Town of Beekman Highway Garage

TOWN OF BEEKMAN, DUTCHESS COUNTY, NEW YORK

Site Management Plan

NYSDEC Site Number: 3-14-094

Prepared for:
New York State Department of Environmental Conservation
21 South Putt Corners Road
New Paltz, New York 12561

Prepared by:
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1.0 INTRODUCTION AND DESCRIPTION OF REMEDIAL PROGRAM

1.1 INTRODUCTION

This document is required as an element of the remedial program at the Town of Beekman Highway Garage (hereinafter referred to as the "Site") under the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program administered by New York State Department of Environmental Conservation (NYSDEC). The site is listed as Inactive Hazardous Waste Disposal Site #3-14-094. The site was remediated in accordance with Order on Consent Index #W3-0791-9705, which was executed on July 3, 1997.

1.1.1 General

The Town of Beekman (hereafter, referred to as the "Town") entered into a Order an Consent with the NYSDEC to remediate an 9.65-acre owned by the Town of Beekman, in the Hamlet of Poughquag, Dutchess County, New York. This Order on Consent requires the Town of Beekman, to investigate and remediate contaminated media at the site. Maps showing the site location and property boundaries are provided in Figures 1 and 11, respectively. Figure 11 shows the proposed site boundary that would reduce the size of the site. This site redefinition may be the subject of a future petition.

After removal of petroleum contaminated soil as outlined in the Record of Decision (ROD), a groundwater monitoring program was developed and carried out as described in the Remedial Action Plan (RAP). The groundwater monitoring of natural attenuation and vapor intrusion mitigation were the primary components of the remedy. This Site Management Plan (SMP) was prepared to manage remaining groundwater contamination and vapor intrusion mitigation at the site in perpetuity. Soil excavation on the site began in December, 2000, and all contaminated soil was transported to a disposal

facility in March, 2001. All reports associated with the site can be viewed by contacting the NYSDEC.

This SMP was prepared by Conrad Geoscience Corp., on behalf of the Town, in accordance with the requirements in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, and the guidelines provided by NYSDEC. This SMP addresses the means for implementing the Institutional Controls (ICs) and Engineering Controls (ECs) that are required by NYSDEC.

1.1.2 Purpose

The site contains remaining contamination after completion of the remedial action. Engineering Controls have been incorporated into the site remedy to provide mitigation of future vapor intrusion and to monitor the natural attenuation of groundwater contaminants in order to ensure protection of public health and the environment. A Deed Restriction will be granted to the NYSDEC, and recorded with the Dutchess County Clerk, that provides an enforceable legal instrument to ensure compliance with this SMP and all ECs and ICs placed on the site. The ICs place restrictions on site use, and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. This SMP defines the EC's and IC's and specifies the methods necessary to ensure compliance with all ECs and ICs required by the Deed Restriction for contamination that remains at the site. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

This SMP provides a detailed description of all procedures required to manage remaining contamination at the site after completion of the Remedial Action, including: (1) implementation and management of all EC's and IC's; (2) media monitoring; (3) operation and maintenance of all treatment, collection, containment, or recovery systems; (4) performance of periodic inspections, certification of results, and submittal of Periodic Review Reports; and (5) defining criteria for termination of treatment system operations.

To address these needs, this SMP includes three plans: (1) an Engineering and Institutional Control Plan for implementation and management of EC/ICs, which includes a reporting plan for the submittal of data, information, recommendations, and certifications to NYSDEC; (2) a Monitoring Plan for implementation of Site Monitoring; and (3) an Operation and Maintenance Plan for implementation of remedial collection,

containment, treatment, and recovery systems (including, where appropriate, preparation of an Operation and Maintenance Manual for complex systems).

It is important to note that:

- This SMP details the site-specific implementation procedures that are required by the Deed Restriction. Failure to properly implement the SMP is a violation of Environmental Conservation Law and the Deed Restriction;
- Failure to comply with this SMP is also a violation of 6NYCRR Part 375 and the Order on Consent (Index #W3-0791-9705; Site #3-14-094) for the site, and thereby subject to applicable penalties.

At the time the SMP was prepared, the SMP and all site documents related to Remedial Investigation and Remedial Action were maintained at the NYSDEC office at 21 South Putt Corners Road, New Paltz, New York 12561.

1.2 SITE BACKGROUND

1.2.1 Site Location and Description

The Town of Beekman Highway Garage inactive hazardous waste disposal site is located on Town of Beekman Highway Department property at the intersection of County Route 7 and Gardner Hollow Road in the Hamlet of Poughquag, Town of Beekman, Dutchess County, New York (Figure 1). The site is situated in the north-central part of the 10-acre Town property. Selected site features are shown in Figure 2.

1.2.2 Site History

The Town of Beekman has owned the property for over 100 years. During that time, the Town used the property to accommodate town offices and run Fire Department and Highway Garage operations. Additionally, western portions of the 10-acre property were previously mined by the Town for gravel and used as a waste dump.

1.2.3 Geologic Conditions

Surface geology in the vicinity of the highway garage consists of thick deposits (10 to 50 feet) of stratified sand and gravel, with interbedded layers of silt. Sand and gravel layers are more porous than the silt layers, and are the primary strata through which

groundwater, and dissolved contaminants, flow. According to the Geologic Map of New York, Lower Hudson Sheet, bedrock at the site is part of the Wappinger Group, which consists of Cambrian and Lower Ordovician limestone and dolostones. This finding is consistent with a 2 foot dolostone core retrieved from the top of bedrock at approximately 60 feet below grade.

Based on data from all monitoring wells, groundwater levels vary between 12 and 18 feet below the surface. In general, groundwater flows from North to South at the site and often trends in a southwesterly direction. A groundwater contour map representing site conditions on February 14, 2008 shows this trend and is illustrated in Figure 3.

1.3 SUMMARY OF REMEDIAL INVESTIGATION FINDINGS

A list of all investigation reports is listed below in chronological order:

- Preliminary Site Assessment (PSA) – May 1996
- Order on Consent – July, 1997
- Remedial Investigation (RI) – March 1998
- Focused Feasibility Study (FFS) – March 1999
- Proposed Remedial Action Plan (PRAP) – February 1999
- Record of Decision (ROD) – November 1999
- Soil Remediation Report – April 2001

From June through December 1997, the Town of Beekman conducted a Remedial Investigation (RI) to more precisely pinpoint the source(s) of solvent contamination on Town premises so that appropriate remedial actions could be selected. The RI report, dated March 1998, confirmed that two overlapping plumes of dissolved solvents, originating from three separate areas at the site are present. The chlorinated solvent 1,1,1-trichloroethane (TCA) was originally discharged near the western end of the Highway pole barn (Figure 2). The chlorinated solvent perchloroethylene (PCE) was originally discharged near the northeastern corner of the pole barn. From these discharge locations, dissolved solvents are carried southward with the flow of groundwater (see

Figure 3). Petroleum constituents, so-called BTEX compounds (benzene, toluene, ethylbenzene & xylene), also conform to this same general pattern.

In addition to chlorinated solvents, petroleum related contaminants were also found on site. Soil borings in the former gasoline and diesel tank area near the east end of the Highway salt shed revealed petroleum-contaminated soil, presumably from tank leakage prior to removal of the underground storage tanks (USTs) near the eastern end of the salt shed in 1989 and 1993 (Figure 2). However, no documentation exists to show exact tank locations in this area.

1.3.1 Soil

According to the Focused Feasibility Study (FFS) report (LMS, 1999), approximately 410 yd^3 of petroleum-contaminated soil were present in the former underground storage tank (UST) area near the northeastern corner of the salt barn (Figure 4). Contaminants in this area included the petroleum constituents benzene, toluene, ethylbenzene, and xylene (BTEX). The chlorinated solvent perchloroethylene (PCE), which is not a fuel constituent, was also present. The depth of contamination ranged from 3 to 14 feet below ground surface beneath an area covering approximately 1,100 ft^2.

No undissolved product was observed during soil removal. No VOCs were detected in any of the 15 sidewall post-excavation samples at concentrations exceeding recommended soil cleanup objectives. Only one of the seven floor samples, at location PE-21 (Figure 4), contained VOCs at concentrations exceeding recommended soil cleanup objectives. The Soil Remediation Report (April, 2001) contains tables that include all post excavation soil data.

1.3.2 Off-Site and On-Site Groundwater

Off-site Groundwater

In 1992, the chlorinated solvent 1,1,1-trichloroethane (TCA) was detected in residential wells downgradient from the Town of Beekman Highway Garage. Further groundwater tests demonstrated that perchloroethylene (PCE) and other volatile organic compounds (VOCs) were also present in the drinking water aquifer in Poughquag. At

that time, the solvent plume was known to extend approximately 1,100 to 1,200 feet into the Hamlet south of the Highway garage.

On-Site Groundwater

The RI report dated March 1998, which summarizes data from installation and sampling of on-site wells, confirmed that two overlapping plumes of dissolved solvents, TCA and PCE, originate from separate locations adjacent to the Highway pole barn (Figure 2). From these discharge locations, dissolved solvents are carried southward with the flow of groundwater (see Figure 3). Petroleum constituents, so-called BTEX compounds (benzene, toluene, ethylbenzene & xylene), also conform to this same general pattern. The current extent of the contaminant plumes (depicted with Total VOCs) is shown in Figure 10.

Based on site investigations, depth to groundwater ranges from 12 to 18 feet below ground surface. Although no monitoring wells have been installed in the former fuel tank area, groundwater is presumed to have been contaminated (based on soil sampling data). Elevated concentrations of petroleum constituents have also been detected in Monitoring Well MW-5 along the property boundary, and in a nearby residential well (tax parcel #885713 per Figure 9).

1.3.3 On-Site and Off-Site Soil Vapor

In March 2006, Conrad Geoscience Corp. conducted sub-slab vapor and indoor air sampling at the site. Tetrachloroethene (PCE) and trichloroethene (TCE) were present in both sub-slab vapor and indoor air samples, indicating that a vapor intrusion condition exists on Highway Garage property. Both compounds were found in groundwater on site as well as in products used in the automotive maintenance sections of the garage. According to New York State Department of Health (NYSDOH) guidance documents, mitigation of PCE and TCE vapors was required at five locations: Sheriff Substation office, Highway Superintendent office, former Alamo Ambulance substation, Pole Barn garage, and Block Garage (Figure 2).

On February 13, 2007, Conrad Geoscience conducted radius-of-influence testing at selected locations in the Pole Barn and Block Garage buildings to evaluate the ability

of vapors to move laterally beneath the slabs. Three-quarter-inch holes were drilled in several locations in each building. Titanium chloride tracer smoke was injected into each hole to evaluate ambient pressure gradient conditions at each location, without inducing a vacuum. Subsequently, a vacuum was applied to a diagnostic hole and tracer smoke injected into other nearby holes to determine sub-slab communication. Upon completion of diagnostic testing, each hole was plugged with insulation and urethane sealant. Based on diagnostic testing in the pole barn and block garage buildings, it was determined that, installation of an active sub-slab depressurization system (SSDS)in trenches dug in each building, would effectively mitigate exposure to soil vapor intrusion. SSDSs were installed in 2007 and 2008, including a third SSDS, installed without trenching, in the Sheriff's Substation office. Details of these systems and their installation are included section 2.0.

1.3.4 Underground Structures

In 1989 and 1993, the Highway Department removed two underground storage tanks (USTs) containing gasoline and diesel fuel, respectively. No underground storage tanks remain at the site.

1.4 SUMMARY OF REMEDIAL ACTIONS

The site was remediated in accordance with the NYSDEC-approved Remedial Action Plan dated June, 2000 and Vapor Intrusion Mitigation Workplan, dated November, 2006.

The following is a summary of the Remedial Actions performed at the site:

1. In December 2000, Conrad Geoscience Corp. supervised the excavation, stockpiling, and disposal of approximately 650 cubic yards (1,011 tons) of contaminated soil from the former UST locations. The exact locations of the former USTs are not known, but are presumed to be within the December 2000 excavation footprint shown in Figure 4. Contaminated soil was transported off-site, thermally treated and recycled. The excavation measured approximately 1,500 square feet and averaged 11 feet in depth.

2. The excavation was backfilled to grade with clean soil and repaved.
3. On March 10, 2006, Conrad Geoscience installed sub-slab vapor sampling ports in five indoor locations: Dutchess County Sheriff's Substation Office, Highway Superintendents Office, former Alamo Ambulance Substation, Pole Barn, and Block Garage (Figure 2). In March 2007 Conrad Geoscience Corp. installed an SSDS in the Sheriff's Substation office. In May and June 2008, Conrad Geoscience Corp. completed the trenching and sub-slab depressurization system installation at the Town of Beekman Highway Garage and Pole Barn (Figures 5 to 8, 12-13).

Remedial activities were completed at the site in June, 2008.

1.4.1 Removal of Contaminated Materials from the Site

As outlined in the ROD (November, 1999), the potential for direct human or animal contact with contaminated soils was eliminated to the extent practical. In order to accomplish this, contaminated soils were excavated, stockpiled, and removed from the site. Contaminated soil was stockpiled and placed on 6-mil polyethylene sheeting. Each pile was covered by additional sheets of polyethylene sheeting. Sorbent booms were placed around the perimeter of each pile. Twenty-two post-excavation soil samples were collected from the floor and sidewalls as excavation progressed. Between March 8 and 20, 2001, stockpiled soil was transported by Tri-X Transport to the Environmental Soil Management Inc. (ESMI) in Fort Edward, New York. At ESMI, the soil was weighed, then thermally treated and recycled. Weigh bills provided by Tri-X and ESMI indicate that a total of 1,011 tons of contaminated soil were transported to ESMI from the Beekman Highway site. A map illustrating the excavation area is shown in Figure 4; however, the location of the former USTs is not known.

1.4.2 On-Site and Off-Site Treatment Systems

All contaminated soil was removed off-site, and no long-term treatment systems were installed as part of the site remedy for soil contamination. As previously

summarized, SSDSs are in place in the Sheriff's Substation, Block Garage and Pole Barn on site.

1.4.3 Remaining Contamination

As previously summarized, the bulk of contaminated soil was excavated, transported off-site, and recycled. However, some petroleum contaminated soil is likely to remain close to the water table in the area excavated in December, 2000, and to extend some distance laterally from this area.

1.4.4 Engineering and Institutional Controls

Since remaining contamination is present at this site, Engineering Controls have been implemented to protect public health and the environment for the applicable future use. The Controlled Property has the following Engineering Controls:

1. A cover system consisting of asphalt pavement is in place covering the area of excavated soil.
2. Sub-slab depressurization systems are in place in the Sheriff's Substation, Block Garage, and Pole Barn.
3. Natural attenuation of groundwater contaminants.

2.0 ENGINEERING AND INSTITUTIONAL CONTROL PLAN

2.1 INTRODUCTION

2.1.1 General

Remedial activities completed at the site were conducted in accordance with the NYSDEC-approved Remedial Action Plan for the Town of Beekman Highway Garage (Soil Remediation Report - April, 2001). Additionally, soil vapor mitigation was required and completed in June, 2008 A summary of the remedial strategies and EC/ICs implemented at the site are as follows:

Since remaining contaminated soil, groundwater, and soil vapor exist beneath the site, Engineering Controls and Institutional Controls (EC/ICs) are required to protect human health and the environment. This Engineering and Institutional Control Plan describes the procedures for the implementation and management of all EC/ICs at the site. The EC/IC Plan is one component of the SMP and is subject to revision by NYSDEC.

2.1.2 Purpose

- The basic operation and intended role of each implemented EC/IC;
- A Description of the features that should be evaluated during each periodic inspection and compliance certification period;
- A Description of plans and procedures to be followed for implementation of EC/ICs, such as the implementation of an Excavation Plan for the safe handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the site;
- Any other provisions necessary to identify or establish methods for implementing the EC/ICs required by the site remedy, as determined by the NYSDEC; and
- A description of the reporting requirements for these controls.

2.2 ENGINEERING CONTROLS

2.2.1 Engineering Control Systems

2.2.1.1 Soil Cover System

Exposure to remaining contamination in soil/fill at the site is prevented by a soil cover system placed over the area in which petroleum hydrocarbon soil was excavated at the site (Figure 4). This cover system is comprised of approximately 1,500 square feet of asphalt pavement with an average clean fill depth of 11 feet.

2.2.1.2 Sub-slab Depressurization Systems

Procedures for operating and maintaining the sub-slab depressurization systems (SSDS) are documented in the Operation and Maintenance Plan (Section 4 of this SMP). Procedures for monitoring the system are included in the Monitoring Plan (Section 3 of this SMP). The Monitoring Plan also addresses severe condition inspections in the event that a severe condition, which may affect controls at the site, occurs. Three SSDSs were installed at the site between March 2007 and June, 2008; installation and construction details of each system are listed below. The objective of each SSDS is to prevent vapor contaminants from entering the indoor airspace of each building by lowering the pressure beneath the slab.

Sheriff's Substation

In March 2007 Conrad Geoscience Corp. installed a sub-slab depressurization system (SSDS) in the Sheriff Substation office. One suction pit was installed in the Sheriff Substation office. Approximately 5 to 10-gallons of sub-slab soils were removed during suction pit installation. A 4-inch diameter PVC pipe was inserted into the suction pit, extending no more than one inch below the slab and sealed with concrete. The PVC pipe was vented to the outside of the building and fitted with a RadonAway™ RP145 fan.

Product specifications for the sub-slab venting fan are attached (Appendix A). Plan view and cross-sectional schematics are depicted in Figures 12 and 13, respectively.

Block Garage

Between May and June 2008, Conrad Geoscience supervised the installation of the sub-slab depressurization system in the Block Garage. The installation began with excavation of a north-south trench that runs longitudinally along the center of the concrete slab in the maintenance area (Figure 5). The trench footprint was saw-cut to a width of 3 feet and soil was removed to a depth of 3.5 feet using a small excavator. A 4-inch perforated, corrugated, flexible HDPE pipe was installed in the bottom of the trench. Five-foot long sections of solid corrugated pipe were installed near external walls to prevent drawing vapors from outside of the building. The trench was backfilled with ¾-inch washed gravel and covered with filter fabric and poured concrete.

Two Fantech™ HP220 fans were connected to the perforated trench piping. Cross-sectional schematics depicting trench and mitigation system construction details are attached (Figure 6). Product specifications for the sub-slab venting fans are attached (Appendix A).

Pole Barn

Between May and June 2008, Conrad Geoscience supervised the installation of the sub-slab depressurization system in the Pole Barn. An L-shaped trench was excavated inside the Pole Barn maintenance area (Figure 7). The north-south segment of the excavation begins at the Alamo Ambulance Substation and runs south along the western wall of the Highway Superintendent's Office. From there it runs west along the center of the concrete slab to the western wall of the Pole Barn building. The trench footprint was saw-cut to a width of 3 feet and soil was removed to a depth of 3.5 feet using a small excavator. A 4-inch perforated, corrugated, flexible HDPE pipe was installed in the bottom of the trench. Five-foot long sections of solid corrugated pipe were installed near external walls to prevent drawing vapors from outside of the building.

The trench was backfilled with ¾-inch washed gravel and covered with filter fabric and poured concrete.

Two RadonAway™ GP401 fans were connected to the perforated trench piping. Cross-sectional schematics depicting trench and mitigation system construction details

are attached (Figure 8). Product specifications for the sub-slab venting fans are attached (Appendix A).

2.2.1.3 Natural Attenuation Monitoring

The natural attenuation of contaminants in groundwater at the site will be monitored annually, or until modifications to the monitoring plan are approved by the NYSDEC. Details of this monitoring program are outlined in sections below.

- A network of monitoring wells is located in the Beekman Highway Garage property (Figure 2).
- Monitoring wells will be sampled following the USEPA low-flow purge (minimal drawdown) sampling technique.

2.2.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, the remedial processes will be considered to be completed when effectiveness monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The specific determination of when the following remedial processes are complete will be made in compliance with Section 6.6 of NYSDEC DER-10.

2.2.2.1 Composite Cover System

The composite cover system is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals in perpetuity.

2.2.2.2 Sub-slab Depressurization System (SSDS)

The active SSD system will not be discontinued unless prior written approval is granted by the NYSDEC. In the event that monitoring data indicates that the SSD system is no longer required, a proposal to discontinue the SSD system will be submitted by the property owner to the NYSDEC and NYSDOH.

2.2.2.3 Monitored Natural Attenuation

Groundwater monitoring activities to assess the natural attenuation of contaminants at the site will continue, as determined by the NYSDEC, until residual groundwater concentrations are found to be consistently below NYSDEC standards or have become asymptotic over an extended period. A set of groundwater cleanup objectives has been established for this site and are included in the table below. Monitoring will continue until permission to discontinue is granted in writing by the NYSDEC.

Table 1. Groundwater cleanup objectives.

Year		***MW-18S*** PCE (ug/l)	***MW-18S*** Total VOCs (ug/l)	***MW-4*** PCE (ug/l)	***MW-5*** Total VOCs (ug/l)
1	2000	326	311	75	142
2	2001	242	287	62	139
3	2002	179	264	51	135
4	2003	133	244	42	132
5	2004	99	225	35	129
6	2005	73	207	29	126
7	2006	54	191	24	122
8	2007	40	176	19	119
9	2008	30	163	16	116
10	2009	22	150	13	113
11	2010	16	138	11	110
12	2011	12	128	9	108
13	2012	9	118	7	105
14	2013	7	108	6	103
15	2014	5	100	5	100

2.3 INSTITUTIONAL CONTROLS

A series of Institutional Controls is required by the Record of Decision to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination; and, (3) limit the use and development of the site. Adherence to these Institutional Controls on the site is required by the Deed Restriction and will be implemented under this Site Management Plan. These Institutional Controls are:

- Compliance with the Deed Restriction by the Grantor and the Grantor's successors and assigns with all elements of this SMP;
- All Engineering Controls must be operated and maintained as specified in this SMP;
- All Engineering Controls on the Controlled Property must be inspected and certified at a frequency and in a manner defined in the SMP;
- Groundwater and soil vapor monitoring must be performed as defined in this SMP;
- Data and information pertinent to Site Management for the Controlled Property must be reported at the frequency and in a manner defined in this SMP;
- On-site environmental monitoring devices, including groundwater monitoring wells and sub-slab depressurization systems, must be protected and replaced as necessary to ensure the devices function in the manner specified in this SMP.

2.3.1 Soil Vapor Intrusion Evaluation

Prior to the construction of any enclosed structures located over areas that contain remaining contamination, a soil vapor intrusion (SVI) evaluation will be performed to determine whether any mitigation measures are necessary to eliminate potential exposure to volatile organic vapors in the proposed structure. Alternatively, an SVI mitigation system will be installed as an element of the building foundation without first conducting an investigation. This mitigation system will include a vapor barrier and passive sub-slab depressurization system that is capable of being converted to an active system.

Prior to conducting an SVI investigation or installing a mitigation system, a work plan will be developed and submitted to the NYSDEC and NYSDOH for approval. This work plan will be developed in accordance with the most recent NYSDOH "Guidance for Evaluating Vapor Intrusion in the State of New York". Measures to be employed to mitigate potential vapor intrusion will be evaluated, selected, designed, installed, and maintained based on the SVI evaluation, the NYSDOH guidance, and construction details of the proposed structure.

Preliminary SVI sampling data will be forwarded to the NYSDEC and NYSDOH for initial review and interpretation. The final data will be transmitted to the agencies, along with a recommendation for follow-up action, such as mitigation.

SVI sampling results, evaluations, and follow-up actions will also be summarized in the subsequent Periodic Review Report.

2.4 EXCAVATION PLAN

The site remedy allows for continued Town operations. At present, no excavation plans exist for the site. Any future intrusive work that will penetrate, encounter or disturb the remaining contamination, and any modifications or repairs to the existing cover system will be performed in compliance with this Excavation Plan (EP). Intrusive construction work must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) prepared for the site. This HASP must be in compliance with DER-10, and 29 CFR 1910, 29 CFR 1926, and all other applicable Federal, State and local regulations, and will be prepared by the contractor at the time of planned activities. Based on future changes to State and federal health and safety requirements, and specific methods employed by future contractors, the HASP and CAMP will be updated and re-submitted with the notification provided in Section 2.4.1.1 below. Any intrusive construction work will be performed in compliance with the EP, HASP and CAMP, and will be included in the periodic inspection and certification reports submitted under the Site Management Reporting Plan (See Section 2.6).

The site owner and associated parties preparing the remedial documents submitted to the State, and parties performing this work, are completely responsible for the safe performance of all invasive work, the structural integrity of excavations, and for structures that may be affected by excavations (such as building foundations and bridge footings).

The site owner will ensure that site development activities will not interfere with, or otherwise impair or compromise, remedial activities proposed in this Remedial Action Work Plan.

Any future EP will include a survey prepared by a surveyor licensed to practice in the State of New York. This survey will include all primary contaminant sources (including but not limited to tanks and hotspots) identified during the Preliminary Site Assessment, Remedial Investigation, and Remedial Action Plan.

2.4.1 Notification

At least 10 days prior to the start of any activity that is reasonably anticipated to encounter remaining contamination, the site owner or their representative will notify the Department. Currently, this notification will be made to:

John J. Rashak - NYSDEC Project Manager for Site Management Phase

New York State Dept. of Environmental Conservation
Division of Environmental Remediation
21 South Putt Corners Road
New Paltz, New York 12561-1620

Phone: (845) 256-3153

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent, plans for site re-grading, intrusive elements or utilities to be installed below the soil cover, or any work that may impact an engineering control;

- A summary of environmental conditions anticipated in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;
- A schedule for the work, detailing the start and completion of all intrusive work;
- A statement that the work will be performed in compliance with this EP and 29 CFR 1910.120;
- A copy of the contractor's health and safety plan, in electronic format;
- Identification of disposal facilities for potential waste streams;
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

2.4.2 Soil Screening Methods

Visual, olfactory and instrument-based soil screening will be performed by a qualified environmental professional during all remedial and development excavations into known or potentially contaminated material (remaining contamination). Soil samples will be placed into a ziploc bag and screened using a PID with headspace techniques. Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the COC.

