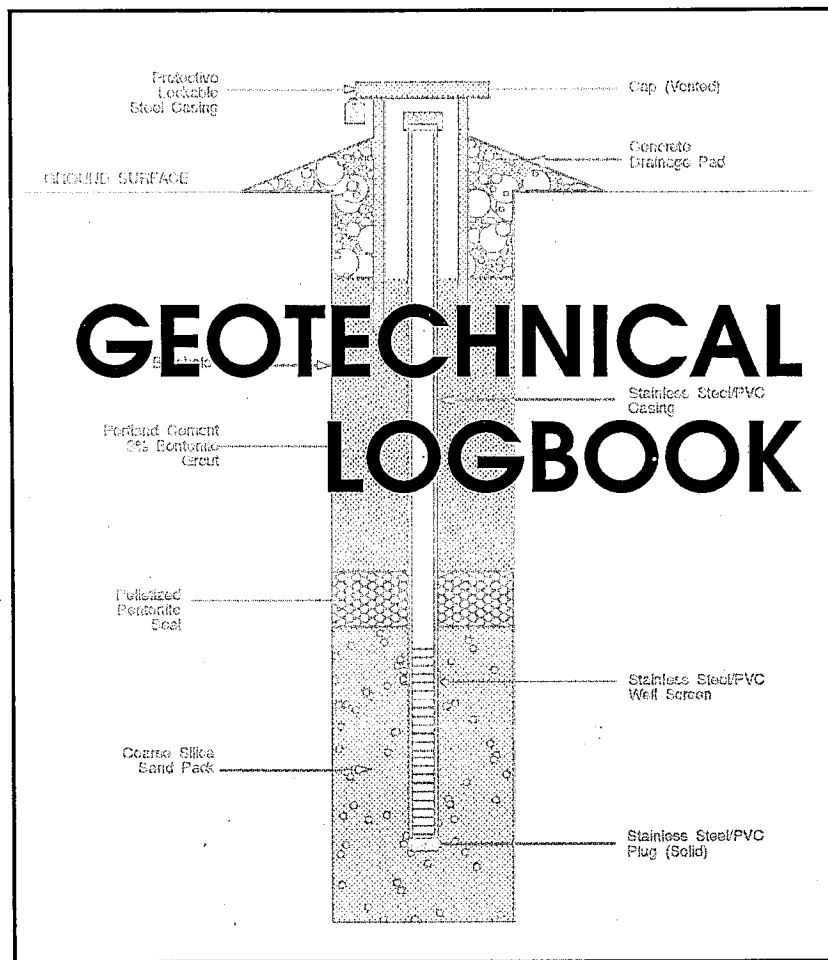
**A**

**Boring Logs**



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the Environment



PROJECT NUMBER: 000699.NV32.05

CLIENT/SITE NAME: NYSDEC/Band Box Cleaner

DRILLING COMPANY: Zebra

DATE OF FIELD ACTIVITIES: 1-12-06 -

HOLES LOGGED IN BOOK: BB-BH-01 thru 06  
BB-GW-01 thru 06  
PZ-1 thru PZ-3

CLIENT: NYSDEC

JOB NUMBER: 000699, NV32.05

SITE NAME: Band Box Cleaner

DRILLER: Zebra (Dom Pino)

LOCATION: CITY/TOWN: Bath

STATE: New York

PROJECT MANAGER: Bob Meyers

FIELD TEAM LEADERS: Stephanie Reynolds-Smith,

SITE SAFETY OFFICER(S): Jim Mays 1

TEAM MEMBERS: \_\_\_\_\_

JOB START/FINISH DATE: 1-12-06 1

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
<u>Matt Dunham</u>	<u>DEC</u>	<u>office 518-402-9812 Cell 518-527-4877</u>
_____	_____	_____
_____	_____	_____

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.

