SITE MANAGEMENT PLAN

Dalewood I Shopping Plaza
357 North Central Avenue
Hartsdale, NY

VCP Site V00457-3

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1.0 Introduction and Purpose

The subject Site is known as Dalewood I Shopping Plaza and consists of a retail shopping center located on the west side of North Central Avenue (Route 100) in the Village of Hartsdale, New York. The Site property consists of approximately 7 acres of land and is improved with two structures consisting of 57,700 square feet and 1,300 square feet. The two structures consist of a retail shopping center building and a former automobile service station which has been closed and will be demolished in 2006. Figure 1 is a site locus map showing local topographic features. Figure 2 is a site map showing structures and location of known utilities on the Site.

A Voluntary Cleanup Program (VCP) application was completed and submitted to the NYSDEC for the subject Site in March 2001. The VCP application was submitted based on information obtained in previous investigations completed at the Site. The Site has been characterized during a comprehensive investigation completed between February 2003 and February 2005. A "Final Report Remedial Action Work Plan" (RAWP) was finalized by Kroll Associates, Inc. in November 2005 which documented the results of the investigation findings and recommended remedial alternatives for the Site.

1.1 Overview and Objectives

This Site Management Plan (SMP) is provided pursuant to the "Voluntary Cleanup Program Guide - Draft" published May 2002 by the New York State Department of Environmental Conservation (NYSDEC), "Draft DER-10 Technical Guidance for Site Investigation and Remediation" published December 2002 (12/25/02) by the NYSDEC, and additional Draft sections (Section 6: Site Management Plan & Site Closeout) of the DER-10 Guidance provided by the NYSDEC.

The objective of this SMP is to provide:

- Guidelines for future remedial activities
- Institutional and Engineering Controls (IC / EC), including Soil Management Plan
- Operations and Maintenance (O&M) Plan for recommended engineering controls
- Monitoring plans for Groundwater, Indoor Air, and Sub Slab Vapor
- Project reports and reporting timeframes

This SMP addresses all known environmental concerns at the Site and has been reviewed and approved by the NYSDEC and New York State Department of Health (NYSDOH).

Summaries of previous environmental investigations have been provided in this SMP, where appropriate. The reader should refer to the previous investigation reports for more detail.

In accordance with Section I (Site Specific Definitions) of the Voluntary Cleanup Agreement, upon completion of the remedial activity the "Contemplated Use" will be "unrestricted", and the site will remain commercial/industrial which is consistent with its present use and zoning.

1.2 Site History and Description

The property area was reportedly occupied by residential structures prior to 1966. The surrounding properties are heavily developed with a mixed use of commercial and residential buildings.

The main Site building consists of a shopping center and is currently occupied by the following businesses, based on mailing address:

355 N. Central Avenue	Verizon Wireless Phone Store
357 N. Central Avenue	Quizno's Sub Shop (former dry cleaner and former Huntington Learning Center)
359 N. Central Avenue	Spectrum (Card and Novelty Store)
361 N. Central Avenue	Friendly's Restaurant
365 N. Central Avenue	Sally Beauty Supply (Retail Store)
371 N. Central Avenue	Path Mark (Grocery Store)

357 N. Central Avenue was previously occupied by a dry cleaning facility from 1966 until 1997. Huntington Learning Center vacated this space in March 2003 and Quizno's Sub began operating within this space in February 2005. 355 N. Central Avenue was previously occupied by Coconuts music and video store (through spring 2005) and is referenced as such in historic reports.

A separate building is located in the southeast area of the property with an address of 353 N. Central Avenue. This building was occupied by Proper Service Center (a vehicle service center and retail gasoline (ExxonMobil) sales facility until December 31, 2005. The facility has been vacated and underground petroleum systems have been removed. This building was scheduled for demolition upon receipt of local building permits, and is the subject of a separate corrective action with the NYSDEC (NYSDEC Spill #00-09624).

The property located adjacent to and northeast of Dalewood I is known as Dalewood II Shopping Plaza. The next property to the northeast, adjacent to Dalewood II is known as Dalewood III Shopping Plaza. Dalewood II and Dalewood III each have a common ownership with Dalewood I. Therefore, property access agreements are not required for subsequent well sampling and to be completed as part of this Site Management Plan.

1.3 Previous Investigations

The chemical compound that is historically associated with the former dry cleaning operations is Tetrachloroethylene. Tetrachloroethylene is synonymous with Tetrachloroethene and Perchloroethene. Tetrachloroethylene is typically abbreviated with the letters PCE or is referred

as "PERC". The degradation (breakdown) daughter products of PCE include Trichloroethylene (TCE), trans and cis 1,2-Dichloroethylene (DCE), and Vinyl chloride (VC).

Preliminary site investigations were completed between March 2000 and June 2001. A total of forty-three (43) soil borings and seventeen (17) monitoring wells were installed during this period of Site investigation. The results of soil and groundwater sampling indicated that a source area was present in the shallow intervals in the rear of the shopping plaza. Impacted groundwater was identified in the rear source area, as well as the front area of the plaza. The groundwater plume was partially delineated in the front (east) area of the plaza as part of the 2001 assessment.

Tetrachloroethylene was the primary constituent identified. Trichloroethylene, Vinyl chloride, and trans 1,2-Dichloroethylene isomers (degradation by-products) were also reported to be present, and is indicative of environments with active natural attenuation of tetrachloroethylene.