Soils will be segregated based on previous environmental data and these screening results into material that requires off-site disposal, material that requires testing, material that can be returned to the subsurface, and material that can be used as cover soil.

2.4.3 Stockpile Methods

Soil stockpiles will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters and other discharge points. Stockpiles will be kept covered at all times with appropriately anchored 6 millimeter poly tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced. Stockpiles will be inspected at a minimum once each week and after every

storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by NYSDEC.

2.4.4 Materials Excavation and Load Out

A qualified environmental professional or person under their supervision will oversee all invasive work and the excavation and load-out of all excavated material. The owner of the property and its contractors are solely responsible for safe execution of all invasive and other work performed under this Plan. The presence of utilities and easements on the site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment to the planned work under this SMP is posed by utilities or easements on the site. A truck wash will be operated on-site during load out activity. The qualified environmental professional will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the site until the activities performed under this section are complete.

Loaded vehicles leaving the site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements). Locations where vehicles enter or exit the site shall be inspected daily for evidence of off-site soil tracking.

The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the site are clean of dirt and other materials derived from the site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to site-derived materials.

2.4.5 Materials Transport Off-Site

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Material transported by trucks exiting the site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

All trucks will be washed prior to leaving the site. Truck wash waters will be collected and disposed of off-site in an appropriate manner.

Truck transport routes will be identified that will: (a) limit transport through residential areas and past sensitive sites; (b) use city-mapped truck routes; (c) minimize off-site queuing of trucks entering the facility; (d) limit total distance to major highways; and (e) promote safety in access to highways.

Trucks will be prohibited from stopping and idling in the neighborhood outside the project site. Egress points for truck and equipment transport from the site will be kept clean of dirt and other materials during site remediation and development. Queuing of trucks will be performed on-site in order to minimize off-site disturbance. Off-site queuing will be prohibited.

2.4.6 Materials Disposal Off-Site

All soil/fill/solid waste excavated and removed from the site will be treated as contaminated and regulated material and will be transported and disposed in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations. If disposal of soil/fill from this site is proposed for unregulated off-site disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC. Unregulated off-site management of materials from this site will not occur without formal NYSDEC approval.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, i.e. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C/D recycling facility, etc. Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic

Review Report. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled, at a minimum, as a Municipal Solid Waste pursuant to 6NYCRR Part 360-1.2. Material that does not meet the lower of the SCOs for residential use or groundwater protection will not be taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility) without a beneficial use determination issued by NYSDEC.

2.4.7 Materials Reuse On-Site

Only soil screened and segregated in accordance with the procedures outlined above, and demonstrated to meet all applicable standards can be reused on site.

Contaminated on-site material, including historic fill and contaminated soil, that is acceptable for re-use on-site will be placed below the demarcation layer or impervious surface, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

Any demolition material proposed for reuse on-site will be sampled for asbestos and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing on-site will not be performed without prior NYSDEC approval. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the site will not be reused on-site.

2.4.8 Fluids Management

All liquids to be removed from the site, including excavation dewatering and groundwater monitoring well purge and development waters, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids will not be recharged back to the land surface or subsurface of the site, but will be managed off-site.

Discharge of water generated during large-scale construction activities to surface waters (i.e. a local pond, stream or river) will be performed under a SPDES permit.

2.4.9 Cover System Restoration

After the completion of soil removal and any other invasive remedial activities, the cover system will be restored in a manner that complies with the Record of Decision and the Remedial Action Plan. The demarcation layer, consisting of asphalt will be replaced to provide a visual reference to the top of the 'Remaining Contamination Zone', the zone that requires adherence to special conditions for disturbance of remaining contaminated soils defined in this Site Management Plan. If the type of cover system changes from that which exists prior to the excavation (i.e., the current asphalt cover is replaced by a tarp), this will constitute a modification of the cover element of the remedy and the upper surface of the Remaining Contamination. A figure showing the modified surface will be included in the subsequent Periodic Review Report and in any updates to the Site Management Plan.

2.4.10 Backfill from Off-Site Sources

All materials proposed for import onto the site will be approved by the qualified environmental professional and will be in compliance with provisions in this SMP, applicable regulations (6NYCRR 375-6.7(d)) and guidance (DER-10) prior to receipt at the site.

Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the site.

All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d). Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this site, will not be imported onto the site without prior approval by NYSDEC. Solid waste will not be imported onto the site.

Trucks entering the site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

2.4.11 Stormwater Pollution Prevention

The remedial construction program did not require a Stormwater Pollution Prevention (SWPP) control plan because the area of disturbance was less than one acre, and therefore no SWPP was required.

2.4.12 Contingency Plan

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition.

Sampling will be performed on product, sediment and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides and PCBs), unless the site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone to NYSDEC's Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in daily and periodic electronic media reports.

2.4.13 Community Air Monitoring Plan

This Community Air Monitoring Plan (CAMP) will be implemented in conformance with the NYSDOH Generic Community Air Monitoring Plan as contained in DER-10 TECHNICAL GUIDANCE FOR SITE INVESTIGATION AND REMEDIATION; and TAGM 4031. The particulate monitoring at the perimeter of the exclusion zone will be with a MIE PDM-3 MiniRam or equivalent.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations shall be monitored continuously at the up-wind and down-wind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

If the downwind PM-10 particulate level is 100 micrograms per cubic meter (ug/m3) greater than background (up-wind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that down-wind PM-10 particulate levels are not observed at concentrations exceeding 150 ug/m3 greater than the up-wind level and provided that no visible dust is migrating from the work area.

If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are more than 150 ug/m3 greater than the up-wind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the down-wind PM-10 particulate concentration to within 150 ug/m3 of the up-wind level and in preventing visible dust migration.

All readings must be recorded and be available for NYSDEC and NYSDOH personnel to review.

Sampling stations will be placed on the eastern portion of the site based on generally prevailing wind conditions. These locations will be adjusted on a daily or more frequent basis based on actual wind directions to provide an upwind and at least two downwind monitoring stations.

Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

2.4.14 Odor Control Plan

This odor control plan is capable of controlling emissions of nuisance odors off-site. Specific odor control methods to be used on a routine basis will include periodic inspections by the environmental professional. If nuisance odors are identified at the site boundary, or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the property owner's Remediation Engineer, and any measures that are implemented will be discussed in the Periodic Review Report.

All necessary means will be employed to prevent on- and off-site nuisances. At a minimum, these measures will include: (a) limiting the area of open excavations and size of soil stockpiles; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils; If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-site disposal; (e) use of chemical odorants in spray or misting systems; and, (f) use of staff to monitor odors in surrounding neighborhoods.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by

sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

2.4.15 Dust Control Plan

A dust suppression plan that addresses dust management during invasive on-site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved though the use of a dedicated on-site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles;
- Clearing and grubbing of larger areas will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production;
- Gravel will be used on roadways to provide a clean and dust-free road surface;
- On-site roads will be limited in total area to minimize the area required for water truck sprinkling.

2.4.16 Other Nuisances

A plan for rodent control will be developed and utilized by the contractor prior to and during site clearing and site grubbing, and during all remedial work.

A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.

2.5 INSPECTIONS AND NOTIFICATIONS

2.5.1 Periodic Inspections

Periodic inspections of all remedial components installed at the site will be conducted at the frequency specified in SMP Monitoring Plan schedule. A comprehensive site-wide inspection will be conducted annually, regardless of the

frequency of the Periodic Review Report. The inspections will determine and document the following:

- Whether Engineering Controls continue to perform as designed;
- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this SMP and the Environmental Easement;
- Achievement of remedial performance criteria;
- Sampling and analysis of appropriate media during monitoring events;
- If site records are complete and up to date; and
- Changes, or needed changes, to the remedial or monitoring system.

Inspections will be conducted in accordance with the procedures set forth in the Monitoring Plan of this SMP (Section 3), using the Inspection Form included in Appendix C. The reporting requirements are outlined in the Site Management Reporting Plan (Section 2.6).

If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs, an inspection of the site will be conducted within 5 days of the event to verify the effectiveness of the EC/ICs implemented at the site by a qualified environmental professional as determined by NYSDEC.

2.5.2 Notifications

Notifications will be submitted by the property owner to the NYSDEC as needed for the following reasons:

- 60-day advance notice of any proposed changes in site use that are required under the terms of the Order on Consent #W3-0791-9705, 6NYCRR Part 375, and/or Environmental Conservation Law.
- 10-day advance notice of any proposed ground-intrusive activities.
- Notice within 48 hours of any damage or defect to the foundations structures that reduces or has the potential to reduce the effectiveness of other Engineering Controls and likewise any action to be taken to mitigate the damage or defect.

- Notice within 48 hours of any emergency, such as a fire, flood, or earthquake that reduces or has the potential to reduce the effectiveness of Engineering Controls in place at the site, including a summary of actions taken, or to be taken, and the potential impact to the environment and the public.
- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action shall be submitted to the NYSDEC within 45 days and shall describe and document actions taken to restore the effectiveness of the ECs.

Notifications will be made to:

John J. Rashak - NYSDEC Project Manager for Site Management Phase

New York State Dept. of Environmental Conservation
Division of Environmental Remediation
21 South Putt Corners Road
New Paltz, New York 12561-1620

Phone: (845) 256-3153.

In the event that NYSDEC develops a centralized notification system, that system will be used instead.

2.5.3 Evaluation and Reporting

The results of the inspection and site monitoring data will be evaluated as part of the EC/IC certification to confirm that the:

- EC/ICs are in place, are performing properly, and remain effective;
- The Monitoring Plan is being implemented;
- Operation and maintenance activities are being conducted properly and, based on the above items, the site remedy continues to be protective of public health and the environment and is performing as designed in the RAWP and FER.

2.6 REPORTING PLAN

2.6.1 Introduction

A Periodic Review Report will be submitted to NYSDEC every third year, beginning one year after the Certificate of Completion is issued. The Periodic Review

Report will be prepared in accordance with NYSDEC DER-10 "Technical Guidance for Site Investigation and Remediation" once every three years. The frequency of submittal of the Periodic Review Report may be modified with the approval of the NYSDEC.

This report will include the following;

- Identification of all EC/ICs required by the Remedial Action Work Plan for the site;
- An assessment of the effectiveness of all Institutional and Engineering Controls for the site;
- An evaluation of the Engineering and Institutional Control Plan and the Monitoring Plan for adequacy in meeting remedial goals;
- Results of the required annual site inspections and severe condition inspections, if any;
- Certification of the EC/ICs.

2.6.2 Certification of Engineering and Institutional Controls

Inspection of the EC/ICs will occur at the frequency described in Section 3 (Monitoring Plan) and Section 4 (Operation and Maintenance Plan). After the last inspection of the reporting period, a qualified environmental professional will prepare a Periodic Review Report which certifies that:

- On-site ECs/ICs are unchanged from the previous certification;
- They remain in-place and are effective;
- The systems are performing as designed;
- Nothing has occurred that would impair the ability of the controls to protect the public health and environment;
- Nothing has occurred that would constitute a violation or failure to comply with any operation and maintenance plan for such controls;

- Access is available to the site by NYSDEC and NYSDOH to evaluate continued maintenance of such controls;
- Site use is compliant with the environmental easement.

2.6.3 Periodic Review Report

A Periodic Review Report will be submitted every third year, beginning one year after the Site Management Plan is completed. The report will be submitted within 45 days of the end of each certification period. Groundwater and vapor intrusion monitoring reports will be submitted annually, and as determined by NYSDEC thereafter. Media sampling results will also be incorporated into the Periodic Review Report. The report will include:

- EC/IC certification;
- All applicable inspection forms and other records generated for the site during the reporting period;
- A summary of any monitoring data and/or information generated during the reporting period with comments and conclusions;
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data sufficient for the Department to evaluate contaminant concentration trends;
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted electronically in a NYSDEC-approved format;
- A site evaluation, which includes the following:
    - The compliance of the remedy with the requirements of the site-specific RAP, ROD;
    - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;

- Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring Plan for the media being monitored;
- Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan; and
- The overall performance and effectiveness of the remedy.

The Periodic Review Report will be submitted, in hard-copy format, to the NYSDEC Regional Office located closest to the site, and in electronic format to NYSDEC Central Office and the NYSDOH Bureau of Environmental Exposure Investigation.

3.0 MONITORING PLAN

3.1 INTRODUCTION

3.1.1 General

The Monitoring Plan describes the measures for evaluating the performance and effectiveness of the implemented ECs to reduce or mitigate contamination at the site. ECs at the site include Sub-Slab Depressurization System and the Natural Attenuation of contaminants in groundwater. This Monitoring Plan may only be revised with the approval of NYSDEC.

3.1.2 Purpose and Schedule

This Monitoring Plan describes the methods to be used for groundwater and soil vapor sampling.

- Sampling and analysis of appropriate media (e.g., groundwater, indoor air, soil vapor);
- Assessing compliance with NYSDEC groundwater standards (6NYCRR Part 700-705, Class GA Groundwater Standards) and soil vapor intrusion guidelines;
- Assessing achievement of the remedial performance criteria;
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment; and
- Preparing the necessary reports for the various monitoring activities.

To adequately address these issues, this Monitoring Plan provides information on:

- Sampling locations, protocol, and frequency;
- Information on all designed monitoring systems (e.g., well logs);
- Analytical sampling program requirements;
- Reporting requirements;
- Quality Assurance/Quality Control (QA/QC) requirements;

- Inspection and maintenance requirements for monitoring wells;
- Monitoring well decommissioning procedures; and
- Annual inspection and periodic certification.

Groundwater and vapor sampling occur will annually in the third quarter of the year. Monitoring remedy performance and overall reduction in contamination on-site will be conducted indefinitely, as determined by NYSDEC. Trends in contaminant levels in air and groundwater in the affected areas, will be evaluated to determine if the remedy continues to be effective in achieving remedial goals. Monitoring programs for environmental media are summarized in Table 2 and outlined in detail in Sections 3.2 through 3.5 below.

Table 2: Media Monitoring Schedule

Monitoring Program	Frequency*	Matrix	Analysis
Groundwater	Annually	Groundwater	VOCs via EPA 524.2
Indoor Air	Annually	Air	VOCs via TO-15

* The frequency of events will be conducted as specified until otherwise approved by NYSDEC and NYSDOH

3.2 GROUNDWATER MONITORING PROGRAM

The Record of Decision (ROD) indicates that contaminants in soil and groundwater on the Town site have resulted in a significant threat to human health and the environment. Accordingly, the ROD includes requirements for long-term groundwater monitoring of migration and attenuation of the contaminant plume over time. As indicated in the ROD, monitoring the natural attenuation of contaminants will continue until contaminant concentrations show a steadily decreasing trend sufficient to

be protective of public health and the environment. Target cleanup objectives for Monitoring Wells MW-4, MW-5 and MW-18S are shown in Table 1 (section 2.2.2.3).

In 2002, NYSDEC modified the groundwater sampling program to consist of quarterly sampling of Monitoring Well MW-4, and annual sampling of ten on-site wells and seven off-site wells (Figure 9). In June, 2008 the NYSDEC removed the seven off-site (residential supply) wells from the sampling program. Collection and analysis of groundwater samples from the ten on-site wells has been conducted every fifth quarter through May 2009 to capture differences in seasonality. As summarized in the cover letter for this document, Conrad Geoscience Corp. is requesting a reduction in the frequency of sampling on-site wells and eliminating Monitoring Wells MW-19S, MW-19D, MW-16R, and MW-18D from the sampling program. As a result, monitoring Wells MW-3, MW-4, MW-5, MW-8, MW-17 and MW-18S will be sampled annually, in the 2nd or 3rd quarter of the year.

3.2.1 Monitoring System Design

On-site monitoring wells that are part of the current groundwater monitoring program and are sampled annually include: MW-3, MW-4, MW-5, MW-8, MW-17 and MW-18S (Figure 9). Groundwater samples will be analyzed for VOCs via USEPA Method 524.2. Monitoring well construction details, including total depth and screened intervals for each well, are provided in Appendix B. Screened geologic units for monitoring wells vary between sandy gravels, silty sands, and sand-silt gravels. Figure 10 shows the most recent extent of the groundwater contaminant plume (as characterized by Total VOCs) in the overburden aquifer.

3.2.2 Groundwater Monitoring Schedule

Sampling of Monitoring Wells MW-3, MW-4, MW-5, MW-8, MW-17 and MW-18S will be conducted annually. The sampling frequency may be modified with the approval of NYSDEC. The SMP will be modified to reflect changes in sampling plans approved by NYSDEC. Deliverables for the groundwater monitoring program are specified below.

3.2.3 Sampling Event Protocol

All monitoring well sampling activities will be recorded in a field book and a groundwater-sampling log will be created. After opening each monitoring well, the depth to water will be measured to the nearest 0.01 ft using an electronic sounding device. Samples will be collected using low-flow purge techniques. Water temperature, pH, conductivity, turbidity, oxidation-reduction potential, and dissolved oxygen will be monitored during purging until all parameters have stabilized, and turbidity is less than 50 nephelometric turbidity units (NTUs). Samples will be collected via a peristaltic pump or bladder pump and dedicated tubing, recorded on separate chain-of-custody forms for each property, and shipped on ice via overnight delivery to Paradigm Environmental Services, a NYSDOH-approved and ELAP certified laboratory, for analysis.

Sample containers will be labeled with appropriate information such as site location, sample identification, date and time of collection, analysis requested, and sampler's initials. A chain-of-custody form will be completed for all samples collected. One copy is retained and two are sent with the samples to the laboratory. Samples will be shipped to the laboratory via overnight delivery within 24 hours of collection. Samples will be analyzed for volatile organic compounds (VOCs) via USEPA Method 524.2.

Other observations (e.g., well integrity, etc.) will be recorded in the field, which will serve as the sampling log. The well sampling log will serve as the inspection form for the groundwater monitoring well network.

3.3 MONITORING WELL REPAIRS, REPLACEMENT AND DECOMMISSIONING

If biofouling or silt accumulation occurs in the on-site and/or off-site monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced (as per the Monitoring Plan), if an event renders the wells unusable. Repairs and/or replacement of wells in the

monitoring well network will be performed based on assessments of structural integrity and overall performance.

The NYSDEC will be notified prior to any repair or decommissioning of monitoring wells for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent periodic report. Well decommissioning without replacement will be done only with the prior approval of NYSDEC. Well abandonment will be performed in accordance with NYSDEC's "Groundwater Monitoring Well Decommissioning Procedures." Monitoring wells that are decommissioned because they have been rendered unusable will be reinstalled in the nearest available location, unless otherwise approved by the NYSDEC.

3.4 SURFACE WATER, BIOTA

There are no surface water bodies on site.

3.5 MONITORING QUALITY ASSURANCE/QUALITY CONTROL

All sampling and analyses will be performed in accordance with the requirements of Standard Operating Procedures included in Appendix D. Main Components of the QAPP include:

- QA/QC Objectives for Data Measurement;
- Sampling Program:
    - Sample containers will be provided by the laboratory with any appropriate preservative. Containers with preservative will be tagged as such.
    - Sample holding times will be in accordance with the NYSDEC ASP requirements.
    - One field QC sample will be collected during the sampling event and a trip blank will be shipped with sample containers provided by the laboratory.
- Sample Tracking and Custody;

- Calibration Procedures:

    - All field analytical equipment will be calibrated immediately prior to each day's use. Calibration procedures will conform to manufacturer's standard instructions.
    - The laboratory will follow all calibration procedures and schedules as specified in USEPA SW-846 and subsequent updates that apply to the instruments used for the analytical methods.

- Analytical Procedures;
    - The laboratory will be a NYSDOH ELAP-Certified laboratory

3.6 COVER SYSTEM MONITORING

Soil excavation was completed in December, 2001. The excavated area was filled with clean soil and covered with asphalt pavement covering approximately 1,500 square feet.

3.6.1 INSPECTION SCHEDULE

The asphalt cover system will be inspected annually. Inspection frequency is subject to change with the approval of the NYSDEC. Unscheduled inspections and/or sampling may take place when a suspected failure of the asphalt cover system has been reported or an emergency occurs that is deemed likely to affect the operation of the system. Monitoring deliverables for the asphalt cover system are specified later in this Plan.

3.6.2 General Equipment Inspection

A visual inspection of the asphalt system will be conducted during the annual groundwater monitoring. The asphalt cover system will be monitored for cracks, holes, and other structural damage at the surface that would compromise its ability to prevent water infiltration.

3.7 SUB-SLAB DEPRESSURIZATION SYSTEM MONITORING

According to the current New York State Department of Health (NYSDOH) document entitled "Guidance for Evaluating Soil Vapor Intrusion in the State of New York," mitigation of PCE and TCE vapors is required at five locations on site: Sheriff's Substation office, Highway Superintendent's office, former Ambulance Substation, Pole Barn garage, and Block Garage (Figure 2). Sub-slab depressurization systems were installed at the Sheriff's Substation, Block Garage, and Pole Barn and were activated in June, 2008. Details of the system construction are provided in section 2.2.1.2 and diagrams are provided in Figures 5 to 8 and 12 to 13. After sub-slab depressurization system installation, Conrad Geoscience conducted system effectiveness monitoring at the Block Garage and Pole Barn.

On June 30, 2008, Conrad Geoscience installed five system effectiveness monitoring points in the Block Garage and seven points in the Pole Barn. System effectiveness monitoring points were installed by coring a 2-inch diameter "outer" hole into the floor slab to a depth of 1 ½ inches; then drilling a 5/8-inch diameter "inner" hole through the bottom of the floor slab. The concrete slab thickness is nominally 6 inches. A stainless steel tube, or nipple, was inserted into the inner hole and cemented in place, with the open bottom end of the nipple extending approximately 2 inches below the base of the slab. The top end of the nipple is fitted with a threaded stainless steel coupling and a removable threaded stainless steel plug. The top of the removable plug is flush with the floor grade.

Conrad Geoscience used an Infiltec DM1 Digital Micro-Manometer to measure the differential pressure between the interior space and sub-slab environment in the Block Garage and Pole Barn. One end of a 1/4-inch ID Teflon tube is connected to a compression fitting, which threads into the monitoring point. The other end of the tube connects to a brass pressure port on the micro-manometer. The second brass pressure port on the micro-manometer is open to the indoor air space. The micro-manometer measures the differential pressure between the two brass ports. Conrad Geoscience also

documented the U-tube manometer readings from each sub-slab depressurization system. These tests indicated that the SSDS was creating negative pressure beneath the slab.

3.7.1 INSPECTION SCHEDULE

The vapor intrusion mitigation systems in the Sheriff's Substation, Block Garage, and Pole Barn operate 24 hours a day, 7 days a week. The vapor intrusion mitigation systems will be inspected quarterly to ensure they are functioning properly.

Inspection frequency is subject to change with the approval of the NYSDEC. Unscheduled inspections and/or sampling may take place when a suspected failure of the sub-slab depressurization system has been reported or an emergency occurs that is deemed likely to affect the operation of the system. Monitoring deliverables for the sub-slab depressurization system are specified later in this Plan.

3.7.2 General Equipment Inspection

During system inspections, readings from the U-tube manometers will be recorded in the vapor mitigation operation and maintenance inspection form (Appendix C). The vapor intrusion mitigation system piping will be inspected for cracks and broken seals during these inspections.

A visual inspection of the complete system will be conducted during the monitoring event. Sub-slab depressurization system components to be monitored include, but are not limited to, the following: sample port integrity, fan operation, and trench pressure gradients.

If any equipment readings are not within their typical range, any equipment is observed to be malfunctioning, or the system is not performing within specifications, maintenance and repair (as per the Operation Maintenance Plan in Section 4 of this SMP) will be performed immediately, and the sub-slab depressurization system will be restarted.

3.7.3 Sampling Event Protocol

Periodic vapor intrusion sampling will be conducted annually during the heating season. All samples will be collected over a 24-hour sampling period. Summa canisters

will be labeled and shipped via overnight delivery to a NYSDOH ELAP-approved laboratory. Samples will be analyzed for volatile organic compounds (VOCs) via USEPA Method TO-15.

Sub-slab vapor sampling is unnecessary due to the installation of SSD systems in all affected buildings. Indoor air sampling inside the Pole Barn and Block Garage is unnecessary due to the known use of chlorinated solvents and petroleum products in these buildings.

An indoor air sample will be collected annually at breathing height at the former sub-slab sampling location in the Sheriff's Substation and Highway Superintendants office (see Figure 5).

The annual Indoor air sample is collected in a one-liter summa canister. The flow controller is connected to the 1-liter summa canister and sample collection begins. The flow controller is set to collect a 1-liter sample over a 24-hour period. At the end of the 24-hour sampling period, summa canisters are shipped via overnight delivery to a NYSDOH-certified laboratory to be analyzed.

3.8 NATURAL ATTENUATION SYSTEM MONITORING

The Record of Decision (ROD) indicates that contaminants in soil and groundwater on the Town site have resulted in a significant threat to human health and the environment. The annual monitoring program is described in detail in section 3.2 and 3.7. The distribution of monitoring wells is shown in Figure 2 and well construction diagrams are included in Appendix B.

3.8.1 INSPECTION SCHEDULE

Monitoring wells will be inspected during each annual sampling event. Inspection frequency is subject to change with the approval of the NYSDEC. Unscheduled inspections and/or sampling may take place when a suspected failure of the monitoring well system has been reported or an emergency occurs that is deemed likely to affect the operation of the system. Monitoring deliverables for the monitoring well system are specified later in this Plan.

3.8.2 General Equipment Inspection

A visual inspection of the complete system will be conducted during the monitoring event. Monitoring well components to be inspected include: lock, cap, stick-up casing, and PVC. If any equipment readings are not within their typical range, any equipment is observed to be malfunctioning, or the system is not performing within specifications, maintenance and repair as per the Operation and Maintenance Plan will be performed immediately.