DAILY LOGS

BA-01

# Borehole Record for BH-01/PZ-1

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

BOREHOLE NO. BH-01 BOREHOLE NO. BH-02



# DRILLING LOG FOR BB-BH-01 / PZ-1

Project Name Steuben Co. Site Characterization

Site Location Band Box Cleaners  
Bath NY

Date Started/Finished 1-12-06

Drilling Company Zebra

Driller's Name Dom Pino

Geologist's Name Robert Meyers

Geologist's Signature Robert Meyers

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 \_\_\_\_\_

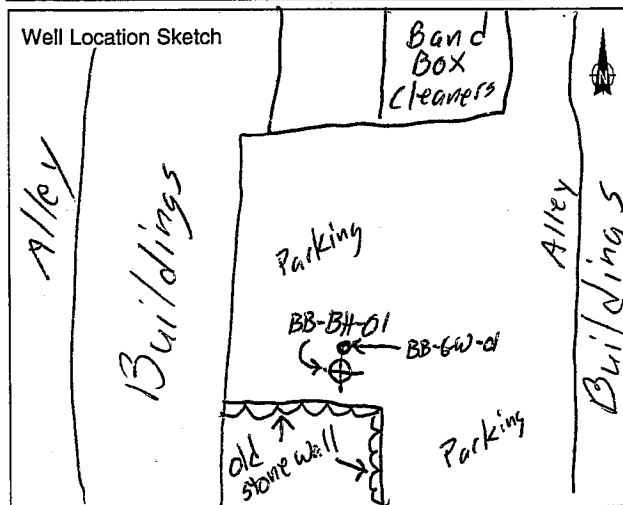
Total Depth of Borehole Is \_\_\_\_\_

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				1143						
2					1	1.5'			Oppm	
3										
4				1145						
5				1147						
6										
7					2	2.3'			Oppm	
8										
9										
10				1148						
11				1134						
12										
13					3	3.3'			Oppm	
14										
15				1156						

**PZ-1** Lock Number NA

**SCREENED WELL**  
Flushmount

Stick-up 0.2 ft BGS

Top of Grout Grade ft

Top of Seal at 7.5' ft

Top of Sand Pack 12.5' ft

Top of Screen 24.6' ft

Bottom of Screen at 29.6' ft

Bottom of Hole at 40' ft

Bottom of Sandpack at \_\_\_\_\_

**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

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 \_\_\_\_\_

NOTE: See pages 136 and 137 for well construction diagrams

Depth-ft.	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content		
		Dry	Moist	Wet
1	0'-0.9, Blacktop & Gravel base (Dry)	⊗	○	○
2	0.9'-1.5' Med. brown/Gray Angular to Rounded gravel with some silt & sand, trace clay. (moist to wet)	○	⊗	⊗
3		○	○	○
4		○	○	○
5	5'-7.3', Broken Coarse Gravel & sm. Cobbles with few silt & VF-Coarse sand.	⊗	⊗	○
6		⊗	⊗	○
7		○	⊗	○
8		○	⊗	○
9		○	⊗	○
10		○	⊗	○
11	10'-13.3' Dry Fine to Coarse gravel (rounded) with little (25%) silt and VF-C sand	⊗	○	○
12		⊗	○	○
13		⊗	○	○
14		⊗	○	○
15		⊗	○	○

BOREHOLE NO. BH-02  
BOREHOLE NO. BH-01



Depth(feet).	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content		
		Dry	Moist	Wet
16	15'-17.9' Gravel as above, Water @ 15.9' <sup>BGS</sup>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
17		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
18		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
19		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
20		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
21	20'-24.1' Gravel as above	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
22		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
23		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
24		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
25		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
26	25'-25.9' Gravel as above	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
27	25.9'-28.2' VF Gray Sand & Silt, Uniform	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
28		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
29		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
30		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
31	30-33.6', Gray Sand & Silt as above	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
32		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
33		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
34		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
35		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
36	35'-38.2', Gray Silt & VF Sand as above	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
37		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
38		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
39	B.O.H @ 40' BGS	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
40		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
41		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
42		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
43		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
44		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
45		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BOREHOLE NO. BH-02