3.8.3 Sampling Event Protocol

Sampling event protocol is outlined in section 3.2.4 of this document.

3.8 MONITORING REPORTING REQUIREMENTS

Forms and any other information generated during regular monitoring events and inspections will be kept on file on-site. All forms, and other relevant reporting formats used during the monitoring/inspection events, will be (1) subject to approval by NYSDEC and (2) submitted at the time of the Periodic Review Report, as specified in Section 2.6.

All media and engineering system monitoring results will be reported to NYSDEC on a periodic basis in the Periodic Review Report. The report will include, at a minimum:

- Description of the activities performed;
- Type of samples collected (e.g., sub-slab vapor, indoor air, outdoor air, etc);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, inspection checklists, etc.);
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and sampling locations;

- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (to be submitted electronically in the NYSDEC-identified format);
- Any observations, conclusions, or recommendations; and
- A determination as to whether groundwater conditions have changed since the last reporting event.

4.0 OPERATION AND MAINTENANCE PLAN

4.1 INTRODUCTION

This Operation and Maintenance Plan describes the measures necessary to operate and maintain the mechanical components of the vapor intrusion remedy selected for the site. This Operation and Maintenance Plan:

- Includes the steps necessary to allow individuals unfamiliar with the site to operate and maintain the sub-slab depressurization systems;
- Includes an operation and maintenance contingency plan; and,
- Will be updated periodically to reflect changes in site conditions or the manner in which the sub-slab depressurization systems are operated and maintained.

Information on non-mechanical Engineering Controls (i.e. soil cover system) is provided in Section 3 - Engineering and Institutional Control Plan. A copy of this Operation and Maintenance Plan, along with the complete SMP, will be kept at the site. This Operation and Maintenance Plan is not to be used as a stand-alone document, but as a component document of the SMP.

4.2 ENGINEERING CONTROL SYSTEM OPERATION AND MAINTENANCE

4.2.1 Scope

The vapor intrusion mitigation systems in the Sheriff's Substation, Block Garage, and Pole Barn operate 24 hours a day, 7 days a week. The vapor intrusion mitigation systems will be inspected in conjunction with quarterly groundwater monitoring to ensure they are functioning properly. A copy of the most recent SSDS evaluation in the Sheriff's Substation and Block Garage is included in Appendix C. During system inspections, readings from the U-tube manometers will be recorded in the SSDS operation and maintenance inspection form (Appendix C). The vapor intrusion mitigation system piping will be inspected for cracks and broken seals during these inspections.

4.2.2 System Start-Up and Testing

The vapor intrusion mitigation systems in the Sheriff's Substation, Block Garage, and Pole Barn operate 24 hours a day, 7 days a week. If the system stops operating, Conrad Geoscience personnel should be contacted immediately to provide system maintenance.

The system is inspected quarterly by Conrad Geoscience personnel. During each quarterly inspection, the piping system is visually analyzed for structural integrity, U-tube manometer readings are recorded and adequate fan function is verified. If significant changes are made to the system, and the system must be restarted, a manometer should be connected to sample ports in the building slab to verify a negative pressure beneath the slab.

4.2.3 System Operation: Routine Operation Procedures

A periodic inspection (annually) of the fan at each SSDS should be conducted. As summarized in section 3.7, Conrad Geoscience has relied on an Infiltec DM1 Digital Micro-Manometer to measure the differential pressure between the interior space and sub-slab environment in the Block Garage and Pole Barn. The following steps should be performed to ensure the SSDS is operating normally:

- One end of a 1/4-inch ID Teflon tube is connected to a compression fitting, which threads into the monitoring point;
- The other end of the tube connects to a brass pressure port on the micro-manometer;
- The second brass pressure port on the micro-manometer is left open to the indoor air space;
- The micro-manometer measures the differential pressure between the two brass ports; the sub-slab sampling port should have a pressure lower than the atmospheric conditions. Generally, the differential reading should be a negative number;
- Inspect each U-tube manometer to verify each system is operating normally.

4.2.4 System Operation: Routine Equipment Maintenance

Routine maintenance of the fans at each SSDS is not required, beyond the normal periodic inspections.

4.2.5 System Operation: Non-Routine Equipment Maintenance

- Prior to any troubleshooting, turn the breaker switch at the electric panel into the off position;
- If the PVC piping to the SSDS is damaged or the fan not is not operating, contact a local radon mitigation system contractor;
- The following contractor has performed repairs on the SSDSs at the site:

Dave Barber (845) 527-0057
Acceptable Environment
PO Box 7275
Newburgh, New York 12555

4.3 MAINTENANCE REPORTING REQUIREMENTS

Maintenance reports and any other information generated during regular operations at the site will be kept on-file on-site. All reports, forms, and other relevant information generated will be available upon request to the NYSDEC and will be submitted as part of the Periodic Review Report, as specified in the 2.6 of this SMP.

4.3.1 Routine Maintenance Reports

Checklists or forms (see Appendix C) will be completed during each routine maintenance event. Checklists/forms will include, but not be limited to, the following information:

- Date;
- Name, company, and position of person(s) conducting maintenance activities;
- Maintenance activities conducted;

- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet); and,
- Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc. (attached to the checklist/form).

4.3.2 Non-Routine Maintenance Reports

During each non-routine maintenance event, a form will be completed which will include, but not be limited to, the following information:

- Date;
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities;
- Presence of leaks;
- Date of leak repair;
- Other repairs or adjustments made to the system;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet); and,
- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

4.4 CONTINGENCY PLAN

Emergencies may include injury to personnel, fire or explosion, environmental release, or serious weather conditions. In the event any of these conditions occurs, follow the procedures below.

4.4.1 Emergency Telephone Numbers

In the event of any environmentally-related situation or unplanned occurrence requiring assistance, the Owner or Owner's representative(s) should contact the appropriate party from the contact list below. For emergencies, appropriate emergency

response personnel should be contacted. Prompt contact should also be made to both the Town Supervisor's office at 845-724-5300 (ext. 2) and Conrad Geoscience at 845-454-2544. These emergency contact lists must be maintained in an easily accessible location at the site.

Table 3: Emergency Contact Numbers

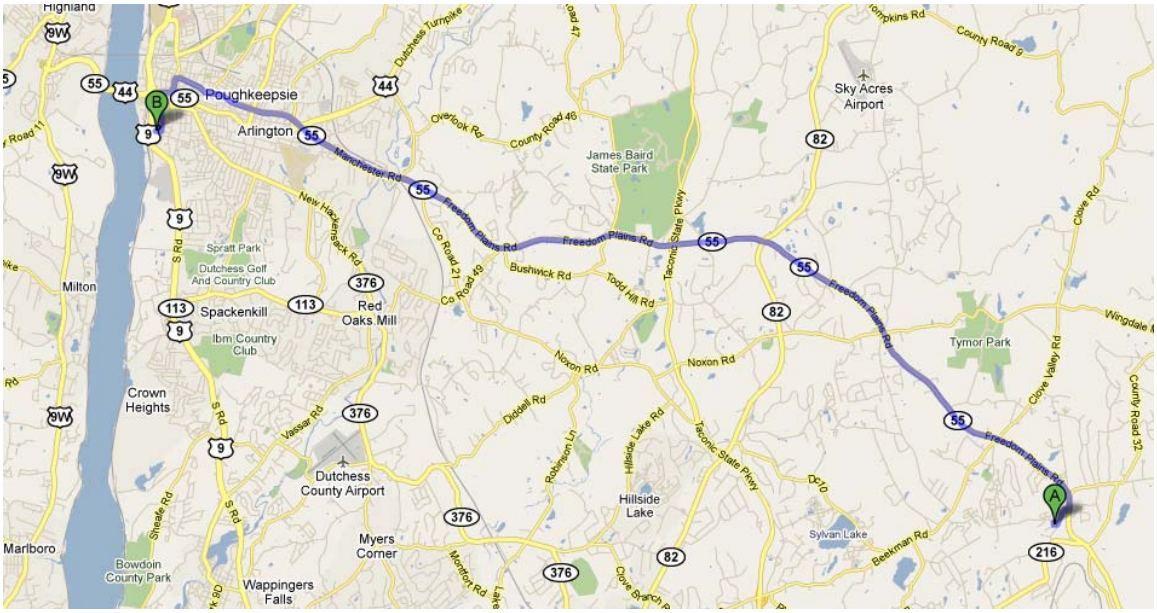
Medical, Fire, and Police:	911
One Call Center:	(800) 245-2828 or 811 (3 day notice required for utility markout)
Poison Control Center:	(800) 222-1222
Pollution Toxic Chemical Oil Spills:	(800) 424-8802
NYSDEC Spills Hotline	(800) 457-7362

Table 4: Other Contact Numbers

Christopher B. Brown; Conrad Geoscience	845-454-2544; 914-475-2650
Stephanie LaRose; Conrad Geoscience	845 454-2544; 914 475 8957
John A. Conrad; Conrad Geoscience	845 454 -2544; 914-475-2670
Matthew Tymchak; Conrad Geoscience	845-454-544; 845-797-0321

4.4.2 Map and Directions to Vassar Brothers Hospital

The Alamo Ambulance Company is located in the Fire House immediately adjacent to the Highway Garage property on Beekman Road. See the map below for directions to the Vassar Brothers Dyson Center Hospital:



1.	Head north on Dougies Pl toward Beekman-Poughquag Rd/County Road 7/Main St	184 ft
2.	Turn right at Beekman-Poughquag Rd/County Road 7/Main St	256 ft
3.	Turn left at Church St	0.3 mi
4.	Take the 1st right onto Connecting Rd	381 ft
5.	Turn left at Freedom Plains Rd/NY-55 W Continue to follow NY-55 W	13.8 mi
6.	Slight left at East-West Arterial/NY-55 W/US-44 W Continue to follow NY-55 W/US-44 W	2.2 mi
7.	Turn left at Jefferson St	0.2 mi
8.	Continue onto Lincoln Ave	0.3 mi
9.	Turn right at Reade Pl	463 ft

Vassar Brothers Dyson Center
45 Reade Pl
Poughkeepsie, NY 12601-3990

4.4.3 Response Procedures

As appropriate, the fire department and other emergency response group will be notified immediately by telephone of the emergency. The emergency telephone number list is found in Table 3. The list will also be posted prominently at the site and made readily available to all personnel at all times.

FIGURES

SITE

PHOTO: NY STATE GIS CLEARINGHOUSE, 2004

BASE MAP: USGS TOPOGRAPHIC MAP, 1:24,000 SERIES

ALL LOCATIONS ARE APPROXIMATE

Miles

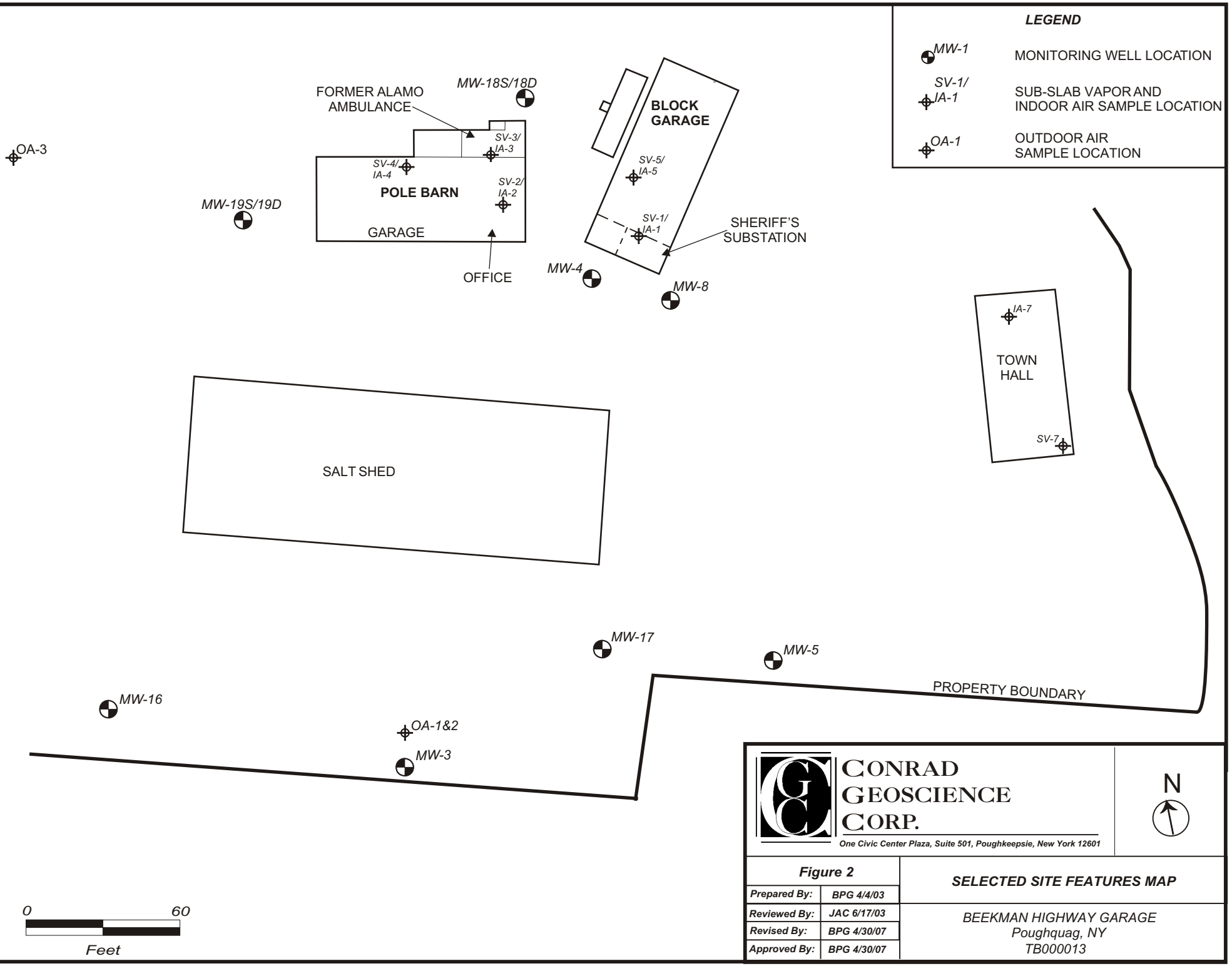
0 0.5 1 2

N

CONRAD GEOSCIENCE CORP.

One Civic Center Plaza, Suite 501, Poughkeepsie, New York 12601

Figure 1	***SITE LOCATION***
Prepared By: SPL 3/6/09	
Reviewed By:	*BEEKMAN HIGHWAY GARAGE*
Revised By:	*Beekman, New York*
Approved By: SPL 3/9/09	*TB000013*



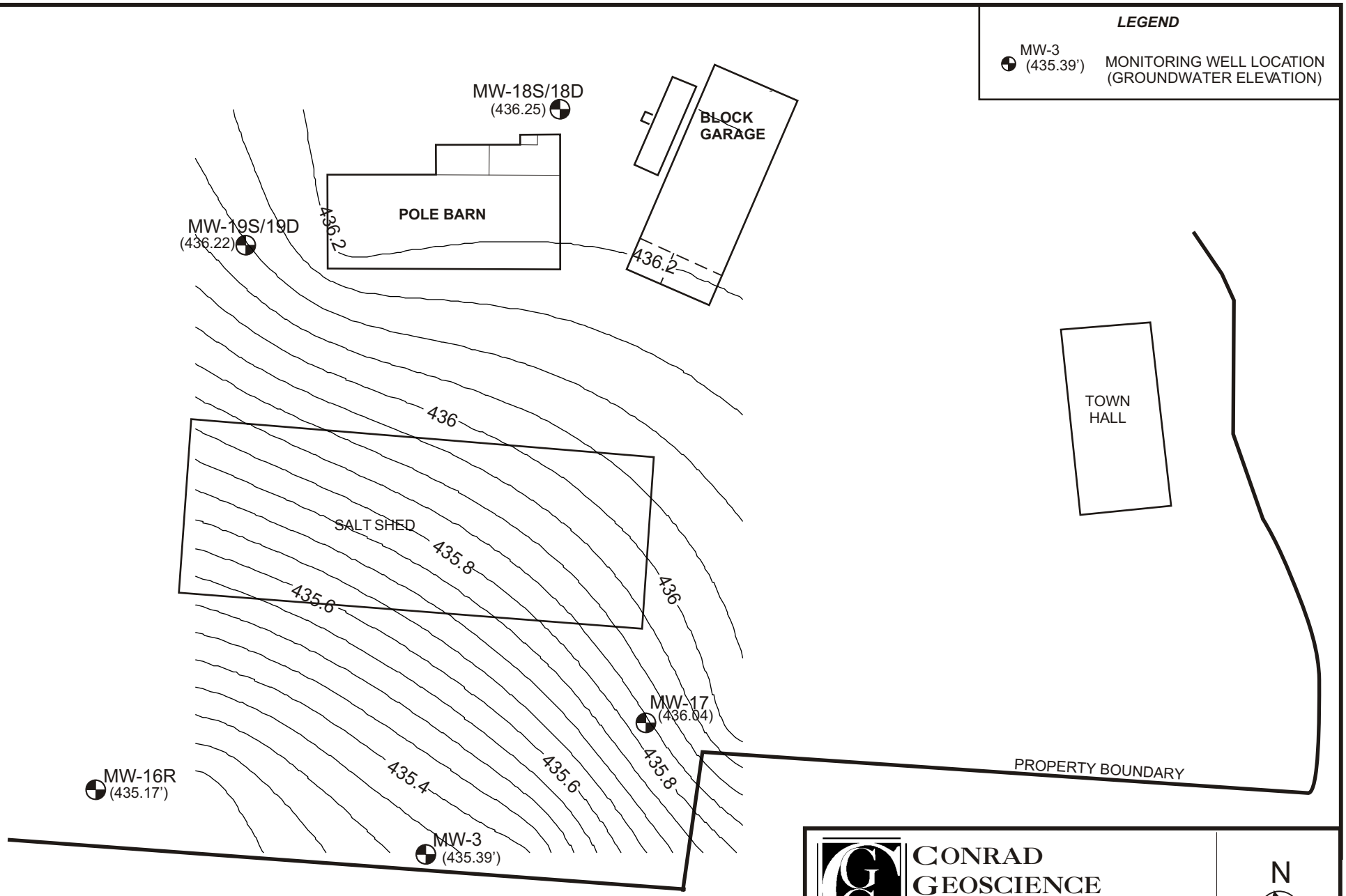
CONRAD GEOSCIENCE CORP.

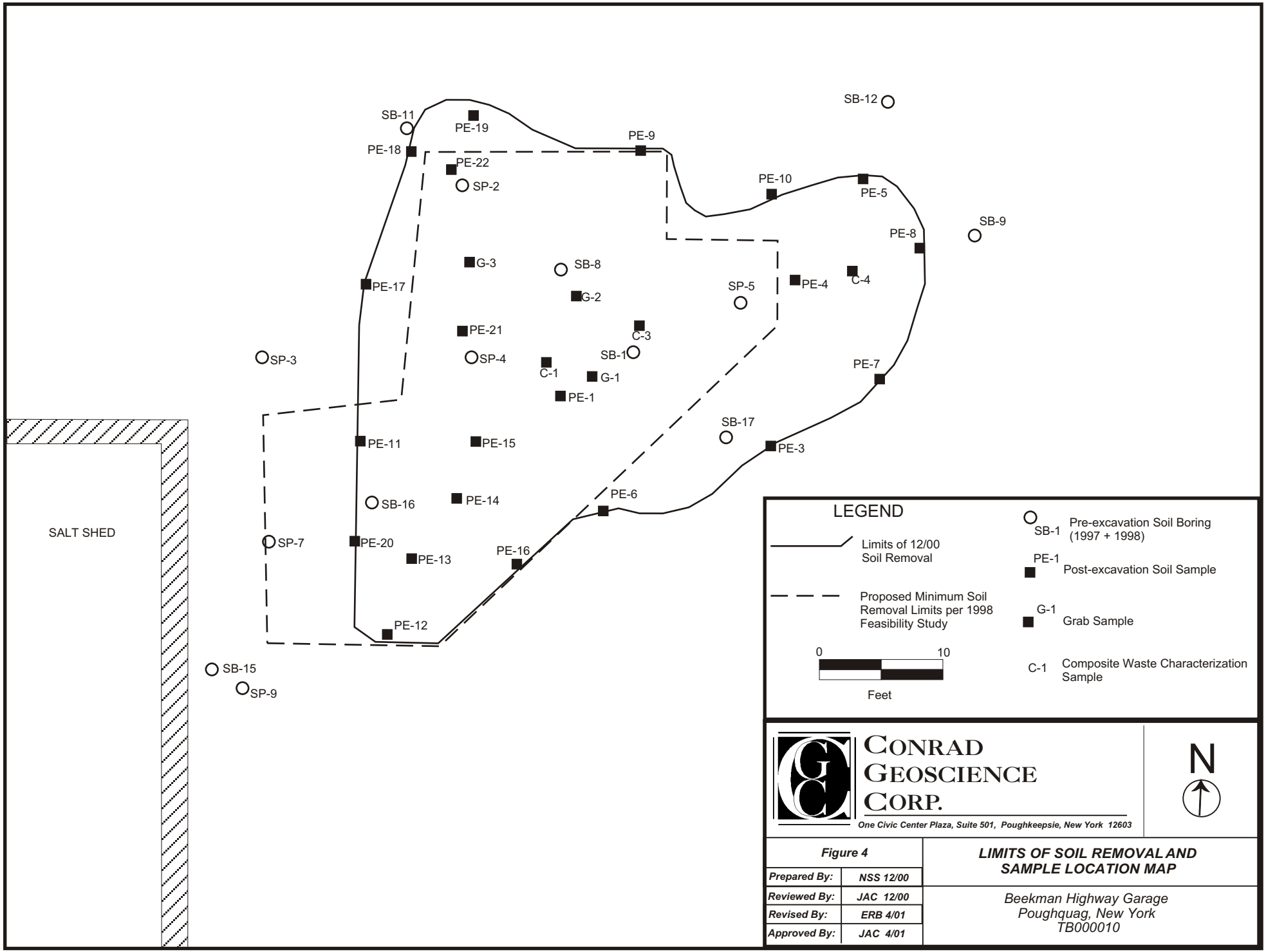
One Civic Center Plaza, Suite 501, Poughkeepsie, New York 12601

Figure 2	
Prepared By:	BPG 4/4/03
Reviewed By:	JAC 6/17/03
Revised By:	BPG 4/30/07
Approved By:	BPG 4/30/07

SELECTED SITE FEATURES MAP

BEEKMAN HIGHWAY GARAGE
Poughquag, NY
TB000013


LEGEND
MW-3
(435.39')
MONITORING WELL LOCATION
(GROUNDWATER ELEVATION)
MW-18S/18D
(436.25)
BLOCK
GARAGE
POLE BARN
MW-19S/19D
(436.22)
436.2
436.2
TOWN
HALL
436
SALT SHED
435.8
435.6
436
MW-17
(436.04)
435.8
435.6
435.4
PROPERTY BOUNDARY
MW-16R
(435.17')
MW-3
(435.39')
0
60
Feet
GROUNDWATER CONTOUR INTERVAL = 0.05 FEET
GROUNDWATER ELEVATIONS COLLECTED 2-14-08
CONRAD
GEOSCIENCE
CORP.
One Civic Center Plaza, Suite 501, Poughkeepsie, New York 12601
N
Figure 3
GROUNDWATER CONTOUR MAP
Prepared By: BPG 4/4/03
Reviewed By: JAC 6/17/03
Revised By: SPL 6/9/08
Approved By: MPT 6/9/09
BEEKMAN HIGHWAY GARAGE
Poughquag, NY
TB000013

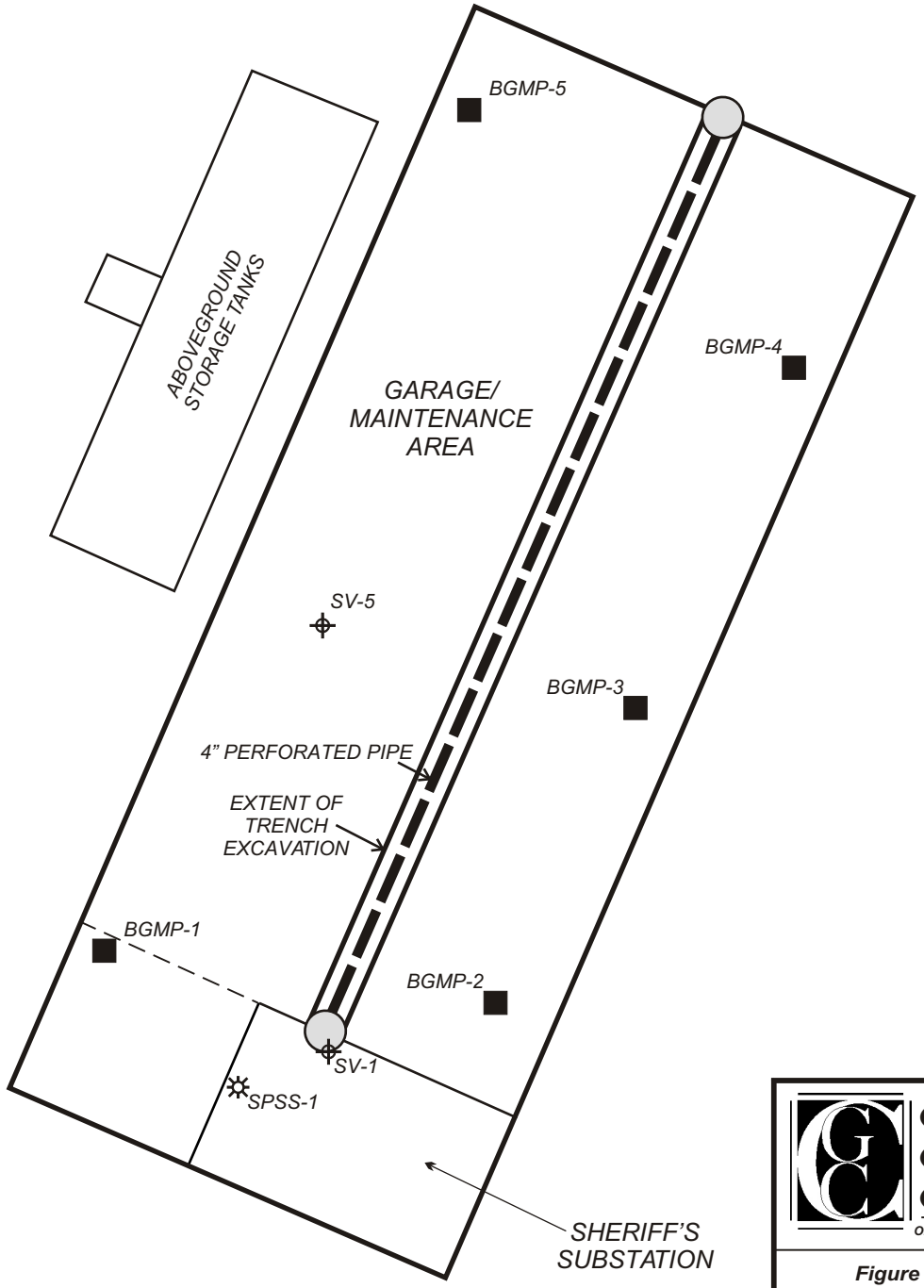


CONRAD GEOSCIENCE CORP.

One Civic Center Plaza, Suite 501, Poughkeepsie, New York 12603

Figure 4	***LIMITS OF SOIL REMOVAL AND SAMPLE LOCATION MAP***
Prepared By:	***NSS 12/00***
Reviewed By:	***JAC 12/00***
Revised By:	***ERB 4/01***
Approved By:	***JAC 4/01***

Beekman Highway Garage
Poughquag, New York
TB000010



LEGEND

- BGMP-1 — SUB-SLAB DEPRESSURIZATION SYSTEM EFFECTIVENESS MONITORING POINT
- SV-1 — SUB-SLAB VAPOR SAMPLE LOCATION
- SPSS-1 — SUB-SLAB DEPRESSURIZATION SUCTION PIT LOCATION
- FAN LOCATION

0 15
FEET

N

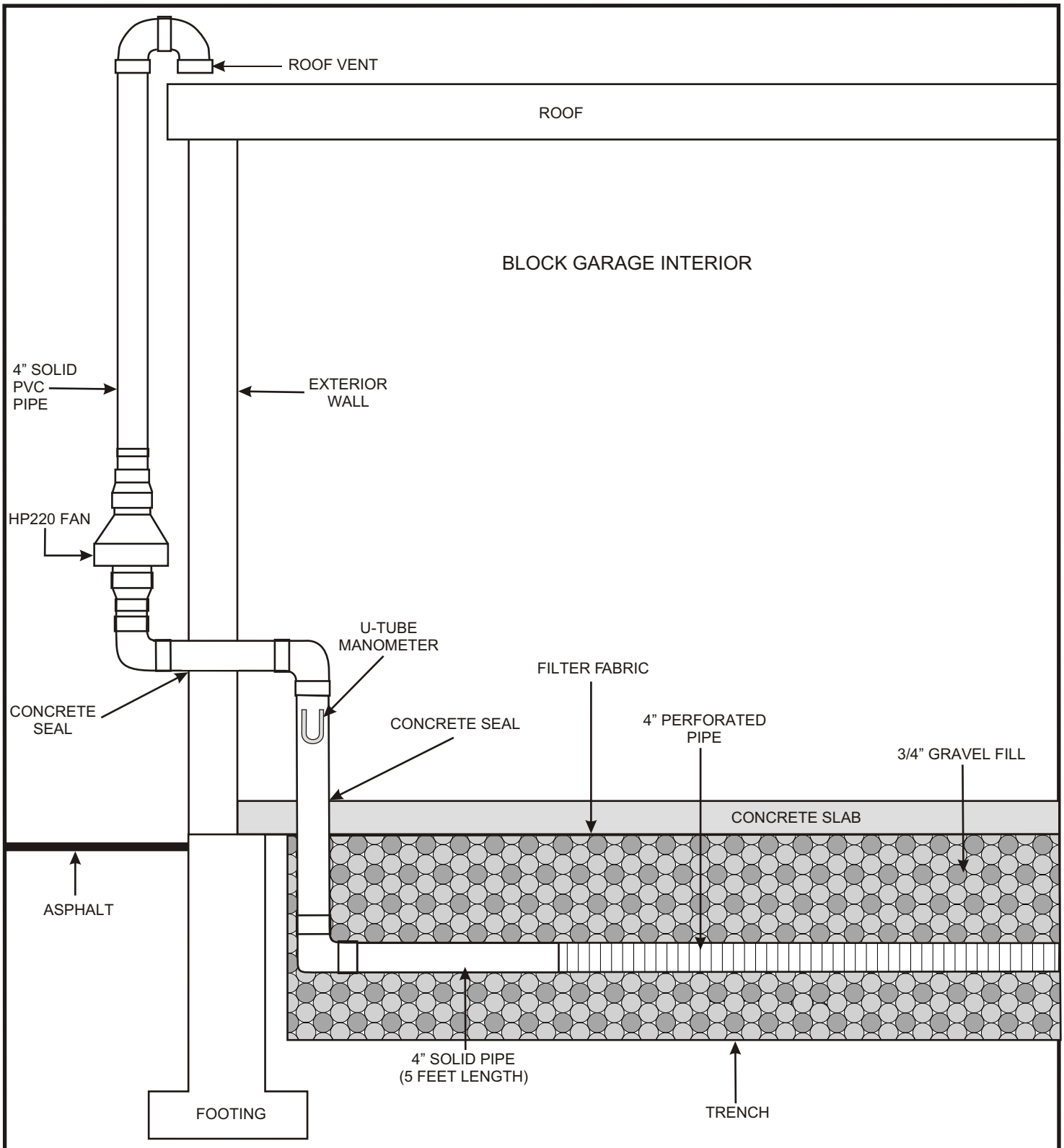
ALL LOCATIONS ARE APPROXIMATE

CONRAD GEOSCIENCE CORP.
One Civic Center Plaza, Suite 501, Poughkeepsie, New York 12601

Figure 5	
Prepared By:	BPG 4/4/03
Reviewed By:	JAC 6/17/03
Revised By:	SPL 8/26/08
Approved By:	BPG 8/26/08

BLOCK GARAGE BUILDING SUB-SLAB DEPRESSURIZATION SYSTEM

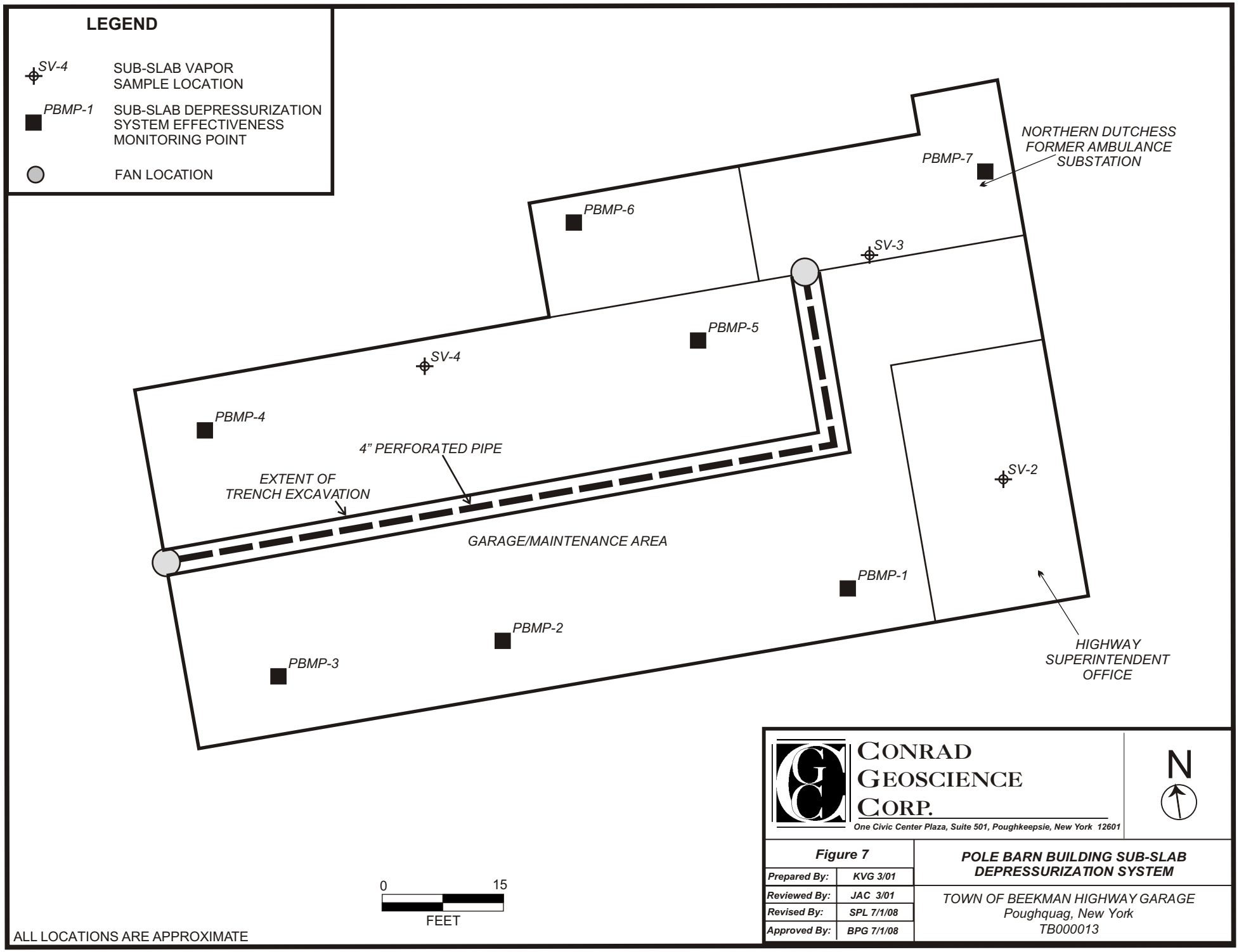
TOWN OF BEEKMAN HIGHWAY GARAGE
Poughquag, NY
TB000013



NOT TO SCALE

CONRAD GEOSCIENCE CORP.
One Civic Center Plaza, Suite 501, Poughkeepsie, New York 12601

Figure 6		BLOCK GARAGE TRENCH CROSS-SECTION SCHEMATIC
Prepared By:	ADQ 3/23/07	
Reviewed By:		BEEKMAN HIGHWAY GARAGE
Revised By:	SPL 8-27-08	Poughquag, NY
Approved By:	BPG 8-27-08	TB000013



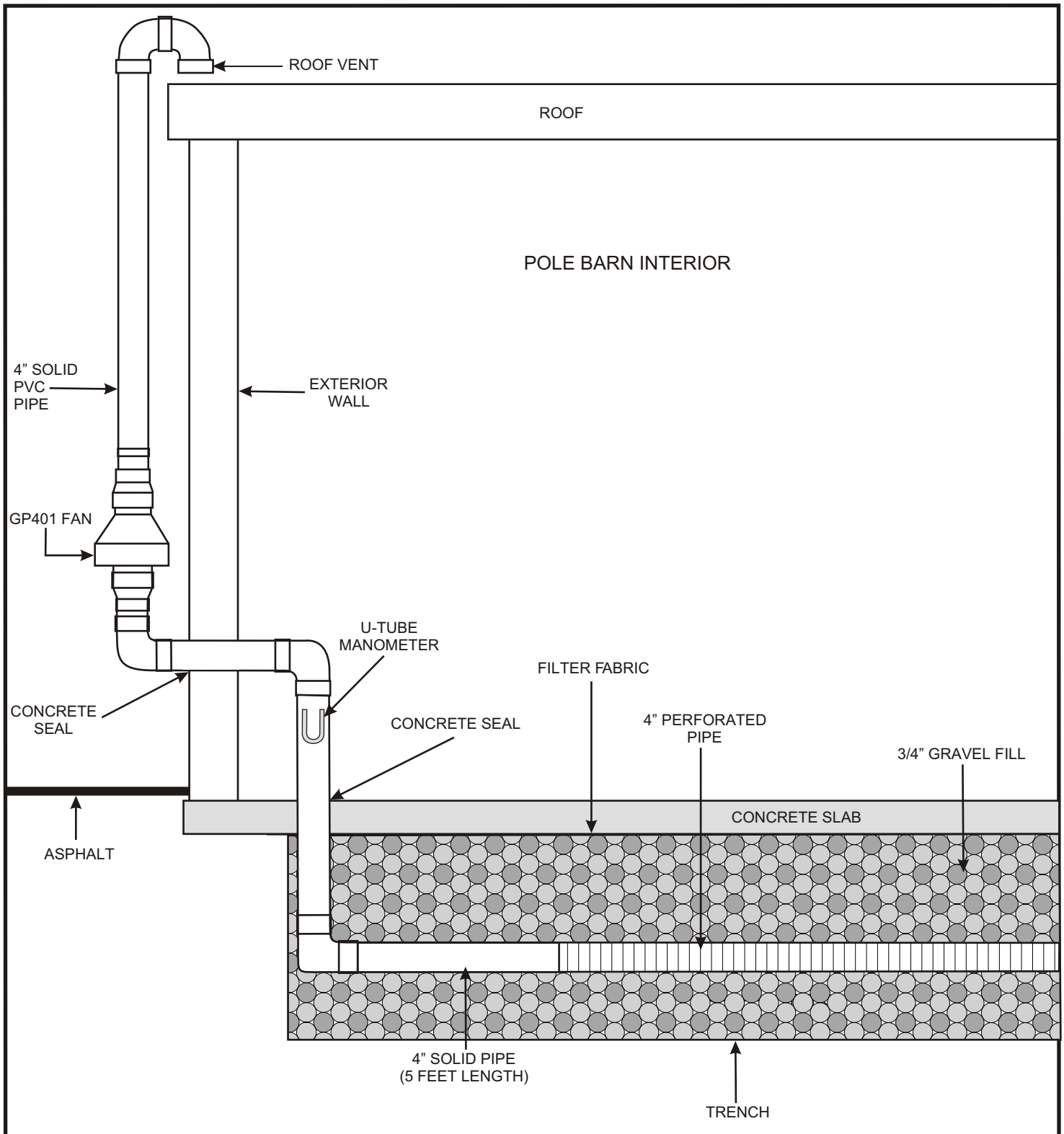
CONRAD GEOSCIENCE CORP.

One Civic Center Plaza, Suite 501, Poughkeepsie, New York 12601

Figure 7	
Prepared By:	KVG 3/01
Reviewed By:	JAC 3/01
Revised By:	SPL 7/1/08
Approved By:	BPG 7/1/08

POLE BARN BUILDING SUB-SLAB DEPRESSURIZATION SYSTEM

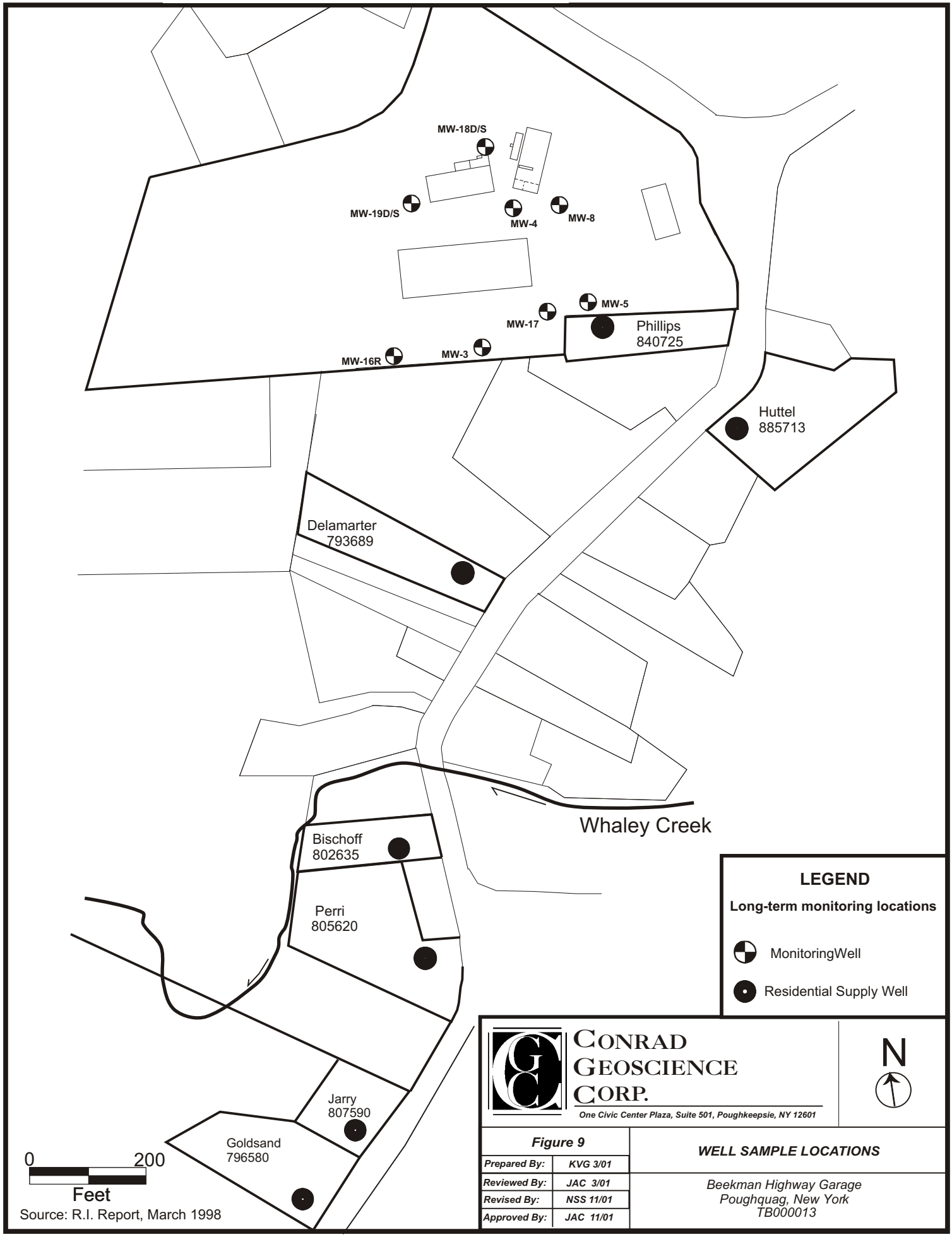
TOWN OF BEEKMAN HIGHWAY GARAGE
Poughquag, New York
TB000013