BOREHOLE NO. BH-4



# Borehole Record for BB-BH-02/PZ-2

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

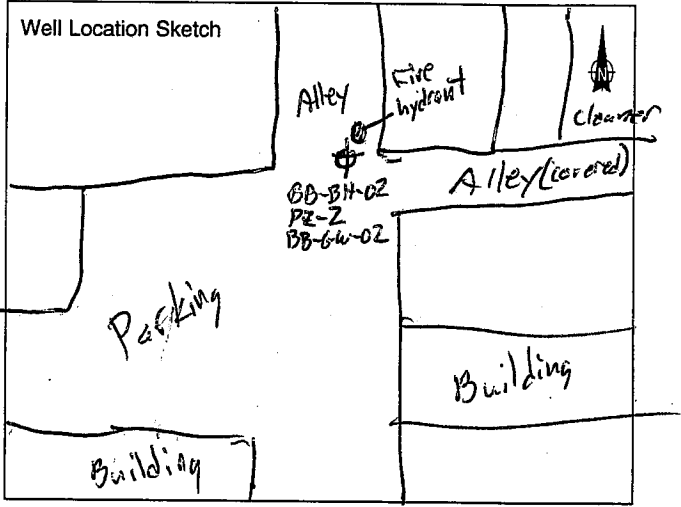
BOREHOLE NO. BB-BH-02  
BOREHOLE NO. BB-BH-02  
BOREHOLE NO. BB-BH-02



# DRILLING LOG FOR BB-BH-02/PZ-2

Project Name Steuben Co. Site Characterizations  
 Site Location Band Box Cleaners  
Bath NY  
 Date Started/Finished 1-13-06  
 Drilling Company Zebra  
 Driller's Name Dom Pino  
 Geologist's Name Robert A Meyers  
 Geologist's Signature Robert A Meyers  
 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' BGS  
 Total Depth of Corehole Is NA

Water Level (TOIC)		
Date	Time	Level (Feet)



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/GVA (ppm)	Comments
1				0811						
2					1	4.1'			Oppm	
3										
4										
5				0813 0820						
6										
7					2	2.4'			Oppm	
8										
9										
10				0821 0825						
11										
12										
13					3	2.9'			0.6	
14										
15				0826						

PZ-2 Lock Number NA  
 SCREENED WELL Inner Casing Material 1" PVC

OPEN-HOLE WELL

Stick-up \_\_\_\_\_ ft

Inner Casing Material \_\_\_\_\_

Inner Casing Inside Diameter \_\_\_\_\_ inches

Stick-up 0.1' ft BL's

Inner Casing Inside Diameter \_\_\_\_\_ inches

GROUND SURFACE

Top of Grout Grade ft

Quantity of Material Used:  
 Bentonite Pellets \_\_\_\_\_

Outer Casing Diameter \_\_\_\_\_ inches

Top of Seal at 7' ft

Cement \_\_\_\_\_

Borehole Diameter \_\_\_\_\_ ft

Top of Sand Pack 10' ft

Borehole 2 1/8" inches Diameter

Bedrock \_\_\_\_\_ ft

Top of Screen at 24.8' ft

Cement/Bentonite \_\_\_\_\_

Bottom of Rock Socket/Outer Casing \_\_\_\_\_ ft

Bottom of Screen at 29.8' ft

Grout \_\_\_\_\_

Bottom of Inner Casing \_\_\_\_\_ ft

Bottom of Hole at 40' ft

Screen Slot Size 0.10"

Screen Type \_\_\_\_\_

- PVC \_\_\_\_\_
- Stainless Steel \_\_\_\_\_

Corehole Diameter \_\_\_\_\_

Bottom of Sandpack at \_\_\_\_\_

Pack Type/Size:

- Sand \_\_\_\_\_
- Gravel \_\_\_\_\_
- Natural \_\_\_\_\_

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'-4.1', Fill Materials (Disturbed) Gravel (F-V.C.) with silt & sand, brick frags & Asphalt throughout	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	5'-7.4' Fine to V. Coarse Gravel (rounded primarily) with some silt & VF to coarse sand, trace clay, Moist	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11	10'-12.9', Gravel as above, moist to wet at bottom	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
13		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

BOREHOLE NO. B11-03



Depth(feet).	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content		
		Dry	Moist	Wet
16	15'-17.1', Gravel as above, Wet Water @ 15.8' BGS	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
17		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
18		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
19		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
20	20'-22.1' Gravel as above	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
21		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
22	22.1' to 23.2', VF Gray/brown Sand & Silt	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
23		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
24		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
25	25'-28', VF Sand, brown to Gray,	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
26		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
27		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
28		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
29		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
30	30'-33.6', VF Gray Sand	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
31		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
32		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
33		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
34		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
35	35'-38.4', Sand as above	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
36		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
37		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
38	B.O.H @ 40' BGS	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
39		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
40		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
41		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
42		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
43		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
44		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
45		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BOREHOLE NO. B11-03

# Borehole Record for BB-BH03/PZ3

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

BOREHOLE NO. BH-01

BH-05

BOREHOLE NO

BOREHOLE NO

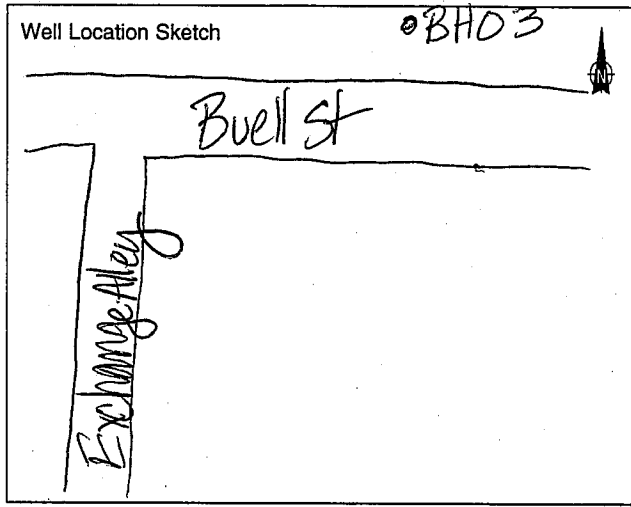
BOREHOLE NO



# DRILLING LOG FOR BB-BH-03/PZ-3

Project Name Steuben Co. Site Characterizations  
 Site Location Band Box Cleaners  
Bath, NY  
 Date Started/Finished 1/17/06  
 Drilling Company Zebra  
 Driller's Name Dom Piro  
 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' bgs  
 Total Depth of Corehole Is NA

Water Level (TOIC)		
Date	Time	Level (Feet)



Depth (Feet)	Sample Number	Blows on Sampler	Soil Components Rock Profile CL SL S GR	Penetration Times	Run Number	Core Recovery	RQD	Fracture Sketch	DIP HNu/OVA (ppm)	Comments
1										
2					1	4.6			φ	
3										
4										
5				0819						
6										
7					2	2.6			φ	
8										
9										
10				0812						
11										
12					3	3			φ	
13										
14										
15				0819						

BOREHOLE NO. BH-01  
BOREHOLE NO. BH-05  
BOREHOLE NO. \_\_\_\_\_  
BOREHOLE NO. \_\_\_\_\_  
BOREHOLE NO. \_\_\_\_\_

**SCREENED WELL**

Lock Number \_\_\_\_\_

Stick-up 0 ft

Top of Grout grade ft

Top of Seal at 3 ft

Top of Sand Pack 14 ft

Top of Screen at 24.5 ft

Bottom of Screen at 29.5 ft

Bottom of Hole at 40 ft

Bottom of Sandpack at \_\_\_\_\_

**OPEN-HOLE WELL**

Stick-up \_\_\_\_\_ ft

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

GROUND SURFACE

Inner Casing Material \_\_\_\_\_

Inner Casing Inside Diameter \_\_\_\_\_ inches

Quantity of Material Used:

Bentonite Pellets \_\_\_\_\_

Cement \_\_\_\_\_

Borehole 2 1/8 inches Diameter

Cement/Bentonite \_\_\_\_\_

Grout \_\_\_\_\_

Screen Slot Size 0.010

Screen Type

PVC 0.010

Stainless Steel \_\_\_\_\_

Pack Type/Size:

Sand \_\_\_\_\_

Gravel \_\_\_\_\_

Natural \_\_\_\_\_

NOTE: See pages 136 and 137 for well construction diagrams

Depth-ft.	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content		
		Dry	Moist	Wet
1	<del>0-2.7</del> <sup>3.2</sup> Asphalt + gravel base dry	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	<del>2.7-3.2</del> <sup>3.2-3.9</sup> Fill - Brown silt with pieces of asphalt	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3	3.9-4.6 Brown clayey silt w/ coarse subrounded gravel, moist	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	5-7.6 Gravel (fine to coarse), subrounded to rounded with some yellowish brown silt	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	10-13 Gravel (fine to coarse) with little silt, dry + becoming moist at 12.7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>





Depth(feet).	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content		
		Dry	Moist	Wet
16	15-18.2 Brown fine to coarse rounded gravel, <del>2</del> few silt + fine sand, wet	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
17		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19	20-23.4 Brown fine to coarse subrounded to rounded gravel, trace F-C sand, wet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
21		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22	25-26.4 Gravel as above 26.4-26.9 Brown fine sand, wet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25	30-30.5 Gray v. Fine sand + silt, wet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
27		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28	35-36.8 Brown F-M sand, wet 36.8-38.3 Gray F-M sand, wet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
31	B.O.H. @ 40'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
32		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
33		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
34		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
35		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
36		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
37		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
38		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
39		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
40		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
41		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
42		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
43		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
44		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
45		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BOREHOLE NO. BH-01

BOREHOLE NO. BH-05

BOREHOLE NO. \_\_\_\_\_

BOREHOLE NO. \_\_\_\_\_

BOREHOLE NO. \_\_\_\_\_

# Borehole Record for BH-04

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



# DRILLING LOG FOR BH-04

Project Name Stevenson Co. Site characterization

Site Location Band Box Cleaners  
Bath, NY

Date Started/Finished 1/16/05

Drilling Company Zebra

Driller's Name Don Finn

Geologist's Name S. Reynolds SMAN

Geologist's Signature [Signature]

Rig Type (s) Geoprobe 6620DT

Drilling Method (s) Direct Push

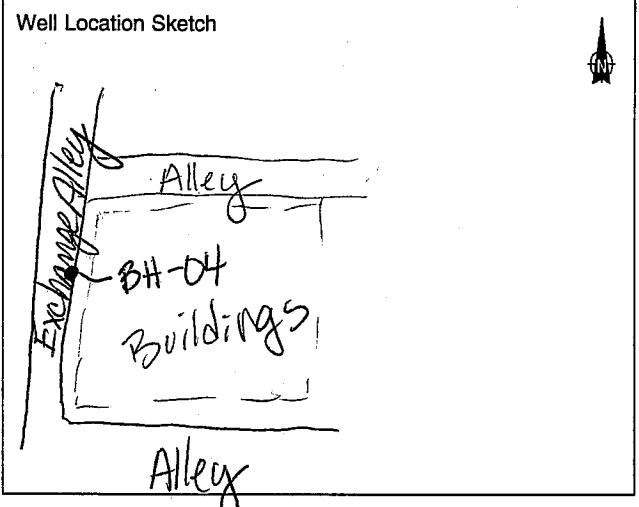
Bit Size (s) 2 1/8 DD Auger Size (s) NA

Auger/Split Spoon Refusal N/A

Total Depth of Borehole Is 40'