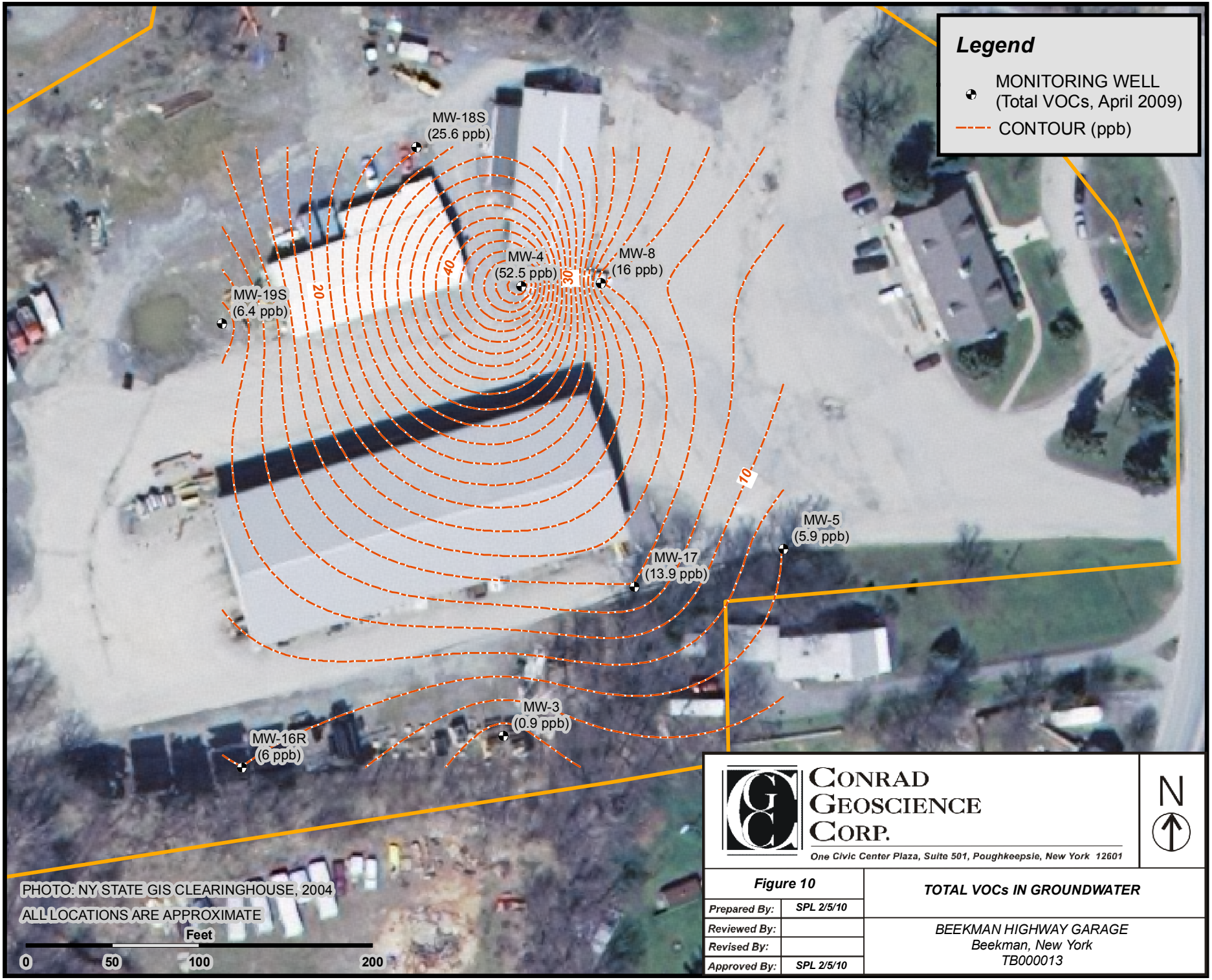


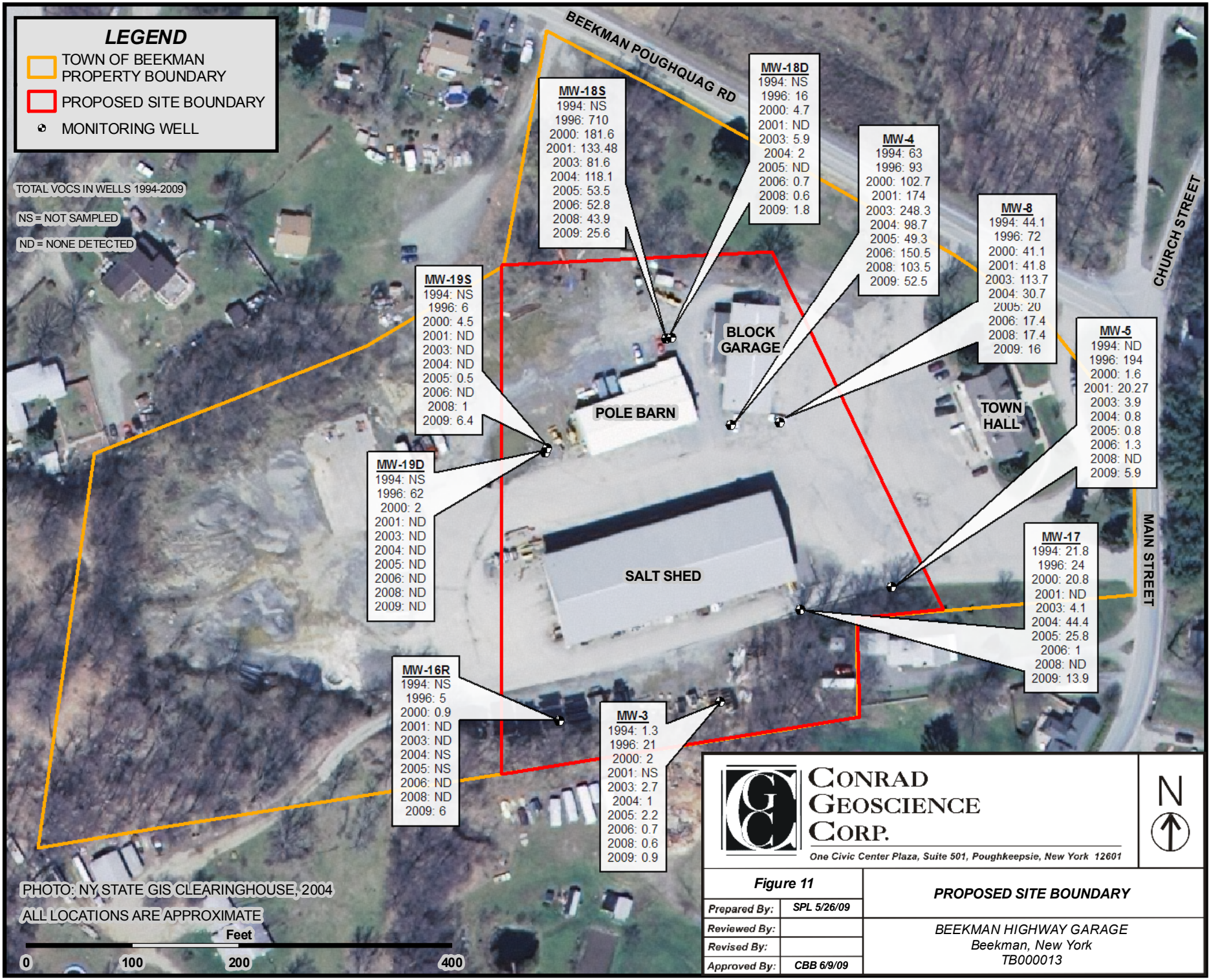
NOT TO SCALE

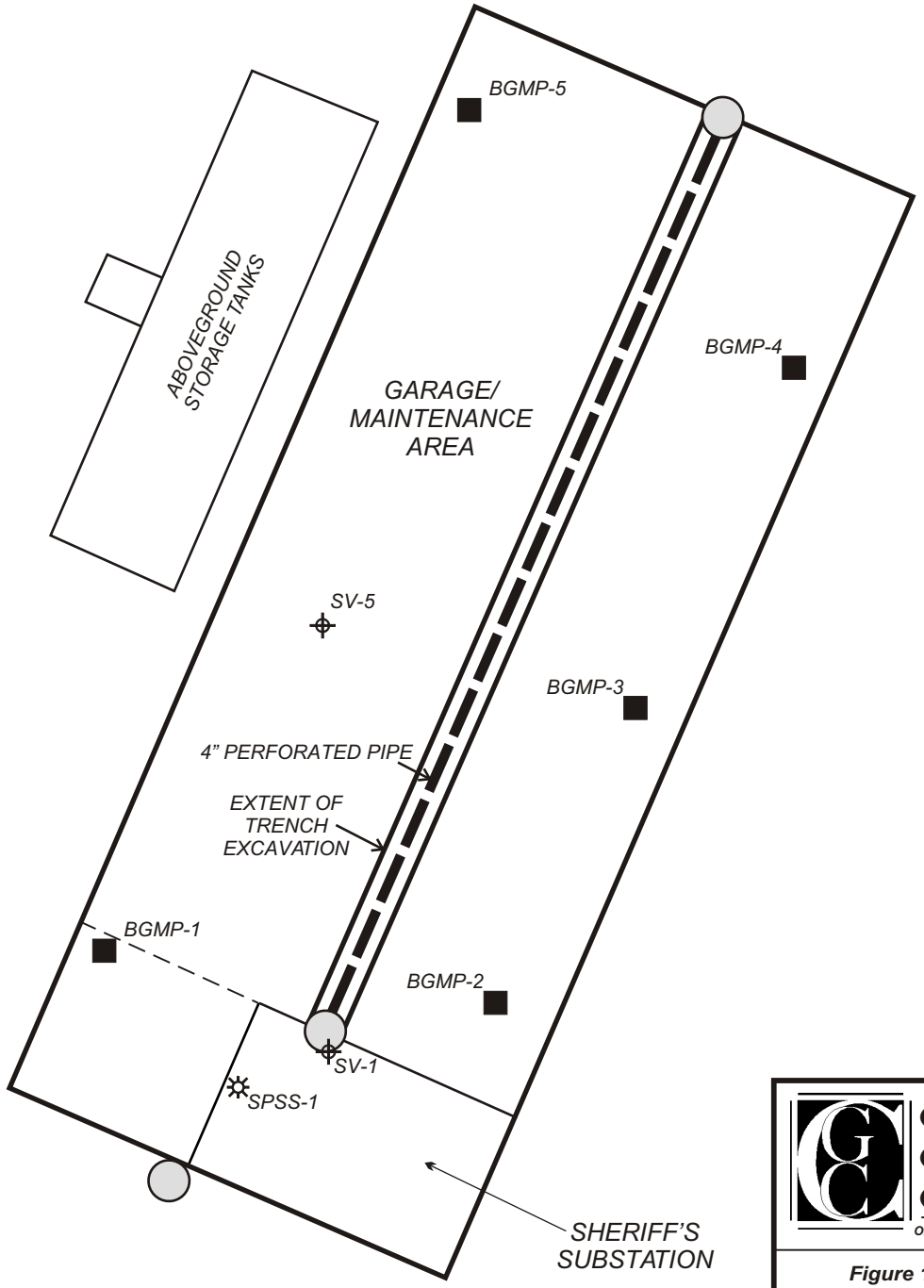
CONRAD GEOSCIENCE CORP.
One Civic Center Plaza, Suite 501, Poughkeepsie, New York 12601

Figure 8		POLE BARN TRENCH CROSS-SECTION SCHEMATIC
Prepared By:	ADQ 3/23/07	
Reviewed By:		BEEKMAN HIGHWAY GARAGE
Revised By:	SPL 8-27-08	Poughquag, NY
Approved By:	BPG 8-27-08	TB000013


MW-18D/S
MW-19D/S
MW-4
MW-8
MW-5
MW-17
Phillips
840725
MW-16R
MW-3
Huttel
885713
Delamarter
793689
Whaley Creek
Bischoff
802635
Perri
805620
Jarry
807590
Goldsand
796580
0
200
Feet
Source: R.I. Report, March 1998
LEGEND
Long-term monitoring locations
MonitoringWell
Residential Supply Well
CONRAD GEOSCIENCE CORP.
One Civic Center Plaza, Suite 501, Poughkeepsie, NY 12601
N
Figure 9
WELL SAMPLE LOCATIONS
Prepared By: KVG 3/01
Reviewed By: JAC 3/01
Revised By: NSS 11/01
Approved By: JAC 11/01
Beekman Highway Garage
Poughquag, New York
TB000013


Legend
MONITORING WELL
(Total VOCs, April 2009)
CONTOUR (ppb)
MW-18S
(25.6 ppb)
MW-4
(52.5 ppb)
MW-8
(16 ppb)
MW-19S
(6.4 ppb)
MW-5
(5.9 ppb)
MW-17
(13.9 ppb)
MW-3
(0.9 ppb)
MW-16R
(6 ppb)
40
30
20
10
PHOTO: NY STATE GIS CLEARINGHOUSE, 2004
ALL LOCATIONS ARE APPROXIMATE
Feet
0
50
100
200
CONRAD GEOSCIENCE CORP.
One Civic Center Plaza, Suite 501, Poughkeepsie, New York 12601
N
Figure 10
TOTAL VOCs IN GROUNDWATER
Prepared By: SPL 2/5/10
Reviewed By:
Revised By:
Approved By: SPL 2/5/10
BEEKMAN HIGHWAY GARAGE
Beekman, New York
TB000013


LEGEND
TOWN OF BEEKMAN PROPERTY BOUNDARY
PROPOSED SITE BOUNDARY
MONITORING WELL
TOTAL VOCS IN WELLS 1994-2009
NS = NOT SAMPLED
ND = NONE DETECTED
BEEKMAN POUGHQUAG RD
CHURCH STREET
MAIN STREET
BLOCK GARAGE
POLE BARN
TOWN HALL
SALT SHED
MW-18S
1994: NS
1996: 710
2000: 181.6
2001: 133.48
2003: 81.6
2004: 118.1
2005: 53.5
2006: 52.8
2008: 43.9
2009: 25.6
MW-18D
1994: NS
1996: 16
2000: 4.7
2001: ND
2003: 5.9
2004: 2
2005: ND
2006: 0.7
2008: 0.6
2009: 1.8
MW-4
1994: 63
1996: 93
2000: 102.7
2001: 174
2003: 248.3
2004: 98.7
2005: 49.3
2006: 150.5
2008: 103.5
2009: 52.5
MW-8
1994: 44.1
1996: 72
2000: 41.1
2001: 41.8
2003: 113.7
2004: 30.7
2005: 20
2006: 17.4
2008: 17.4
2009: 16
MW-5
1994: ND
1996: 194
2000: 1.6
2001: 20.27
2003: 3.9
2004: 0.8
2005: 0.8
2006: 1.3
2008: ND
2009: 5.9
MW-19S
1994: NS
1996: 6
2000: 4.5
2001: ND
2003: ND
2004: ND
2005: 0.5
2006: ND
2008: 1
2009: 6.4
MW-19D
1994: NS
1996: 62
2000: 2
2001: ND
2003: ND
2004: ND
2005: ND
2006: ND
2008: ND
2009: ND
MW-17
1994: 21.8
1996: 24
2000: 20.8
2001: ND
2003: 4.1
2004: 44.4
2005: 25.8
2006: 1
2008: ND
2009: 13.9
MW-16R
1994: NS
1996: 5
2000: 0.9
2001: ND
2003: ND
2004: NS
2005: NS
2006: ND
2008: ND
2009: 6
MW-3
1994: 1.3
1996: 21
2000: 2
2001: NS
2003: 2.7
2004: 1
2005: 2.2
2006: 0.7
2008: 0.6
2009: 0.9
PHOTO: NY STATE GIS CLEARINGHOUSE, 2004
ALL LOCATIONS ARE APPROXIMATE
Feet
0
100
200
400
CONRAD GEOSCIENCE CORP.
One Civic Center Plaza, Suite 501, Poughkeepsie, New York 12601
N
Figure 11
PROPOSED SITE BOUNDARY
Prepared By: SPL 5/26/09
Reviewed By:
Revised By:
Approved By: CBB 6/9/09
BEEKMAN HIGHWAY GARAGE
Beekman, New York
TB000013



LEGEND

- BGMP-1 — SUB-SLAB DEPRESSURIZATION SYSTEM EFFECTIVENESS MONITORING POINT
- SV-1 — SUB-SLAB VAPOR SAMPLE LOCATION
- SPSS-1 — SUB-SLAB DEPRESSURIZATION SUCTION PIT LOCATION
- FAN LOCATION

0 15
FEET

ALL LOCATIONS ARE APPROXIMATE

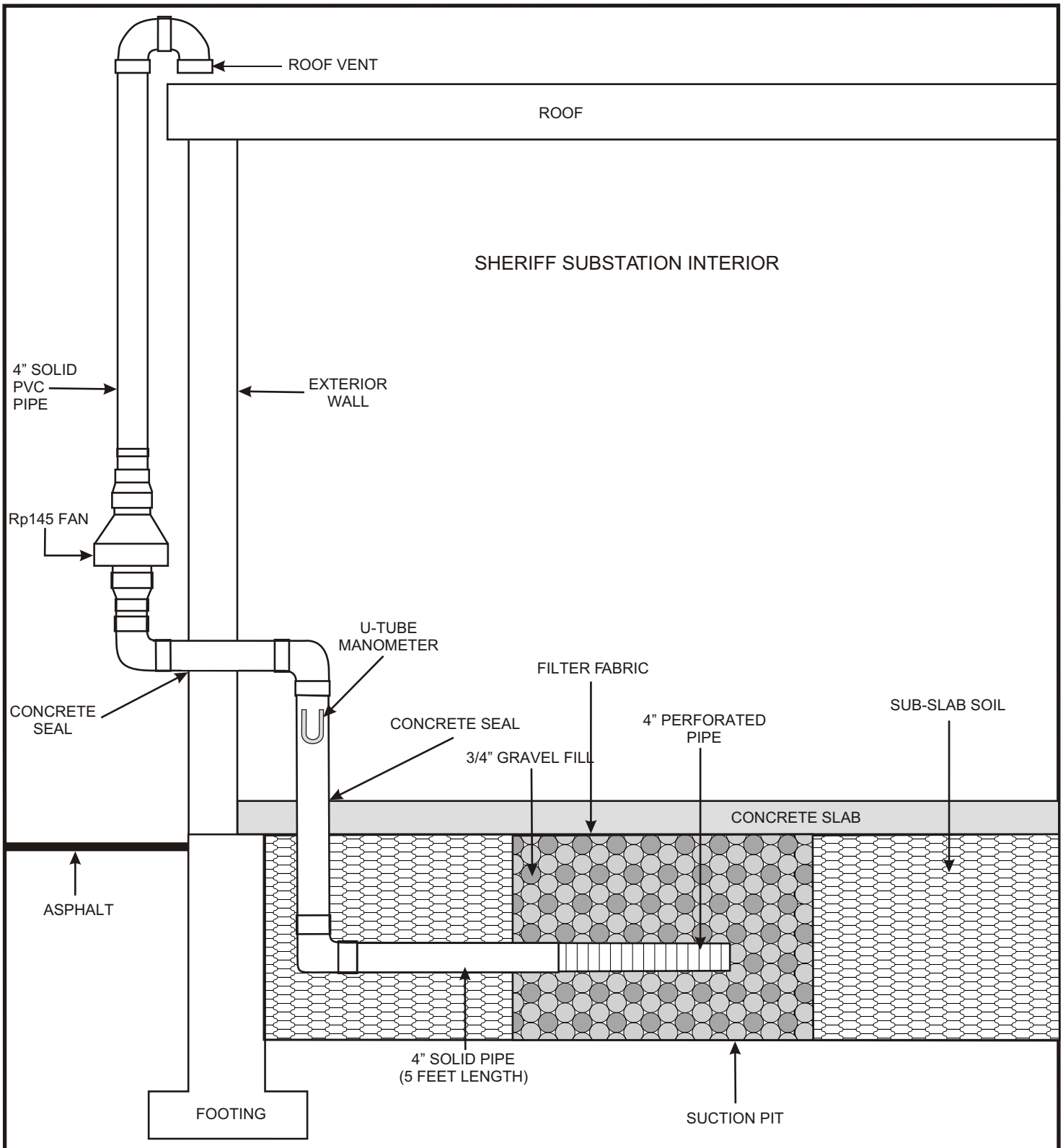
CONRAD GEOSCIENCE CORP.
One Civic Center Plaza, Suite 501, Poughkeepsie, New York 12601

N

Figure 12	
Prepared By:	BPG 4/4/03
Reviewed By:	JAC 6/17/03
Revised By:	MPT 5/28/10
Approved By:	CBB 5/28/10

SHERIFF SUBSTATION - GARAGE BUILDING SUB-SLAB DEPRESSURIZATION SYSTEM

TOWN OF BEEKMAN HIGHWAY GARAGE
Poughquag, NY
TB000013



NOT TO SCALE

CONRAD GEOSCIENCE CORP.
One Civic Center Plaza, Suite 501, Poughkeepsie, New York 12601

Figure 13		SHERIFF SUBSTATION SUCTION PIT CROSS-SECTION SCHEMATIC
Prepared By:	ADQ 3/23/07	
Reviewed By:		BEEKMAN HIGHWAY GARAGE Poughquag, NY TB000013
Revised By:	MPT 5-28-10	
Approved By:	CBB 5-28-10	

APPENDIX A
Sub-Slab Depressurization Venting Fan Specifications

Fantech

HP SERIES

FANS FOR RADON APPLICATIONS
WITH IMPROVED UV RESISTANCE!

TRUST THE INDUSTRY STANDARD.
HERE'S WHY:

Don't put your reputation at stake by installing a fan you know won't perform like a Fantech! For nearly twenty years, Fantech has manufactured quality ventilation equipment for Radon applications. Fantech is the fan Radon contractors have turned to in over 1,000,000 successful Radon installations worldwide.

Fantech external rotor motor

FANTECH HP SERIES FANS MEET THE CHALLENGES OF RADON APPLICATIONS:

HOUSING
- UV resistant, UL Listed durable plastic
- UL Listed for use in commercial applications
- Factory sealed to prevent leakage
- Watertight electrical terminal box
- Approved for mounting in wet locations - i.e. Outdoors

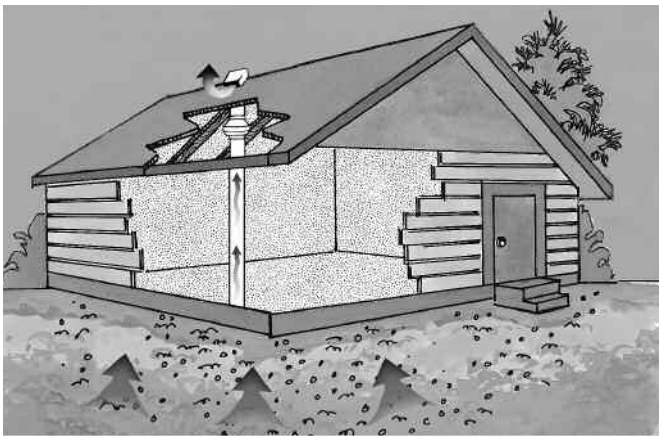
MOTOR
- Totally enclosed for protection
- High efficiency EBM motorized impeller
- Automatic reset thermal overload protection
- Average life expectancy of 7-10 years under continuous load conditions

RELIABILITY
- Five Year Full Factory Warranty
- Over 1,000,000 successful radon installations worldwide

Fantech

HP Series Fans are Specially Designed with Higher Pressure Capabilities for Radon Mitigation Applications

MOST RADON MITIGATORS WHO PREVIOUSLY USED THE FANTECH FR SERIES FANS HAVE SWITCHED TO THE NEW HP SERIES.



PERFORMANCE DATA

Fan Model	Volts	Wattage Range	Max. Amps	CFM vs. Static Pressure in Inches W.G.								Max. Ps
				0"	0.5"	0.75"	1.0"	1.25"	1.5"	1.75"	2.0"	
HP2133	115	14 - 20	0.17	134	68	19	-	-	-	-	-	0.84
HP2190	115	60 - 85	0.78	163	126	104	81	58	35	15	-	1.93
HP175	115	44 - 65	0.57	151	112	91	70	40	12	-	-	1.66
HP190	115	60 - 85	0.78	157	123	106	89	67	45	18	1	2.01
HP220	115	85 - 152	1.30	344	260	226	193	166	137	102	58	2.46

HVI MEMBER™

PERFORMANCE CURVES

Fantech provides you with independently tested performance specifications.

The performance curves shown in this brochure are representative of the actual test results recorded at Texas Engineering Experiment Station/Energy Systems Lab, a recognized testing authority for HVI. Testing was done in accordance with AMCA Standard 210-85 and HVI 916 Test Procedures. Performance graphs show air flow vs. static pressure.

Use of HP Series fans in low resistance applications such as bathroom venting will result in elevated sound levels. We suggest FR Series or other Fantech fans for such applications.

HP FEATURES INCLUDE

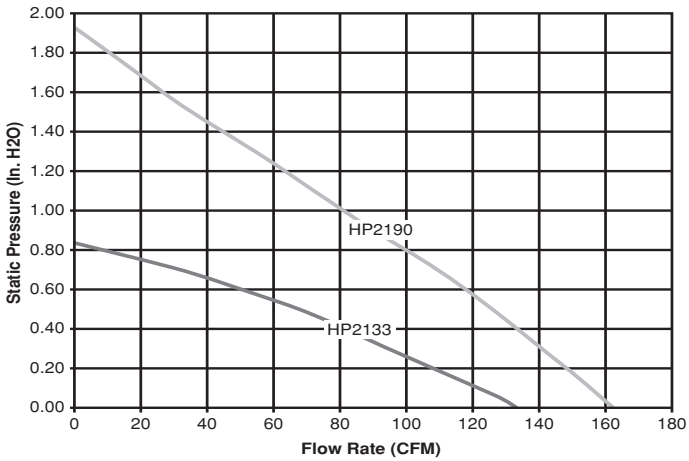
- Improved UV resistant housings approved for commercial applications.
- UL Approved for Wet Locations (Outdoors)
- Sealed housings and wiring boxes to prevent Radon leakage or water penetration
- Energy efficient permanent split capacitor motors
- External wiring box
- Full Five Year Factory Warranty

c UL us

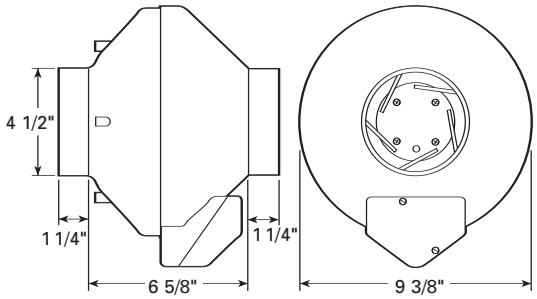
NOTE:

Installations that will result in condensate forming in the outlet ducting should have a condensate bypass installed to route the condensate outside of the fan housing. Conditions that are likely to produce condensate include but are not limited to: outdoor installations in cold climates, long lengths of outlet ducting, high moisture content in soil and thin wall or aluminum outlet ducting. Failure to install a proper condensate bypass may void any warranty claims.

HP2133 & HP2190 RADON MITIGATION FANS



Tested with 4" ID duct and standard couplings.

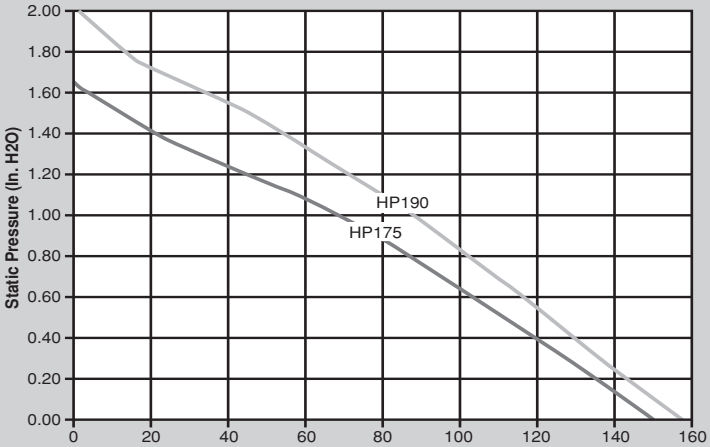


HP2133 – For applications where lower pressure and flow are needed. Record low power consumption of 14-20 watts! Often used where there is good sub slab communication and lower Radon levels.

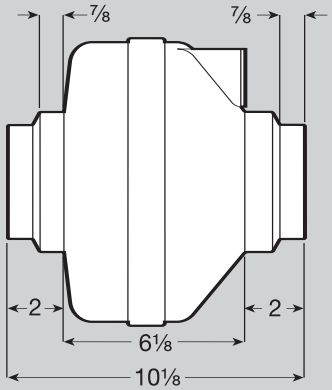
HP2190 – Performance like the HP190 but in a smaller housing. Performance suitable for the majority of installations.

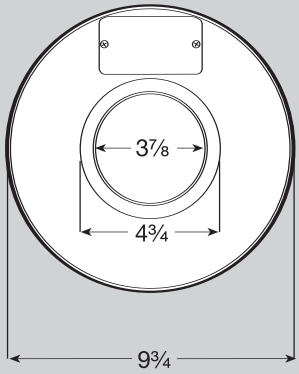
Fans are attached to PVC pipe using flexible couplings.
For 4" PVC pipe use Indiana Seals #156-44, Pipeconx PCX 56-44 or equivalent.
For 3" PVC pipe use Indiana Seals #156-43, Pipeconx PCX 56-43 or equivalent.

HP175 & HP190 RADON MITIGATION FANS



Tested with 4" ID duct and standard couplings.



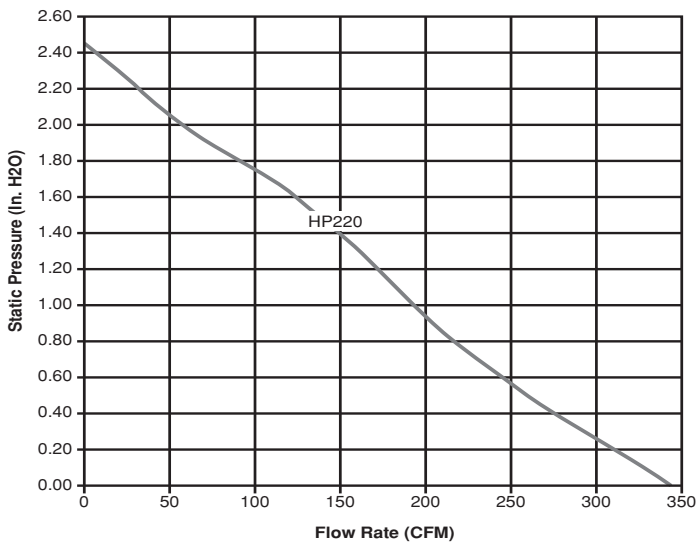


HP175 – The economical choice where slightly less air flow is needed. Often used where there is good sub slab communication and lower Radon levels.

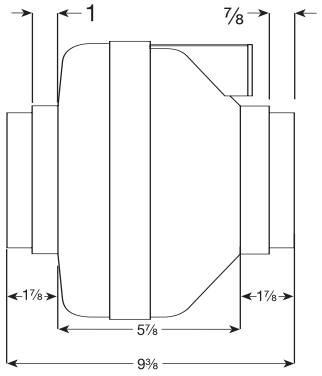
HP190 – The standard for Radon Mitigation. Ideally tailored performance curve for a vast majority of your mitigations.

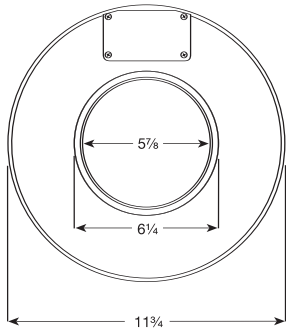
Fans are attached to PVC pipe using flexible couplings.
For 4" PVC pipe use Indiana Seals #151-44, Pipeconx PCX 51-44 or equivalent.
For 3" PVC pipe use Indiana Seals #156-43, Pipeconx PCX 56-43 or equivalent.

HP220 RADON MITIGATION FAN



Tested with 6" ID duct and standard couplings.

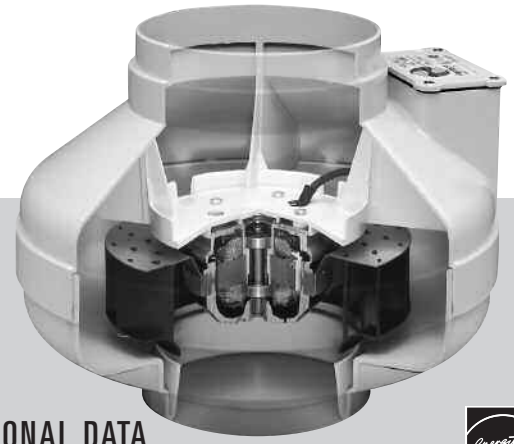




HP 220 – Excellent choice for systems with elevated radon levels, poor communication, multiple suction points and large subslab footprint. Replaces FR 175.

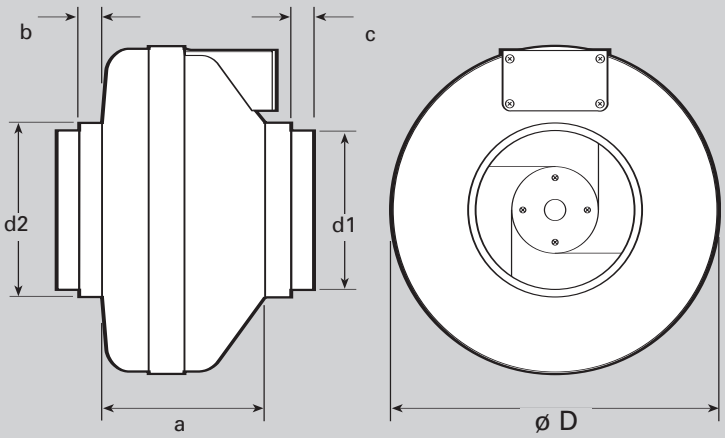
Fans are attached to PVC pipe using flexible couplings.
For 4" PVC pipe use Indiana Seals #156-64, Pipeconx PCX 56-64 or equivalent.
For 3" PVC pipe use Indiana Seals #156-63, Pipeconx PCX 56-63 or equivalent.

Fantech



FR SERIES

THE ORIGINAL MITIGATOR



DIMENSIONAL DATA

model	øD	d1	d2	a	b	c
FR100	9 1/2	3 7/8	4 7/8	6 1/8	7/8	7/8
FR110	9 1/2	3 7/8	4 7/8	6 1/8	7/8	7/8
FR125	9 1/2	–	4 7/8	6 1/8	7/8	–
FR140	11 3/4	5 7/8	6 1/4	5 7/8	1	7/8
FR150	11 3/4	5 7/8	6 1/4	5 7/8	1	7/8
FR160	11 3/4	5 7/8	6 1/4	6 3/8	1	7/8
FR200	13 1/4	7 7/8	9 7/8	6 1/4	1 1/2	1 1/2
FR225	13 1/4	7 7/8	9 7/8	6 1/4	1 1/2	1 1/2
FR250	13 1/4	–	9 7/8	6 1/4	–	1 1/2

All dimensions in inches

PERFORMANCE DATA

Fan Model	Energy Star	RPM	Volts	Rated Watts	Wattage Range	Max. Amps	CFM vs. Static Pressure in Inches W.G.							Max. Ps	Duct Dia.
							0"	.2"	.4"	.6"	.8"	1.0"	1.5"		
FR100	✔	2900	115	19	13 - 19	0.18	122	100	78	55	15	-	-	0.87"	4"
FR125	✔	2950	115	18	15 - 18	0.18	148	120	88	47	-	-	-	0.79"	5"
FR150	✔	2750	120	71	54 - 72	0.67	263	230	198	167	136	106	17	1.58"	6"
FR160	-	2750	115	129	103 - 130	1.14	289	260	233	206	179	154	89	2.32"	6"
FR200	✔	2750	115	122	106 - 128	1.11	408	360	308	259	213	173	72	2.14"	8"
FR225	✔	3100	115	137	111 - 152	1.35	429	400	366	332	297	260	168	2.48"	8"
FR250*	-	2850	115	241	146 - 248	2.40	649	600	553	506	454	403	294	2.58"	10"

FR Series performance is shown with ducted outlet. Per HVI's Certified Ratings Program, charted air flow performance has been derated by a factor based on actual test results and the certified rate at .2 inches WG.
** Also available with 8" duct connection. Model FR 250-8. Special Order.*

NOTE:

Installations that will result in condensate forming in the outlet ducting should have a condensate bypass installed to route the condensate outside of the fan housing. Conditions that are likely to produce condensate include but are not limited to: outdoor installations in cold climates, long lengths of outlet ducting, high moisture content in soil and thin wall or aluminum outlet ducting. Failure to install a proper condensate bypass may void any warranty claims.

FIVE YEAR WARRANTY

DURING ENTIRE WARRANTY PERIOD:

FANTECH will replace any fan which has a factory defect in workmanship or material. Product may need to be returned to the Fantech factory, together with a copy of the bill of sale and identified with RMA number.

FOR FACTORY RETURN YOU MUST:

- Have a Return Materials Authorization (RMA) number. This may be obtained by calling FANTECH either in the USA at 1.800.747.1762 or in CANADA at 1.800.565.3548. Please have bill of sale available.
- The RMA number must be clearly written on the outside of the carton, or the carton will be refused.
- All parts and/or product will be repaired/replaced and shipped back to buyer; no credit will be issued.

OR

The Distributor may place an order for the warranty fan and is invoiced.
The Distributor will receive a credit equal to the invoice only after product is returned prepaid and verified to be defective.

FANTECH WARRANTY TERMS DO NOT PROVIDE FOR REPLACEMENT WITHOUT CHARGE PRIOR TO INSPECTION FOR A DEFECT. REPLACEMENTS ISSUED IN ADVANCE OF DEFECT INSPECTION ARE INVOICED, AND CREDIT IS PENDING INSPECTION OF RETURNED MATERIAL. DEFECTIVE MATERIAL RETURNED BY END USERS SHOULD NOT BE REPLACED BY THE DISTRIBUTOR WITHOUT CHARGE TO THE END USER, AS CREDIT TO DISTRIBUTOR'S ACCOUNT WILL BE PENDING INSPECTION AND VERIFICATION OF ACTUAL DEFECT BY FANTECH.

THE FOLLOWING WARRANTIES DO NOT APPLY:

- Damages from shipping, either concealed or visible. Claim must be filed with freight company.
- Damages resulting from improper wiring or installation.
- Damages or failure caused by acts of God, or resulting from improper consumer procedures, such as:

1. Improper maintenance
2. Misuse, abuse, abnormal use, or accident, and
3. Incorrect electrical voltage or current.

- Removal or any alteration made on the FANTECH label control number or date of manufacture.
- Any other warranty, expressed, implied or written, and to any consequential or incidental damages, loss or property, revenues, or profit, or costs of removal, installation or reinstallation, for any breach of warranty.

WARRANTY VALIDATION

- The user must keep a copy of the bill of sale to verify purchase date.
- These warranties give you specific legal rights, and are subject to an applicable consumer protection legislation. You may have additional rights which vary from state to state.

DISTRIBUTED BY:

Fantech

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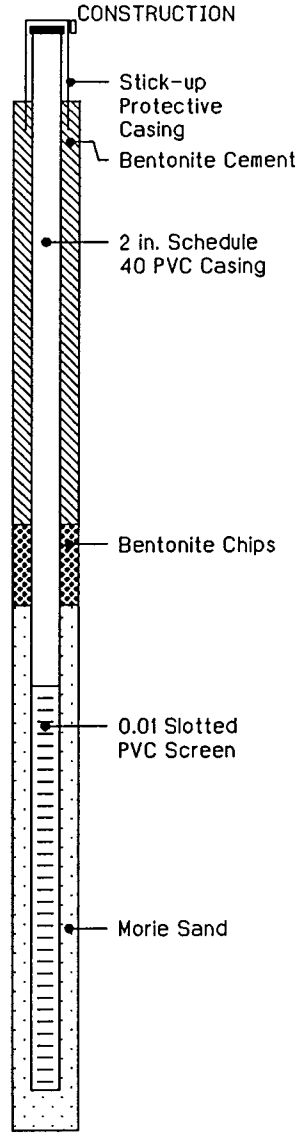
Item #: 411741
Rev Date: 120407

Fantech, reserves the right to modify, at any time and without notice, any or all of its products' features, designs, components and specifications to maintain their technological leadership position.

APPENDIX B
Monitoring Well Boring Logs



DEPTH (feet)	SAMPLE NUMBER	BLOWS/6 IN.	PID (ppm)	SAMPLES	SOIL CLASS	GRAPHIC LOG	MATERIALS DESCRIPTION
0	1	1 5 11 9	BG		Soil Fill		3-Inch Organic Layer FILL - Greenish brown fill and broken-up concrete
5	2	8 8 17 16	BG				FILL - Gravels with broken-up rock
10	3	3 7 10 5	BG		GM		SILTY GRAVEL (GM) - Olive-green silty sand with much gravel
15	4	1 3 3 4	BG				SILTY GRAVEL (GM) - Greenish-brown silty sand with much gravel, saturated Static water table 15.9 feet (12/12/94)
20	5	5 1 3 4	BG				Same as above but more sand and gravel
25	6	5 7 6 1	BG				Same as above
30							
35							

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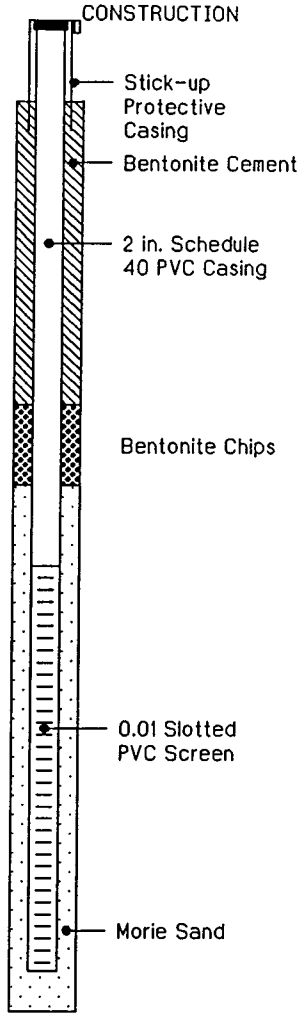
LOG OF BORING MW1

PROJECT Beekman Highway Garage LOCATION Beekman, NY
WELL ELEVATION 450.635 Feet MSLD DRILLING METHOD HSA CME 45
TOTAL DEPTH OF HOLE 25 Feet LOGGED BY Frank Robinson of CDM



DEPTH (feet)	SAMPLE NUMBER	BLOWS/6 IN.	PID (ppm)	SAMPLES	SOIL CLASS	GRAPHIC LOG	MATERIALS DESCRIPTION
0	1		BG		Soil Fill		2-Inch organic material (black) FILL - Blue stone
5	2		BG				FILL - Brown soil and blue stone
					GP		SANDY GRAVEL (GP) - Gravel, broken gravel, some medium to coarse brown sand
10	3		BG				
					SW		WELL-GRADED SANDS (SW) - Moist brown fine to medium sand with much gravel
15	4		BG				
							Static water table 18.7 feet (12/12/94)
20	5		BG				Brown fine to medium sand with gravel (less gravel than above)
25							
30							
35							

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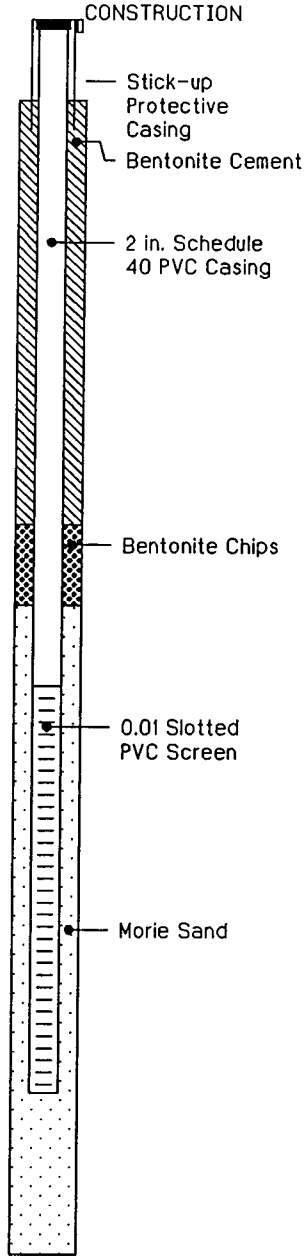
LOG OF BORING MW-2

PROJECT Beekman Highway Garage LOCATION Beekman, NY

WELL ELEVATION 452.565 Feet MSLD DRILLING METHOD HSA CME 45

TOTAL DEPTH OF HOLE 25 Feet LOGGED BY Frank Robinson of CDM



DEPTH (feet)	SAMPLE NUMBER	BLOWS/6 IN.	PID (ppm)	SAMPLES	SOIL CLASS	GRAPHIC LOG	MATERIALS DESCRIPTION
0	1	2 5 6 6	BG		Fill		Brown silty sand with gravel (FILL)
5	2	1 2 2 2	BG		SW		GRAVELLY SANDS (SW) - Brown fine sand with gravel
10	3	5 10 11 10	BG				Grey fine to medium sand with gravel (more gravel than above)
15	4	5 10 14 9	BG				▼ Static water table 15.06 feet (12/12/94) Brown fine to medium sand with gravel (broken quartz gravel at bottom)
20	5	5 6 7 6	BG				Saturated brown coarse sand with much gravel
25	6	5 7 8 14	BG				Brown medium sand to fine sand with gravel (some fines)
30							
35							

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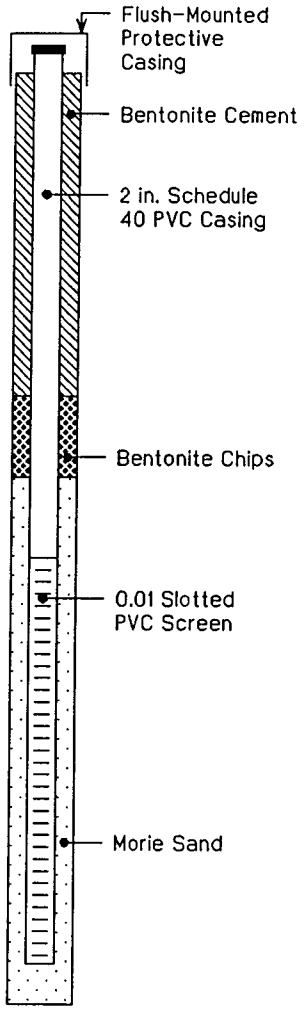
LOG OF BORING MW-3

PROJECT Beekman Highway Garage LOCATION Beekman, NY

WELL ELEVATION 451.57 Feet MSLD DRILLING METHOD HSA CME 45

TOTAL DEPTH OF HOLE 28 Feet LOGGED BY Frank Robinson of CDM

WELL CONSTRUCTION



DEPTH (feet)	SAMPLE NUMBER	BLOWS/6 IN.	PID (ppm)	SAMPLES	SOIL CLASS	GRAPHIC LOG	MATERIALS DESCRIPTION
0	1	14 21 13 6	BG		Fill		Thin asphalt layer FILL - Olive-green sand with gravel
					SP		SAND (SP) - Greenish-brown, fine to medium sand
5	2	1 2 1 2	BG		SC		CLAY, SILT (SC) - Greenish brown clayey silt
					SW		SAND WITH GRAVEL (SW) - Olive green medium to coarse sand with gravel - broken up quartz gravel at bottom
10	3	5 16 10 5	BG				
							Static water table 14.0 feet (12/12/94)
15	4	1 2 1 2	BG				Greenish-brown coarse sand with gravel Soil saturated at about 16 feet
20	5	1 1 2 5	BG				Brown medium to coarse sand with gravel
25							
30							
35							

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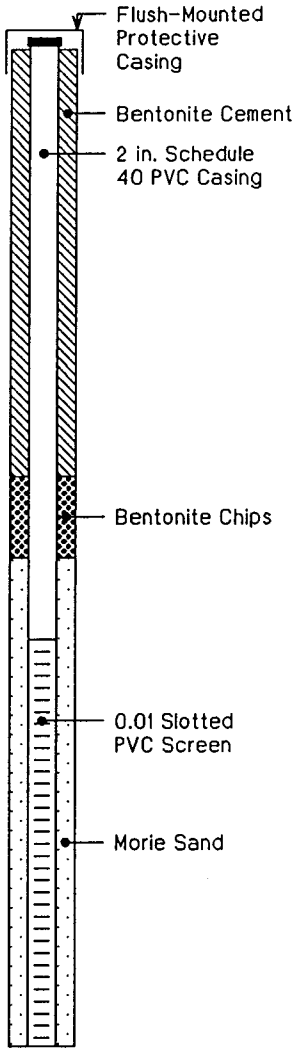
LOG OF BORING MW-4

PROJECT Beekman Highway Garage LOCATION Beekman, NY

WELL ELEVATION 448.63 Feet MSLD DRILLING METHOD HSA CME 45

TOTAL DEPTH OF HOLE 24 Feet LOGGED BY Frank Robinson of CDM

WELL CONSTRUCTION



DEPTH (feet)	SAMPLE NUMBER	BLOWS/6 IN.	PID (ppm)	SAMPLES	SOIL CLASS	GRAPHIC LOG	MATERIALS DESCRIPTION
0	1	3 2 3 3	BG	☒	Soil Fill SM		Black organic soil Fill material SILTY SAND (SM) - Reddish-brown silty sand with grave
					GP		GRAVELS (GP) - Brown gravel with fine to medium sand
					SW		SAND (SW) - Brown sandy silt
5	2	2 3 4 3	BG	☒			
10	3	11 13 13 11	BG	☒			Brown medium to coarse sand with much gravel
15	4	2 3 6 4	BG	☒			▼ Static water table 15.31 feet (12/12/94) Same as above, saturated at bottom
20	5	3 6 10 13	BG	☒			Same as above but with more gravel
25	6	4 4 5 5	BG	☒			Same as above but with less gravel (same as 15-17')
30							
35							

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Poughkeepsie, New York 12603

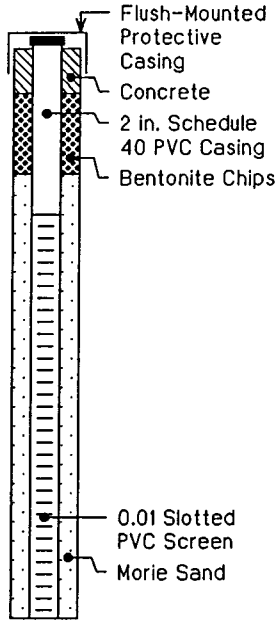
LOG OF BORING MW-5

PROJECT Beekman Highway Garage LOCATION Beekman, NY

WELL ELEVATION 449.71 Feet MSLD DRILLING METHOD HSA CME 45

TOTAL DEPTH OF HOLE 27 Feet LOGGED BY Frank Robinson of CDM

WELL CONSTRUCTION



DEPTH (feet)	SAMPLE NUMBER	BLOWS/6 IN.	PID (ppm)	SAMPLES	SOIL CLASS	GRAPHIC LOG	MATERIALS DESCRIPTION
							▼ Static water table 2.9 feet (12/12/94)
5							
10							
15							
							Boring ended at 18 feet below ground surface.
20							Note: Soil data not provided with well construction log. *Top of casing elevation from 11/94 survey*
25							
30							
35							

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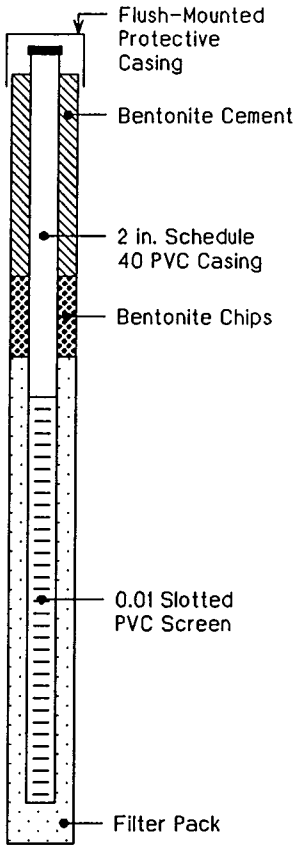
LOG OF BORING MW-6

PROJECT Beekman Highway Garage LOCATION Beekman, NY

WELL ELEVATION 434.27 Feet MSLD DRILLING METHOD HSA CME 45

TOTAL DEPTH OF HOLE 18 Feet LOGGED BY Frank Robinson of CDM

WELL CONSTRUCTION



DEPTH (feet)	SAMPLE NUMBER	BLOWS/6 IN.	PID (ppm)	SAMPLES	SOIL CLASS	GRAPHIC LOG	MATERIALS DESCRIPTION
	1	3 2			Fill		FILL - No recovery
	2	4 2 2	BG		SM		SILTY SAND (SM) - Dark brown fine to coarse sand some silt, trace fine to coarse gravel moist
5	3	2 4 4 3	BG				Same as above
	4	3 3 4 6	2				Static water table 7.70 feet (12/12/94)
	5	4 5 5	1		CL		Same as above
10	6	4 5 4	2				SILTY CLAY (CL) - Grey to brownish silty clay to clayey silt, trace fine to coarse sand, moist
	7	4 3 2	2				Same as above
	8	3 3 3			SP CL		Light grey and brown silty clay, mottled moist to wet
15		5 3 4			CL		Grey silt and clay, wet 12 - 13.2 feet
		2 4 12			SW		SAND AND CLAY (SP/CL) - Grey fine to coarse sand some silt with lenses of silty clay, wet
		14 19 10					SILTY CLAY (CL) - Brown and grey mottled silty clay, wet
20		8 6 7			ML		GRAVELLY SAND (SW) - Dark grey, fine to coarse sand, some fine to coarse gravel, some silt, trace cobbles, wet
		6					Grey to brownish silt, some fine to coarse sand, wet
25							Grades to grey clay (silty), litte fine to coarse sand, trace fine to coarse gravel
							Same as above
							CLAYEY SILT (ML) - Grey clayey silt, wet 19-20
30							Ended boring at 20 feet
35							

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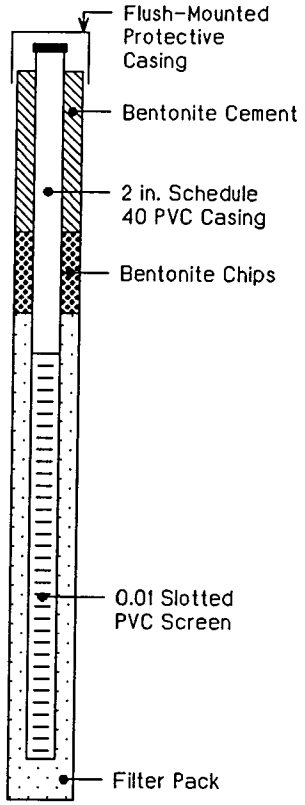
LOG OF BORING MW-7

PROJECT Beekman Highway Garage LOCATION Beekman, NY

WELL ELEVATION 446.93 Feet MSLD DRILLING METHOD HSA

TOTAL DEPTH OF HOLE 20 Feet LOGGED BY Al O. Zay of LMS

WELL CONSTRUCTION



DEPTH (feet)	SAMPLE NUMBER	BLOWS/6 IN.	PID (ppm)	SAMPLES	SOIL CLASS	GRAPHIC LOG	MATERIALS DESCRIPTION
			BG		Asplt SM		Asphalt 0-2", hit rock at 2" augered to 1'
		6 8	BG				SAND AND SILT (SM) - Brown silt and sand and fine to coarse gravel, trace cobbles
		3 13					
		24	BG				Same as above, some more cobbles a piece of weed in shoe
5		18 5					Same as above
		6	BG				
		5			SW		Orange-brown silty fine to medium sand with some fine to medium gravel
		4			ML		
		9	BG				Same as above
		7			SW		Mottled brown-orange silt with trace clay
10		5	BG		SM		
		4 5					SAND AND GRAVEL (SW) - Fine to coarse brown sand and fine to medium gravel
		5	0-2				SANDY SILT (ML) - Mottled brown-orange silt with trace clay and little fine sand
		4 3					
		7	BG				SAND AND GRAVEL (SW) - Fine to coarse brown mottled sand and fine to medium gravel
15		4 3					
		2	BG				SILTY SAND (SM) - Brown-tan silt and fine sand at approx 9.7, moist
		3 2					Static water table 10.7 feet (12/12/94)
		1 2					Orange fine to coarse sand and fine to medium gravel with some silt, moist
		7					
20		19 15					Brown-orange fine to coarse sand and silt, wet
		15					Same as above
		5 7					Orange-brown mottled silt with some clay and trace fine sand, moist
		6					
		4					Fine to coarse sand and silt layering with some lenses of mostly silt, wet
25							Dark brown fine to coarse sand and silt little fine gravel, wet
							Brown silt and fine sand, wet
							Silt and fine sand, wet
30							
35							

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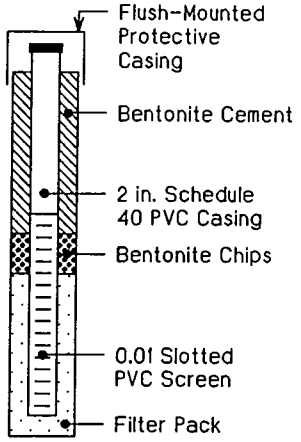
LOG OF BORING MW-8

PROJECT Beekman Highway Garage LOCATION Beekman, NY

WELL ELEVATION 448.43 Feet MSLD DRILLING METHOD HSA

TOTAL DEPTH OF HOLE 19 Feet LOGGED BY John M. Guzimich of LMS

WELL CONSTRUCTION



DEPTH (feet)	SAMPLE NUMBER	BLOWS/6 IN.	PID (ppm)	SAMPLES	SOIL CLASS	GRAPHIC LOG	MATERIALS DESCRIPTION
0		2	BG		Tpsl		Sod 0-0.2', organic topsoil
		2			SM		
		3	BG				SILTY SAND (SM) - Brown silty fine sand, trace fine gravel with mottled dark brown lenses
		2					
		4					Same as above with some clay
5		5	BG				Static water table 2.12 feet (12/12/94)
		6					
		7					Coarse to fine sand and fine to coarse gravel trace silt, very moist
		4	BG				
		6					Same as above, wet
		9					
		8	BG				Same as above (more coarse gravel, less medium to fine sand)
		1					small (0.2') lense of silty fine sand at approximately 6'
10		2			CL		
		3	BG				Medium to coarse sand and fine to coarse gravel, trace cobbles
		2					
		2					SILTY CLAY (CL) - Tan-brown silty clay
		3					NOTE:
		4					*Top of casing elevation from 11/94 survey*
15		2					
		3					
20							
25							
30							
35							