Total Depth of Corehole Is NA

Water Level (TOIC)		
Date	Time	Level( Feet)



Depth(Feet)	Sample Number	Blows on Sampler	Soil Components Rock Profile				Penetration Times	Run Number	Core Recovery	RQD	Fracture Sketch	P17 HNU/GVA (ppm)	Comments
			CL	SL	S	GR							
1						1015							
2							1	2.1'			φ		
3													
4						1017							
5													
6													
7							2	2.1'			φ		
8													
9													
10						1022							
11													
12													
13							3	3.5'			φ		
14													
15						1028							

No PZ installed  
N/A

SCREENED WELL

OPEN-HOLE WELL

Lock Number \_\_\_\_\_

Stick-up \_\_\_\_\_ ft

Inner Casing Material \_\_\_\_\_

Inner Casing Inside Diameter \_\_\_\_\_ inches

Inner Casing Inside Diameter \_\_\_\_\_ inches

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 \_\_\_\_\_

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 \_\_\_\_\_

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	0-1.3 Asphalt w/ brick (orange) at 1-1.3, dry	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	1.3 - 2.1 Gravel (F to C), fine coarse sand & silt, brown, moist, gravel rounded	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	5-7.1 Well rounded gravel with fine sand (yellow) black at 6.4-6.7, moist-wet at 5-6 & dry at 6-7.1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	10-13.5 Well rounded gravel with little brown fine sand & silt, moist, gravel fine to coarse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

BOREHOLE NO. BH-45  
BOREHOLE NO.  
BOREHOLE NO.  
BOREHOLE NO.



Depth(feet).	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content		
		Dry	Moist	Wet
16	15-18.4 Gravel, as above, moist to wet at 18'	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
17		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20	20-23.8 Brown v. fine to coarse gravel, wet, few silt	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
21		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25	25-25.5 Gravel, as above	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
26		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30	30-32.3 Gravel, as above	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
31	30.3-32.5 Brown to gray v.F. <sup>silty</sup> sand, wet	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
32		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
33		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
34		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
35	35-38 Sand, as above	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
36		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
37		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
38		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
39		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
40	BOH @ 40' BGS	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
41		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
42		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
43		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
44		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
45		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BH-65

BOREHOLE NO.

BOREHOLE NO.

BOREHOLE NO.

BOREHOLE NO.

Borehole Record for BH - 05

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





DRILLING LOG FOR BH05

Project Name Stevens Co. Site Characterization

Site Location Bond Box Cleaners

Date Started/Finished 1/16/06

Drilling Company Zebra

Driller's Name Dom Piro

Geologist's Name S. Reynolds Smith

Geologist's Signature [Signature]

Rig Type (s) Geopole-6620DT

Drilling Method (s) Direct Push

Bit Size (s) 2 1/4" OD Auger Size (s) NA

Auger/Split Spoon Refusal NA

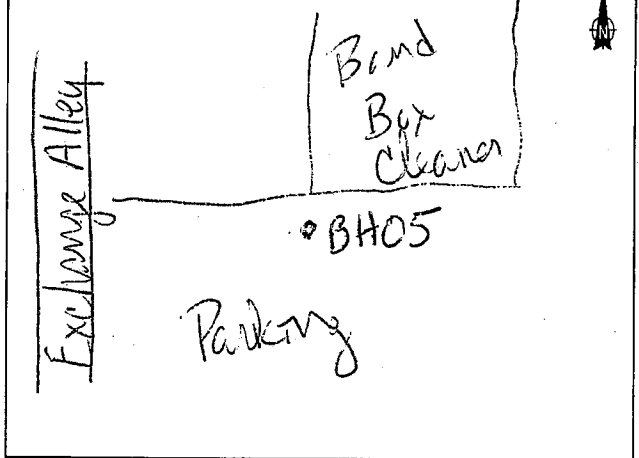
Total Depth of Borehole Is 40' bgs

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				1354						
2					1	2.7			∅	
3										
4										
5				1357						
6										
7										
8					2	2.1			∅	
9										
10				1402						
11										
12					3	3.5			∅	
13										
14										
15				1408						

**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 \_\_\_\_\_

**OPEN-HOLE WELL**

Stick-up \_\_\_\_\_ ft

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

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 \_\_\_\_\_

NOTE: See pages 136 and 137 for well construction diagrams

Depth-ft.	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content		
		Dry	Moist	Wet
1	0-1 Black asphalt, dry	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	1-2.7 Brown rounded gravel (fine to coarse), moist, little fine sand & silt, moist	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
3		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	5-7.1 Gravel, coarse, dry-moist	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10	10-13.5 <sup>5</sup> Gravel, fine to coarse brown w/ some gray red, little coarse sand, dry	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BOREHOLE NO. \_\_\_\_\_

BOREHOLE NO. \_\_\_\_\_

BOREHOLE NO. \_\_\_\_\_



Depth(feet).	NARRATIVE LITHOLOGIC DESCRIPTION	Moisture Content		
		Dry	Moist	Wet
16	15-17.3 Brown rounded gravel trace clay, little fine sand & silt, dry-moist till 16.3, wet at 16.3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
18		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19	20-23.2 Brown sub to well rounded gravel fine grading to coarse at <del>21.6</del> <sup>21.6</sup> , coarse 21.3 at 21.6-21.9, coarse sand & fine gravel 21.9-23.2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
22		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23	25.0-25.3 Gravel, as above	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
25		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
26	25.3-28.4 Brown fine sand, trace silt, wet	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
27		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28	30-33.8 Brown sand, as above, wet	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
31		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
32	35-35.6 Brown sand, as above	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
33		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
34		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
35	35.6-37.4 Gray fine sand	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
36		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
37	37.4-37.7 Brown fine sand	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
38	B.O.H. @ 40' bgs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
39		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
40		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
41		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
42		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
43		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
44		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
45		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

BOREHOLE NO. \_\_\_\_\_

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
Photographer: Jim Mays	Site boring BB-BH-04



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



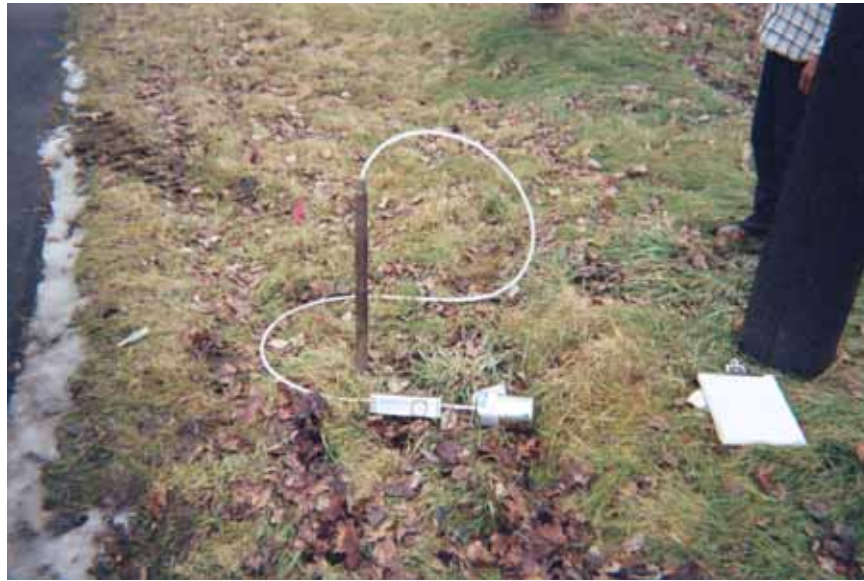
Date: 1/11/06	Subject: Direct-Push activities at the Former Loohns Cleaners Site boring FL-BH-03
Photographer: Jim Mays	



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	



# Laboratory and Data Usability Summary Report

See enclosed CD