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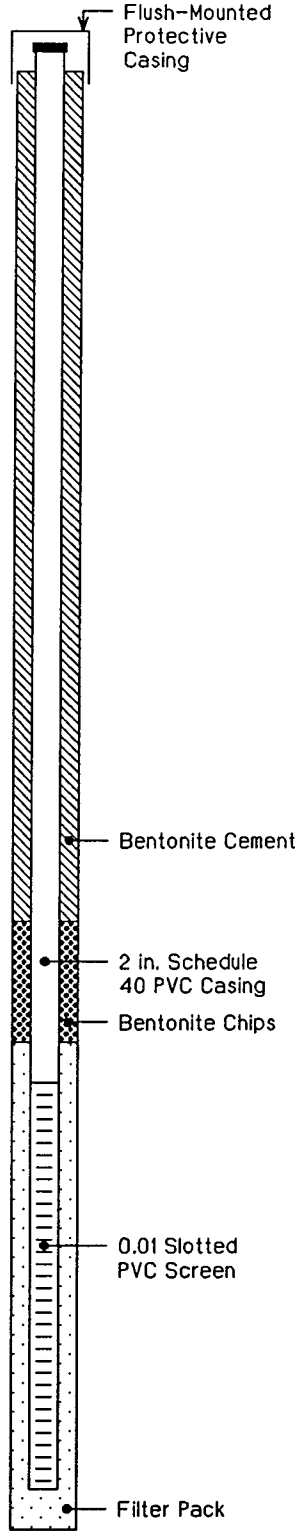
LOG OF BORING MW-9

PROJECT Beekman Highway Garage LOCATION Beekman, NY

WELL ELEVATION 433.55 Feet MSLD DRILLING METHOD HSA

TOTAL DEPTH OF HOLE 10 Feet LOGGED BY John M. Guzimich of LMS



DEPTH (feet)	SAMPLE NUMBER	BLOWS/6 IN.	PID (ppm)	SAMPLES	SOIL CLASS	GRAPHIC LOG	MATERIALS DESCRIPTION
0		5	BG	⊠	Tpsl		TOPSOIL – Organic, dark brown
		3			SW GW		SAND AND GRAVEL (SW/GW) – Coarse to fine sand, trace silt, some fine to coarse gravel, trace cobbles, roots
		4					
		3	BG	⊠			Dark brown medium to coarse sand, fine to coarse gravel, some rootlets, trace silt
5		10					
		13					
		15					
		16					
		5		⊠			Same as above
		5					
		10					Brown fine to coarse sand and fine to medium gravel, trace cobbles
10		15					
		50					*Drove spoon approx. 0.3' in 50 blows* *no recovery*
15							
		32		⊠			Fine to medium sand, fine to coarse gravel, some silt
		25					
		21					
20		20	5-15	⊠			Same as above
		15					
		18			ML		SANDY SILT (ML) – Fine sand and silt, tan-brown, lenses of medium to fine sand and silt with some fine to coarse gravel
		12					*Augers walking, pull up move over and re-auger*
25		3	5-15	⊠			Brown-tan silt and fine sand, wet at 24'
		5					
		5					
		15					
30		3	2-10	⊠			▼ Static water table 32.82 feet (12/12/94)
		4					Tan-brown clayey silt, trace fine sand, moist
		7					Silt and fine to medium sand, wet
		7					*Augered to 37' to set well at 36'* *Top of casing elevation from* 11/94 survey
35							

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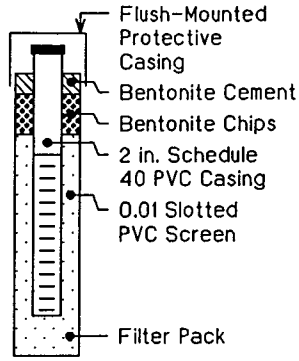
LOG OF BORING MW-10

PROJECT Beekman Highway Ggarage LOCATION Beekman, NY
WELL ELEVATION 464.60 Feet MSLD DRILLING METHOD HSA
TOTAL DEPTH OF HOLE 37 Feet LOGGED BY John M. Gorzimich of LMS

WELL CONSTRUCTION



DEPTH (feet)	SAMPLE NUMBER	BLOWS/6 IN.	PID (ppm)	SAMPLES	SOIL CLASS	GRAPHIC LOG	MATERIALS DESCRIPTION
0		2	BG		Tpsl		Sod 0-0.2'
		3			SM		SAND AND SILT (SM) - Brown organic soil with little gravel and trace cobbles
		4	BG		ML		Black sandy organic material
		5			SM		Dark brown fine sandy silt with little fine gravel
		4					Static water table 2.21 feet (12/12/94)
		4	BG				
5		4					
		10	BG		ML		SILT AND SAND (ML/SM) - Green-brown-tan silty fine sand with lenses of medium sand
		12					Green-tan silty fine sand with little fine to medium gravel, moist
		14					Same as above, a little more gravel, wet
		15	BG				SILT WITH SAND (ML) - Grey silt with little fine sand and little gravel, moist
		9					Same as above, barely moist
10		12					*Note:*
		15					*Top of casing elevation from 11/94 survey*
		12					
		9					
		12					
		16					
		14					
15							
20							
25							
30							
35							

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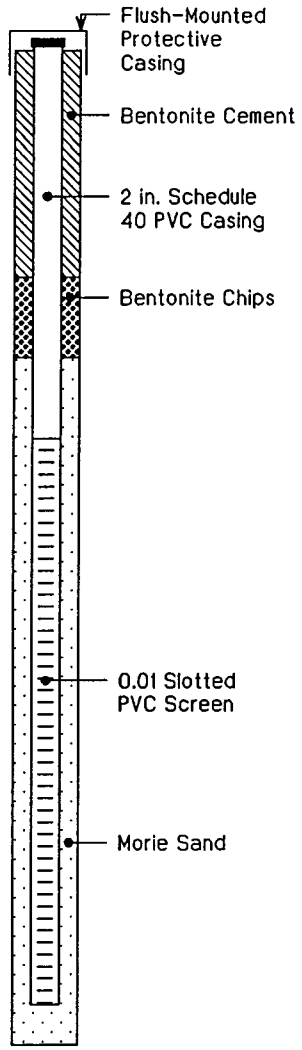
LOG OF BORING MW-11

PROJECT Beekman Highway Garage LOCATION Beekman, NY

WELL ELEVATION 428.66 Feet MSLD DRILLING METHOD HSA

TOTAL DEPTH OF HOLE 8 Feet LOGGED BY John M. Guzimich of LMS

WELL CONSTRUCTION



DEPTH (feet)	SAMPLE NUMBER	BLOWS/6 IN.	PID (ppm)	SAMPLES	SOIL CLASS	GRAPHIC LOG	MATERIALS DESCRIPTION
0	1	5 4 6 8	BG	☒	Fill		FILL - Dark brown fine to coarse sand and silt, little fine to coarse gravel, moist
5	2	4 4 4 4	BG	☒			Dark brown fine to coarse sand and silt, little fine to coarse gravel, trace cobbles, moist
10	3	10 11 18 35	BG	☒	SM		SILTY SAND (SM) - Light brown fine to coarse sand and silt, little fine to coarse gravel and cobbles, dry to moist
15	4	7 9 9 12	BG	☒			▼ Static water table 15.38 feet (12/12/94) Dark brown fine to coarse sand and silt, little fine to coarse gravel and cobbles, moist
20	5	4 4 4 4	BG	☒	SW		WELL-GRADED SAND (SW) - Dark brown fine to coarse sand, some to littlw fine to coarse gravel, little to some silt, wet
25				☒			Ended boring at 25 feet below ground surface *Note:* *Soil cores collected and logged during drilling and installation of MW-16*
30							
35							

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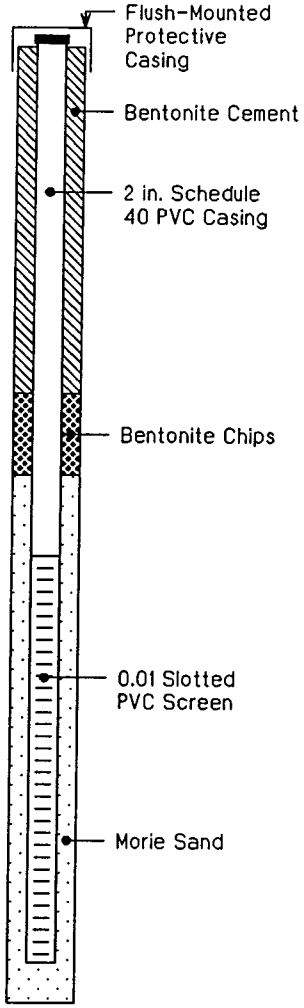
LOG OF BORING MW-16R

PROJECT Beekman Highway Garage LOCATION Beekman, NY

WELL ELEVATION 448.04 Feet MSLD DRILLING METHOD HSA

TOTAL DEPTH OF HOLE 27 Feet LOGGED BY A. Zay of LMS Engineers

WELL CONSTRUCTION



DEPTH (feet)	SAMPLE NUMBER	BLOWS/6 IN.	PID (ppm)	SAMPLES	SOIL CLASS	GRAPHIC LOG	MATERIALS DESCRIPTION
0	1	7 7 8 9	BG	☒	Fill		FILL - Dark brown fine to coarse sand and silt, little cobbles, moist
5	2	10 10 12 13	BG	☒	SW		WELL-GRADED SAND (SW) - Dark brown fine to coarse sand, some silt and fine to coarse gravel, moist
10	3	4 4 4 4	BG	☒	SM		Dark brown fine to coarse sand, some silt and fine to coarse gravel, moist SILTY SAND (SM) - Dark brown fine to coarse sand, little to some silt, moist
15	4	6 5 7 6	BG				Static water table 15.2 feet (12/12/94) No recovery
20	5	4 6 5	BG	☒			Dark brown fine to coarse sand, little to some silt, moist
	6	8 3 6 8 8	BG	☒	GM		SANDY GRAVEL (GM) - Dark brown fine to coarse gravel some fine to coarse sand, little silt, wet
25							Ended boring at 24.0 feet below ground surface
30							
35							

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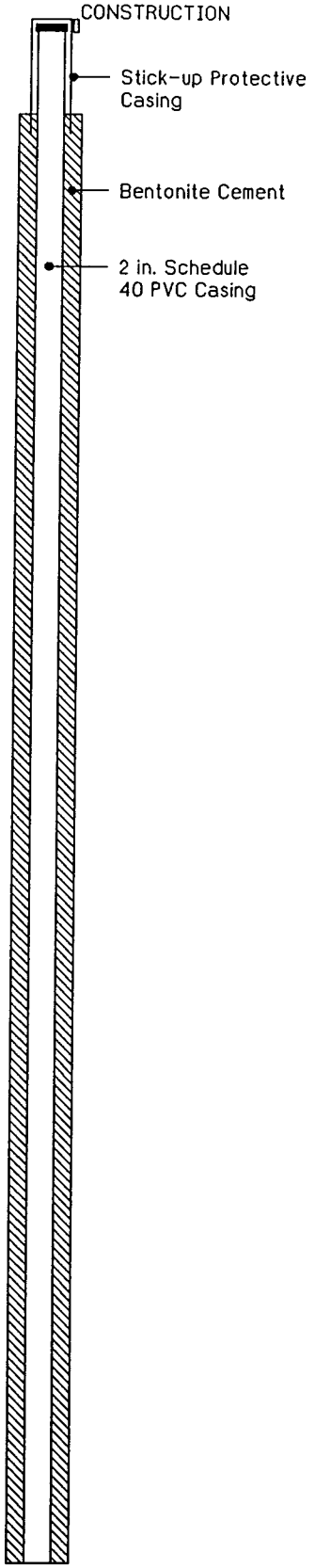
LOG OF BORING MW-17

PROJECT Beekman Highway Garage LOCATION Beekman, NY

WELL ELEVATION 449.54 Feet MSLD DRILLING METHOD HSA

TOTAL DEPTH OF HOLE 24 Feet LOGGED BY A. Zay of LMS Engineers



DEPTH (feet)	SAMPLE NUMBER	BLOWS/6 IN.	PID (ppm)	SAMPLES	SOIL CLASS	GRAPHIC LOG	MATERIALS DESCRIPTION
		10 10	10		Fill		FILL - Dark brown fine to coarse sand and silt, little fine to coarse gravel, dry, broken rock frags
		6 6					
		6 6	2				
		6 12					
5		6 6	3				
		6 12					
	MW18D	14 14	3				Limestone pebbles, shale fragments, fine to med sand
	7-9	20 10					
		6 17					
10		10 6	1				
		6 7			SM		SILTY SAND (SM) - Light brown, moist not wet fine grained sand and silt no cobbles or gravel
		11 6	3				
		10 7					
		6 7	12				
15	MW18D	6 10					
	15-17	12 14	1				Water table ATD
					SW		GRAVELLY SAND (SW) - Dark brown fine to coarse sand, some gravel, coarse to fine, little to some silt, wet
		8 17					
		19 28	BG				
		17 19			GP		POORLY GRADED GRAVEL (GP) - Very coarse sand and gravel, wet, some quartz pebbles, no silt
20		26 28	1				
		27 35					
		38 28	1				
		24 22					
		22 24					
25		35 20					
		25 31					
		35 31					
		21 18					Some fine grained sand with gravel, some silt
		16 11					
30		12 12	BG				
		8 12					
		10 10	1				
		8 10					
		12 10	1.5				
35		21 4			SP		POORLY GRADED SAND (SP) - Clean sand, medium grained, little to no gravel, some silt
		21 21	BG		GP		
		28 23					POORLY GRADED GRAVEL (GP) - Very coarse sand and gravel, wet, some quartz pebbles, no silt
		28 26	BG				

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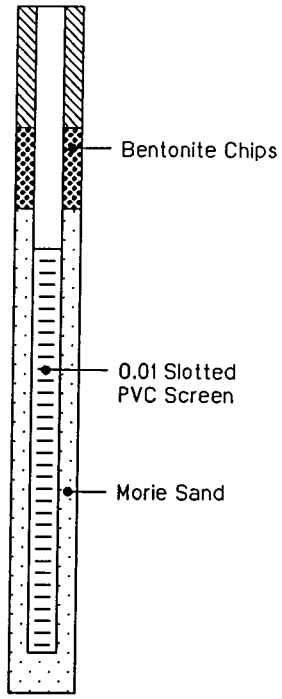
LOG OF BORING MW-18D

PROJECT Beekman Highway Garage LOCATION Beekman, NY

WELL ELEVATION 449.505 Feet MSLD DRILLING METHOD HSA

TOTAL DEPTH OF HOLE 55 Feet LOGGED BY C.B. Brown

WELL CONSTRUCTION



DEPTH (feet)	SAMPLE NUMBER	BLOWS/6 IN.	PID (ppm)	SAMPLES	SOIL CLASS	GRAPHIC LOG	MATERIALS DESCRIPTION
		15 12 12 14	BG	⊠	GP		
		12 15 15 15	BG	⊠	GM		SILTY GRAVEL (GM) – Medium to coarse sand and silt with some gravel, no clay
43		18 21 31 35	BG	⊠	SP		POORLY GRADED SAND (SP) – Clean sand, medium grained, little to no gravel, some silt
					GM		
		20 20 20 20	BG	⊠	SM		SILTY GRAVEL (GM) – Medium to coarse sand and silt with some gravel, no clay
48		18 12 12 6	BG	⊠			SILTY SAND (SM) – Medium sand, poorly graded, little to no gravel, little to no clay
		7 9 13 18		⊠	ML		INORGANIC SILT AND CLAY (ML) – Dense brown, silty clay, little to no sand, no gravel.
		30 75 67 68		⊠			
53		18 24 26 28		⊠			
		100					Ended boring at 55 feet below ground surface *Note:* *Refusal at 55.5 ft, blow counts = 100*
58							
63							
68							
73							

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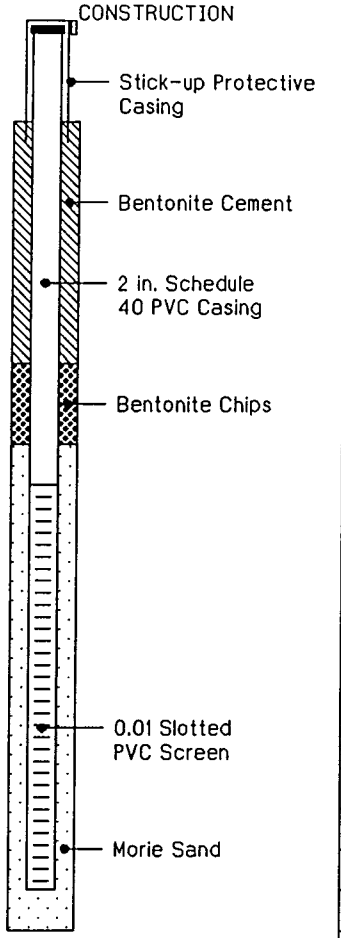
Poughkeepsie, New York 12603

LOG OF BORING MW-18D

PROJECT Beekman Highway Garage LOCATION Beekman, NY

WELL ELEVATION 449.505 Feet MSLD DRILLING METHOD HSA

TOTAL DEPTH OF HOLE 55 Feet LOGGED BY C.B. Brown



DEPTH (feet)	SAMPLE NUMBER	BLOWS/6 IN.	PID (ppm)	SAMPLES	SOIL CLASS	GRAPHIC LOG	MATERIALS DESCRIPTION
0		10 10 6 6	10		Fill		FILL - Dark brown fine to coarse sand and silt, little fine to coarse gravel, dry, broken rock frags
		6 6 6 12	2				
5		6 6 6 12	3				
		14 14 20 10	3				Limestone pebbles, shale fragments, fine to med sand
		6 17 10 6	1				
10		6 7 11 6	3		SM		SILTY SAND (SM) - Light brown, moist not wet fine grained sand and silt no cobbles or gravel
		10 7 6 7	12				
15		6 10 12 14	1				▼ Water table ATD
		8 17 19 28	BG		SW		GRAVELLY SAND (SW) - Dark brown fine to coarse sand, some gravel, coarse to fine, little to some silt, wet
		17 19 26 28	1		GP		POORLY GRADED GRAVEL (GP) - Very coarse sand and gravel, wet, some quartz pebbles, no silt
20							Ended boring at 20 feet below ground surface *Note:* *Soils collected during installation of MW-18D;No split-spoons collected during installation of MW-18S*
25							
30							
35							

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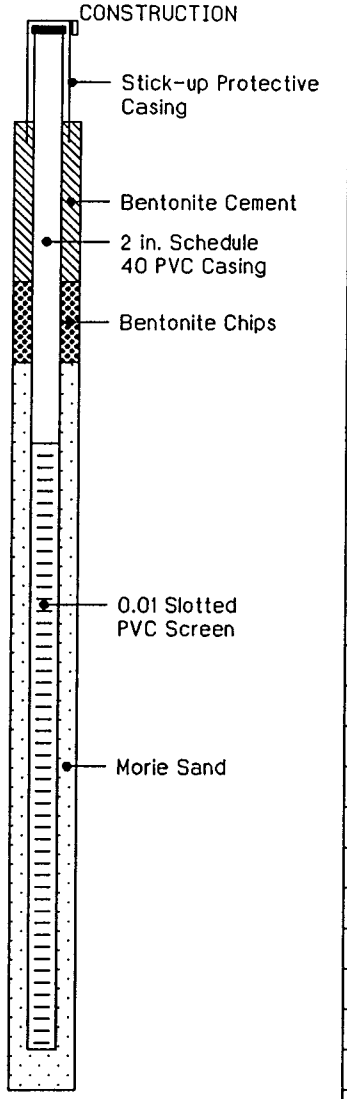
LOG OF BORING MW-18S

PROJECT Beekman Highway Garage LOCATION Beekman, NY

WELL ELEVATION 449.365 Feet MSLD DRILLING METHOD HSA

TOTAL DEPTH OF HOLE 20 Feet LOGGED BY C.B. Brown



DEPTH (feet)	SAMPLE NUMBER	BLOWS/6 IN.	PID (ppm)	SAMPLES	SOIL CLASS	GRAPHIC LOG	MATERIALS DESCRIPTION
0		13 8			Fill		FILL - Dark brown fine to coarse sand and silt, coarse broken rock fragments.
		11 9	1				
		8 11					
		6 9	2				
5		6 5					
		5 5	4				
		8 8					
		17 24					
		22 22	3				
10		6 5					
		7 10	BG				
		8 9					
		11 11	BG				
		4 4					▼ Water table ATD
15		6 6	BG		SM		SILTY SAND (SM) - Coarse wet sand with some silt poorly graded sand silt mixtures
		5 6	BG				Water table ATD
		7 5					
		3 4	BG		SP		POORLY GRADED SAND (SP) - Clean sand, medium to coarse grained, little to no gravel, some silt
		6 10					
20		7 8	BG				
		11 16					
		11 12	BG				
		18 22					
		15 11	BG				Ended boring at 24 feet below ground surface
25		11 14					*Note:* *Soil cores collected during drilling of MW19D; MW19S augered only*
30							
35							

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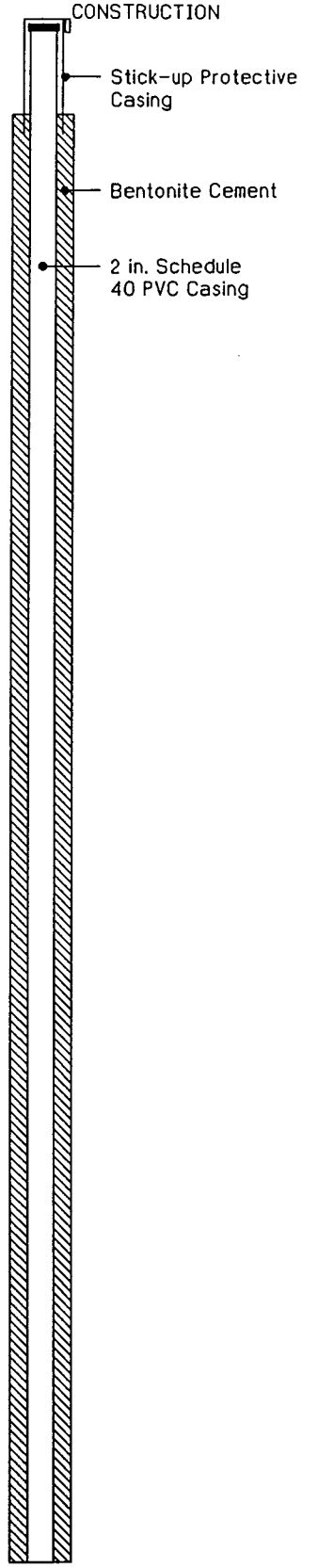
LOG OF BORING MW-19S

PROJECT Beekman Highway Garage LOCATION Beekman, NY
WELL ELEVATION 448.61 Feet MSLD DRILLING METHOD HSA
TOTAL DEPTH OF HOLE 24.5 Feet LOGGED BY C.B. Brown



DEPTH (feet)	SAMPLE NUMBER	BLOWS/6 IN.	PID (ppm)	SAMPLES	SOIL CLASS	GRAPHIC LOG	MATERIALS DESCRIPTION
0		13 8		⊠	Fill		FILL - Dark brown fine to coarse sand and silt, coarse broken rock fragments.
		11 9	1	⊠			
		8 11					
5	MW19D 4-6	6 9	2	⊠			
		6 5					
		5 5	4	⊠			
		8 8					
		17 24					
		22 22	3				
10		6 5		⊠			
		7 10	BG				
		8 9		⊠			
		11 11	BG				
	MW18D 15-17	4 4		⊠	SM		Water table ATD
15		6 6	BG				SILTY SAND (SM) - Coarse wet sand with some silt poorly graded sand silt mixtures
		5 6	BG	⊠			
		7 5					
		3 4	BG	⊠	SP		POORLY GRADED SAND (SP) - Clean sand, medium to coarse grained, little to no gravel, some silt
		6 10					
20		7 8	BG	⊠			
		11 16					
		11 12	BG	⊠			
		18 22					
		15 11	BG	⊠			
25		11 14					
		25 28	BG	⊠			
		28 29					
		14 11	BG	⊠	SM		SILTY SAND (SM) - Fine grained sand with some silt no gravel, little to no clay
		9 9					
30		13 11	BG	⊠			
		13 9					
		19 14	BG	⊠			
		16 16					
		7 8	BG	⊠	SP		POORLY GRADED SAND (SP) - Clean sand, medium grained, little to no gravel, some silt
35		12 3			ML		INORGANIC SILT AND CLAY (ML) - Dense brown, silty clay, little to no sand, no gravel.
		19 24	BG	⊠			
		28 30					
		21 23	BG				

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Poughkeepsie, New York 12603

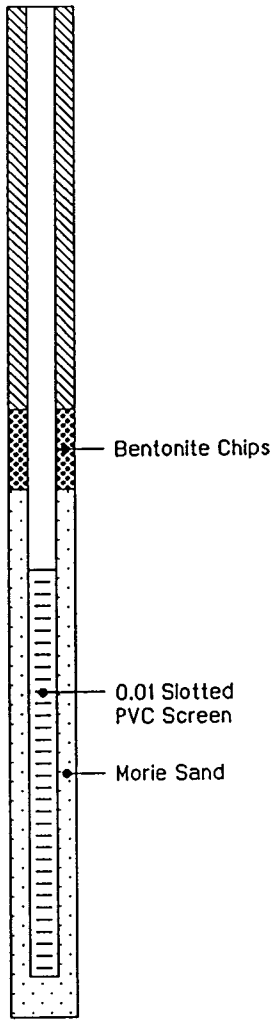
LOG OF BORING MW-19D

PROJECT Beekman Highway Garage LOCATION Beekman, NY

WELL ELEVATION 448.61 Feet MSLD DRILLING METHOD HSA

TOTAL DEPTH OF HOLE 55 Feet LOGGED BY C.B. Brown

WELL CONSTRUCTION



DEPTH (feet)	SAMPLE NUMBER	BLOWS/6 IN.	PID (ppm)	SAMPLES	SOIL CLASS	GRAPHIC LOG	MATERIALS DESCRIPTION
		23 23			ML		
		23 29	BG				
		30 31					
		22 22	BG				
43		24 24					
		4 6	BG				INORGANIC SILT AND CLAY (ML) - Dense brown, silty clay, little to no sand, no gravel.
		6 10					
		7 9	BG				
		11 11					
48		7 9	BG				
		11 20					
		7 11	BG				
		19 16					
		16 17	BG				
53		17 17					
		16 17	BG				
		17 18					
		16 22	BG				
		24 21					
58		16 22	BG				
		24 21					
		18 20	BG				
		23 24					
	MW19D		BG				
63	62-63	100					Ended boring at 63 feet below ground surface *Note:* *Refusal at 63 ft, blow counts = 100*
68							
73							

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8 Raymond Avenue
Poughkeepsie, New York 12603

LOG OF BORING MW-19D

PROJECT Beekman Highway Garage LOCATION Beekman, NY

WELL ELEVATION 448.61 Feet MSLD DRILLING METHOD HSA

TOTAL DEPTH OF HOLE 55 Feet LOGGED BY C.B. Brown

APPENDIX C
Site Inspection Forms and May 2009 SSDS Correspondence

Sub-Slab Depressurization System Operation and Maintenance Inspection Form

Date	*Location*	*U-Tube Manometer Reading*	*Notes/Comments*

CONRAD GEOSCIENCE CORP. www.conradgeo.com
Environmental Scientists One Civic Center Plaza, Suite 501, Poughkeepsie, New York 12601 • 845/454-2544 • fax: 845/454-2655

May 13, 2009

John J. Rashak
New York State Dept. of Environmental Conservation
Division of Environmental Remediation
21 South Putt Corners Road
New Paltz, New York 12561-1696

Re: **May 2009 Sub-Slab Depressurization System Limited Effectiveness Testing;**
Town of Beekman Highway Garage, Hamlet of Poughquag, New York;
NYSDEC #3-14-094;
Conrad Geoscience File #TB000013

Dear Mr. Rashak:

On May 12, 2009, as requested of NYSDEC and NYSDOH, Conrad Geoscience Corp. conducted a limited survey of the effectiveness of the sub-slab depressurization systems (SSDS) in the Block Garage at the Town of Beekman Highway Garage (Figure 1). Two of the three operating at the site were evaluated: The SSDS trench located underneath the Block Garage maintenance area; and the SSDS pit located at the Sheriff Substation office.

Conrad Geoscience personnel used an Infiltec DM1 Digital Micro-Manometer to measure the differential pressure between the interior space and sub-slab environment in the Block Garage building. The Infiltec DM1 Digital Micro-Manometer has a resolution of 0.001" water column (wc) at pressures lower than 2" wc and 0.01" wc at pressures higher than 2" wc.

One end of a 1/4-inch ID Teflon tube is connected to a compression fitting, which threads into the monitoring point. The other end of the tube connects to a brass pressure port on the micro-manometer. The second brass pressure port on the micro-manometer is left open to the indoor air space. The micro-manometer measures the differential pressure between the sub-slab and indoor environments. Conrad Geoscience also documented the U-tube manometer readings from each sub-slab depressurization system.

System effectiveness monitoring was conducted in the Block Garage at the following locations: Sub-Slab Vapor Sample Ports SV-1 and SV-5, and Effectiveness Monitoring Points BGMP-1, BGMP-2, and BGMP-3.

U-tube manometer and differential pressure readings are summarized in Table 1. These measurements indicate that a vacuum of between 1.5 and 2.75 inches of water column is being drawn by the fans. Negative pressure measurements were recorded at all

monitoring locations. Effectiveness monitoring readings ranged from -0.243 inches of water column to -0.865 inches of water column.

Based on the SSDS effectiveness monitoring, negative pressures exist beneath the slab in the Block Garage building, indicating these systems are operating as designed. Additional system modifications are not warranted at this time.

If you have any questions or comments, please feel free to contact me.

Sincerely,

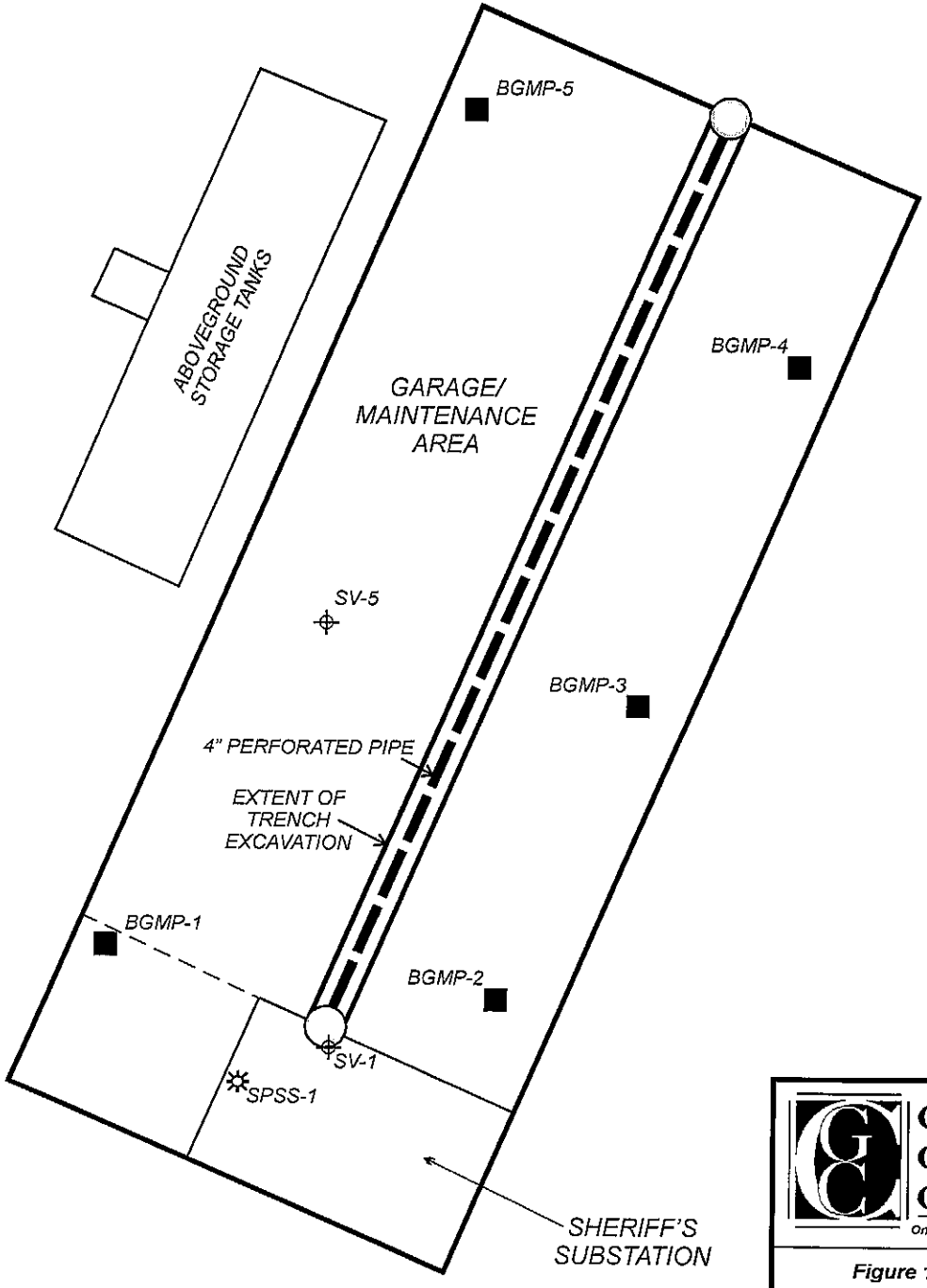
CONRAD GEOSCIENCE CORP.

Stephanie P. LaRose
Geologist

SPL/seg

attachments

cc: John Adams - Beekman Town Supervisor
Nathan Walz - NYSDOH



LEGEND

- BGMP-1 — SUB-SLAB DEPRESSURIZATION SYSTEM EFFECTIVENESS MONITORING POINT
- SV-1 — SUB-SLAB VAPOR SAMPLE LOCATION
- SPSS-1 — SUB-SLAB DEPRESSURIZATION SUCTION PIT LOCATION
- FAN LOCATION

0 15
FEET

N

ALL LOCATIONS ARE APPROXIMATE

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One Civic Center Plaza, Suite 501, Poughkeepsie, New York 12601

Figure 1	
Prepared By:	BPG 4/4/03
Reviewed By:	JAC 8/17/03
Revised By:	SPL 8/26/08
Approved By:	BPG 8/26/08

BLOCK GARAGE BUILDING SUB-SLAB DEPRESSURIZATION SYSTEM

TOWN OF BEEKMAN HIGHWAY GARAGE
Poughquag, NY
TB000013

Table 1. **Differential Pressure Readings from Sub-Slab Depressurization Systems**; collected **May 12, 2009**; Town of Beekman Highway Garage, Hamlet of Poughquag, New York
Conrad Geoscience File #TB000013

Sub-Slab Depressurization System Location	Monitoring Location	Inches of Water Column
Block Garage	BGMP-1	-0.243
	BGMP-2	-0.663
	BGMP-3	-0.422
	SV-1	-0.865
	SV-5	-0.300
	Sheriff Substation U-Tube Manometer	-1.75
	Northern Block Garage U-Tube Manometer	-2.75
	Southern Block Garage U-Tube Manometer	-1.5

APPENDIX D
Standard Operating Procedures for Groundwater Sampling

STANDARD OPERATING PROCEDURES

CONRAD GEOSCIENCE CORP. & PVE SHEFFLER, LLC

PROCEDURE FOR IN-SITU TROLL 9500 FIELD SETUP FOR LOW-FLOW (MINIMAL DRAWDOWN) SAMPLING

1.0 PURPOSE

The purpose of this standard operating procedure (SOP) is to establish guidelines for low-flow sampling of groundwater monitoring wells for dissolved constituents. As part of the SOP for low-flow sampling, sample collection equipment and devices must be considered, and equipment decontamination and pre-sampling procedures (e.g., measuring water levels, sounding wells, and purging wells) must be implemented. Sampling objectives must be firmly established in the work plan before considering the above.

Low-flow procedures for groundwater sampling allow for greater control over physical parameters such as temperature, pH, dissolved oxygen, and conductivity. Low-flow techniques also prevent water conditions in the monitoring well, and in subsequent samples from becoming highly turbid, which in turn provides more accurate water chemistry results (Puls and Barcelona, EPA/540/S-95/504, December 1995).

Valid water-chemistry data are integral to a hydrogeological investigation that characterizes groundwater quality conditions. Water quality data may be used to evaluate both current and historic aquifer chemistry conditions, as well as to estimate future conditions (e.g., trends, migration pathways). These data may also be used to construct groundwater quality maps or to perform statistical analyses to quantify data variability, trends, and cleanup levels. Hence, it is important to maximize sample accuracy through effective well development with low-flow procedures. These procedures are summarized below.

2.0 EQUIPMENT AND MATERIALS

2.1 In order to sample groundwater from monitoring wells, specific equipment and materials are required. The equipment and materials list may include, but not necessarily limited to, the following:

- In-Situ Troll 9500 Multi Parameter Water Quality Monitor – collects physical parameter data including temperature, pH, conductivity, dissolved oxygen, ORP, turbidity,

- In-Situ Rugged Reader – Handheld PC
- Bailers (Teflon™ or stainless steel)
- Pumps (centrifugal, peristaltic, electric submersible, hand-operated diaphragm, etc.)
- Appropriate discharge hose
- Flow-through cell for Troll 9500
- Portable generator and gasoline or alternative power supply if using an electric submersible pump
- Non-absorbent cord (e.g., polypropylene, etc.)
- Plastic sheeting
- Tape measure (stainless steel, steel, fiberglass) with 0.01-foot measurement increments and chalk (blue carpenter's)
- Electronic water-level indicators (e.g., m-scope, etc.) or electric water-level/product level indicators
- Non-phosphate, laboratory grade detergent (Alconox)
- Distilled/Deionized water
- Potable water
- Paper towels, clean rags
- Field forms (e.g., field notebook, monitoring well sampling sheets, monitoring well construction diagrams, etc.)
- Well location and site map
- Well keys and/or sockets
- Calculator
- Black pen and water-proof marker
- Tools (e.g., pipe wrenches, screwdrivers, hammer, pliers, flashlight, pen knife, etc.)

- Appropriate health and safety equipment, as specified in the site health and safety plan (HASP)
- Temperature, pH, and conductivity meter (Troll, Horiba, YSI, etc.)
- Plasticware (e.g., premeasured buckets, beakers, flasks, funnels)
- Disposable gloves
- Water jugs
- Laboratory supplied sample containers with labels
- Cooler(s)
- Ice (wet, blue packs)
- Masking, duct, and packing tape
- Chain-of-custody form(s) and custody seal(s)
- Site health and safety plan (HASP)
- Packing material (e.g., bubble wrap)
- "Zip-lock" plastic bags
- Overnight (express) mail forms

3.0 PROCEDURE

1. Open each well.
2. Measure the depth to water.
3. Insert dedicated polyethylene tubing into the monitoring well – to a depth up to 2 feet below the top of the water table surface.
4. Connect polyethylene tubing to the perristaltic pump and flow-through cell.
5. Insert the Troll 9500 into the flow-through cell. Connect the Troll 9500 to the Rugged Reader (hand-held PC).

6. Calibrate the Troll if necessary with the program previously installed on the Rugged Reader.

7. Fill in data specific to the monitoring well to be sampled on the Rugged Reader well development file. The file calculates the interval at which readings will be collected based on well construction.

8. Begin pumping the well and collecting data after the flow-through cell fills with water.

9. Collect data until physical groundwater parameters (e.g., temperature, pH, conductivity, dissolved oxygen) have stabilized to values with less than 10% change along with turbity values below 50 NTUs for three consecutive readings. Collect groundwater samples from dedicated polyethylene tubing as specified in the scope of work.

APPENDIX E
DECLARATION of COVENANTS & RESTRICTIONS
(DEED RESTRICTION)

DECLARATION of COVENANTS and RESTRICTIONS

THIS COVENANT is made the 15th day of May, 2013, by the Town of Beekman, a municipal corporation having an office for the transction of business at 4 Main Street, Poughquag, NY 12570.

WHEREAS, the Beekman Town Garage facility is the subject of an Order on Consent executed by the Town of Beekman as part of the New York State Department of Environmental Conservation's (the "Department's") State Superfund Program, namely that parcel of real property located on Beekman Poughquag Road in the Town of Beekman, County of Dutchess, State of New York, which is part of lands conveyed by Corey to Town of Beekman by Deed dated 1/27/53 and recorded in the Dutchess County Clerk's Office on 1/29/53 in Book 823 of Deeds at Page 7 and being more particularly described in Appendix "A", attached to this Declaration and made a part hereof, and herinafter referred to as "the Property"; and

WHEREAS, the Department approved a remedy to eliminate or mitigate all significant threats to the environment presented by the contamination disposed at the Property and such remedy requires that the Property be subject to restrictive coveneants.

NOW, THEREFORE, the Town of Beekman, for itself and its successors and/or assigns, covenants that:

First, the Property subject to this Declaration of Covenants and Restrictions is as shown on a map attached to this Declaration as Appendix "B" and made a part hereof.

Second, unless prior written approval by the Department or, if the Department shall no longer exist, any New York State agency or agencies subsquently created to protect the environment of the State and the health of the State's citizens, hereinafter referred to as "the Relevant Agency", is first obtained, where contamination remains at the Property subject to the provisions of the Site Management Plan ("SMP"), there shall be no construction, use or occupancy of the Property that results in the disturbance or excavation of the Property which threatens the integrity of the engineering controls or which results in unacceptable human exposure to contaminated soils.

Third, the owner of the Property shall not disturb, remove, or otherise interfere with the installation, use, operation, and maintanance of engineering controls required for the Remedy, which are described in the SMP, unless in each instance they first obtain a written waiver of such prohibition from the Department or Relevant Agency.

Fourth, the owner of the Property shall prohibit the Property from ever being used for purposes other than Commercial use as described in 6 NYCRR Part 375-1.8(g)(2)(iii) and Industrial use as described in 6 NYCRR part 375-1.8(g)(2)(iv) without the express written waiver of such prohibition by the Relevant Agency.

Fifth, the owner of the Property shall prohibit the use of the groundwater underlying the Property without treatment rendering it safe for drinking water or industrial purposes, as approriate, unless the user first obtains permission to do so from the Department or Relevant Agency.

Sixth, the owner of the Property shall provide a periodic certification, prepared and submitted by a professional engineer or environmental professional acceptable to the Department or Relevant Agency, which will certifiy that the institutional and engineering controls put in place are unchanged from the previous certification, comply with the SMP, and have not been impaired.

Seventh, the owner of the Property shall continue in full force and effect any institutional and engineering controls required for the Remedy and maintain such controls, unless the owner first obtains permission to discontinue such controls from the Department or Relevant Agency, in compliance with the approved SMP, which is incorporated and made enforceable hereto subject to modifications as approved by the Department or Relevant Agency.

Eighth, this Declaration is and shall be deemed a covenant that shall run with the land and shall be binding upon all future owners of the Property, and shall provide that the owner and its successors and assigns hereby covenant not to contest the authority of the Relevant Agency to seek enforcement.

Ninth, any deed of conveyance of the Property, or any portion thereof, shall recite, unless the Department or Relevant Agency has consented to the termination of such covenants and restrictions, that said conveyance is subject to this Declaration of Covenants and Restrictions.

IN WITNESS WHEREOF, the undersigned has executed this instrument the day written below.

TOWN OF BEEKMAN

By: _____
MATTHEW D. KENNEDY, Supervisor

STATE OF NEW YORK)
) s.s.:
COUNTY OF DUTCHESS)

On the 15th day of May, in the year 2013, before me, the undersgined, personally appeared MATTHEW D. KENNEDY, personally known to me or proved to me on the basis of satisfactory evidence to the be individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the indivudual(s) acted, executed the instrument.

_____
Notary Public

DAVID A. SEARS
Notary Public, State of New York
No. 02SE4974158
Qualified in Dutchess County
Commission Expires Nov. 5, 20 14

LEGAL DESCRIPTION OF
DEED RESTRICTION AREA
MA # 210526.26
4/25/11
REV. 8/10/12
REV. 5/14/13

ALL that certain piece or parcel of land situate, lying and being in the Town of Beekman, County of Dutchess and State of New York and is more particularly described as follows:

BEGINNING at a point on the southerly line of the lands, now or formerly, of Town of Beekman (Deed Liber 823 Page 7) said point also being located North 83°23'24" West 202.00 feet from the southeasterly corner of the lands of said Town of Beekman; thence southwesterly and southeasterly along the southerly line of said Town of Beekman the following five (5) courses:

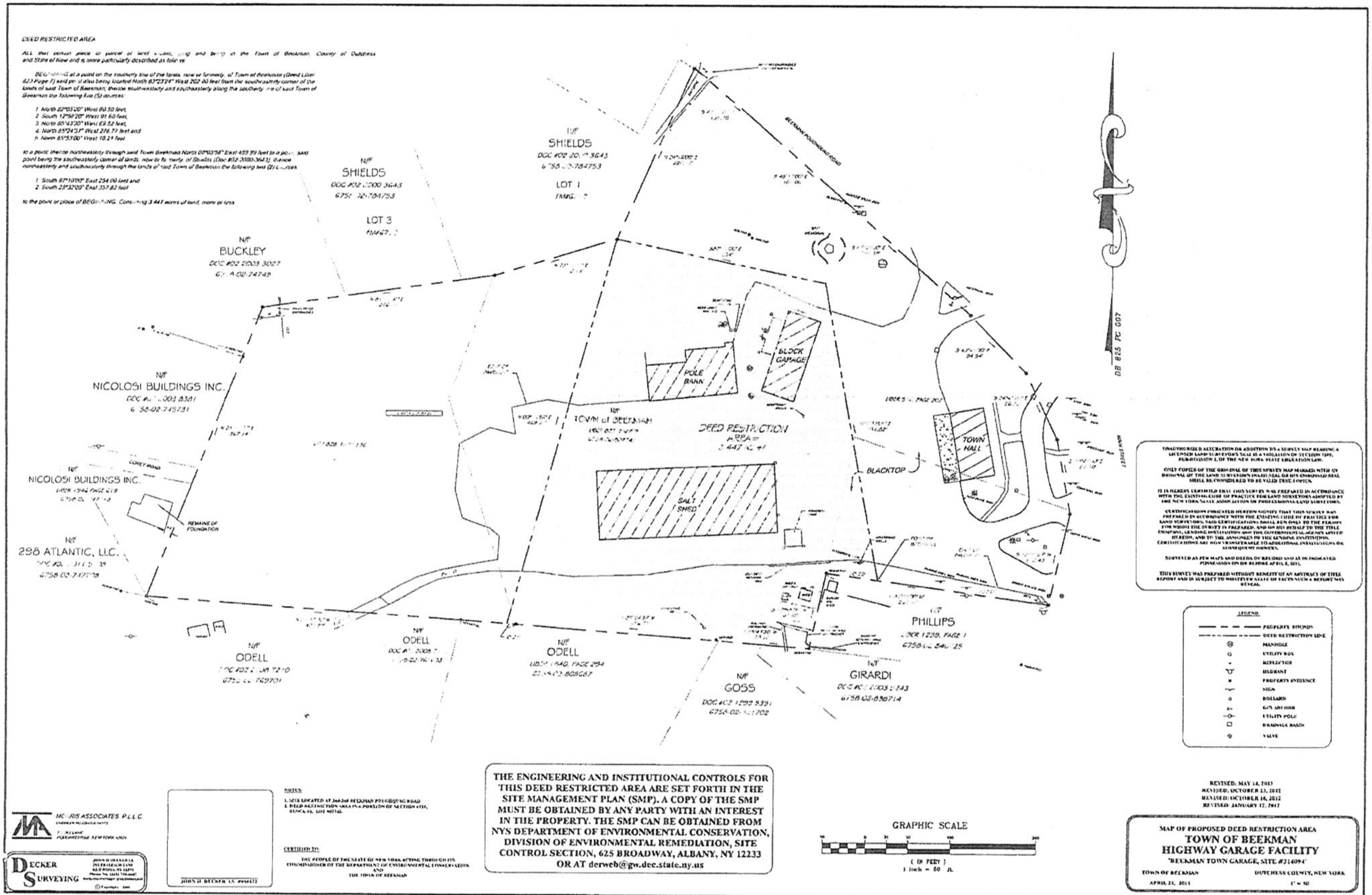
1. North 82°05'00" West 60.50 feet,
2. South 12°58'20" West 91.60 feet,
3. North 85°43'30" West 69.52 feet,
4. North 85°24'37" West 276.77 feet and
5. North 85°53'00" West 10.21 feet

to a point; thence northeasterly through said Town Beekman North 00°03'56" East 469.99 feet to a point, said point being the southeasterly corner of lands, now or formerly, of Shields (Doc #02-2000-3643); thence northeasterly and southeasterly through the lands of said Town of Beekman the following two (2) courses:

1. South 87°10'00" East 254.00 feet and
2. South 25°32'00" East 357.82 feet

to the point or place of BEGINNING. Containing 3.447 acres of land, more or less.

Being p/o Dutchess County Tax Map Grid #:13220000675800028077420000


DEED RESTRICTED AREA
and State of New and is more particularly described as follows
1. North 82°05'20" West 80.50 feet,
2. South 12°58'20" West 91.60 feet,
3. North 65°43'30" West 69.52 feet,
4. North 85°24'37" West 276.77 feet and
5. North 85°53'00" West 10.21 feet
1. South 87°10'00" East 254.00 feet and
2. South 25°32'00" East 357.82 feet
N/F
SHIELDS
LOT 3
N/F
SHIELDS
LOT 1
N/F
BUCKLEY
N/F
NICOLOSI BUILDINGS INC.
N/F
NICOLOSI BUILDINGS INC.
N/F
298 ATLANTIC, LLC.
REMAINS OF FOUNDATION
POLE BARN
BLOCK GARAGE
N/F
TOWN of BEEKMAN
DEED RESTRICTION
SALT SHED
BLACKTOP
TOWN HALL
N/F
ODELL
N/F
ODELL
N/F
ODELL
N/F
GOSS
N/F
GIRARDI
N/F
PHILLIPS
DB 825 PG 007
LEGEND
PROPERTY BOUNDS
DEED RESTRICTION LINE
THE ENGINEERING AND INSTITUTIONAL CONTROLS FOR THIS DEED RESTRICTED AREA ARE SET FORTH IN THE SITE MANAGEMENT PLAN (SMP). A COPY OF THE SMP MUST BE OBTAINED BY ANY PARTY WITH AN INTEREST IN THE PROPERTY. THE SMP CAN BE OBTAINED FROM NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION, DIVISION OF ENVIRONMENTAL REMEDIATION, SITE CONTROL SECTION, 625 BROADWAY, ALBANY, NY 12233 OR AT derweb@gw.dec.state.ny.us
GRAPHIC SCALE
(IN FEET)
1 inch = 50 ft.
NOTES:
CERTIFIED TO:
MORRIS ASSOCIATES P.L.L.C.
DECKER SURVEYING
MAP OF PROPOSED DEED RESTRICTION AREA
TOWN OF BEEKMAN
HIGHWAY GARAGE FACILITY
"BEEKMAN TOWN GARAGE, SITE #314094"
TOWN OF BEEKMAN
DUTCHESS COUNTY, NEW YORK