A Site Investigation Work Plan that was developed and approved by the NYSDEC in January 2003. The investigation was initiated in February 2003. Additional investigation activities, beyond the scope of the original Investigation Work Plan, were completed through February 2005 based on initial investigation findings and subsequent IRMs.

The preliminary result of the investigation prompted two Interim Remedial Measures (IRM) to be completed at the Site in 2003. The first IRM (Indoor Soil) consisted of excavation and off-site disposal of 111.4 tons of soil from under the building floor in the area of the former dry cleaner (unit 357) in May 2003. The second IRM (Outdoor Soil) consisted of excavation and off site disposal of 225.56 tons of soil from the outdoor rear area of the Site in October 2003 (behind unit 357). The IRMs were effective in removing a continuing contaminant source and protecting the occupied building space from vapor intrusion. IRM completion reports were prepared and submitted to the NYSDEC in September 2003 and February 2004.

The IRM projects each included excavation of impacted soil and the placement of SRC™ (Substrate Release Composition) product in the open excavation. SRC™ is a solid-chemical composition which provides for the sustained release of substrates, co-substrates, nutrients, and other proprietary amendments into contaminated aquifers and environmental media.

A Remedial Action Work Plan (RAWP) report was finalized in November 2005 which documented the results of the of the investigation findings. The RAWP summarized field sampling activities, locations, and the results of laboratory analysis. The report results were interpreted with respect to potential sensitive receptors and future Site actions. The RAWP further describes potential remedial alternatives for the Site.

1.3.1 Soil Summary

A total of 49 soil samples were collected and laboratory analyzed between March 2000 and March 2001. The samples were collected from shallow (0 to 5 feet below grade), intermediate (5 to 10 feet below grade), and deep (12 to 50 feet below grade) intervals. Additionally, the soil samples were collected from the front and rear of the shopping center and through the building

floor. Reported target compound (chlorinated VOCs) concentrations in soil ranged from Below Detection Limits (BDL) to 241,000 parts per billion (ppb). Tetrachloroethylene was the primary constituent identified. Trichloroethylene, Vinyl chloride, and 1,2-Dichloroethylene isomers (degradation by-products) were also reported to be present.

A total of 12 additional soil samples were collected from borings B-104, B-105, and MW-205 through MW-214 as part of the investigation work completed in 2003. Laboratory analysis identified several VOCs to be present in the samples; however, the concentrations detected were below the NYSDEC Cleanup Objective. An elevated concentration (1,370 ppb) of PCE was identified in a soil sample collected from MW-206. This soil sample was collected from a depth of seven to nine feet (7 – 9') below grade. As this soil sample was collected from a depth within the groundwater table, the PCE concentration may be a result of the groundwater impact or the presence of absorbed PCE.

Post excavation soil sample results from the Indoor IRM and Outdoor IRM were provided in the respective reports. The Outdoor IRM included seven (7) post excavation soil samples with PCE results for six samples ranging from BDL to 160 ppb, and one sample with 2,100 ppb. The Indoor IRM included twenty-seven (27) post excavation soil samples with six samples collected from the bottom of the excavation (six feet deep) and twenty-one (21) collected from varying depths on the sidewalls. The PCE results for three bottom samples ranged from 80,000 to 230,000 ppb and the remaining bottom sample results ranged from 140 to 6,700 ppb. PCE results for the sidewall samples included nineteen samples with results ranging from 340 to 5,100 ppb; two samples had elevated PCE concentrations of 14,000 and 16,000 ppb.

1.3.2 Groundwater Summary

A total of 32 monitoring wells have been installed at the site as part of the investigation. An additional 7 monitoring wells are present in the area of the former ExxonMobil gasoline station in the southeast portion of the property. The investigation wells included 28 shallow depth (5 – 15'), 3 intermediate depth (23 – 29'), and 1 deep well (40-50').

Groundwater at the Site is generally present between 3.5 and 5 feet below grade and flows toward the east / northeast. Two source areas were identified in shallow soil, one located below the building floor where a former dry cleaning facility was located and a second area in the outdoor rear area of the same space. The investigation defined a CVOC groundwater plume extending from the rear area of the Site building to the northeast property line and onto the downgradient Dalewood II Shopping Center property. PCE concentrations in deep and intermediate monitoring wells indicated that the plume has not migrated to deeper aquifer areas. Although the plume appeared to extend across the northeast property line it was not identified in groundwater monitoring wells on the Dalewood II property (see Figure 2).

A potable well search was completed for a ½ mile radius around the Site, and no public or private potable wells were identified.

Preliminary monitoring data has been collected from Site groundwater for a remedial alternative screening to be completed. The data indicated that Monitored Natural Attenuation or enhanced

bioremediation will be effective for mitigating the CVOC dispersion. Additional assessment and monitoring is recommended to further establish data trends, degradation rates for long term analysis, and effectiveness of the source area removals. Site remediation alternatives and feasibility will be evaluated based on results of additional monitoring and risk analysis. Indicator parameters will be targeted for Monitored Natural Attenuation or enhanced bioremediation incorporated into an on-going monitoring program of groundwater and indoor air quality. The initial groundwater sampling data provides strong indicators that natural attenuation is occurring at the Site.

1.3.3 Indoor Air and Sub Slab Vapor Summary

Sub Slab vapor and indoor air samples have been collected from locations throughout the existing retail building. The sub slab vapor results indicated that elevated concentrations were present below the building floor. Initial indoor air sample results obtained in February 2003 identified PCE concentrations above applicable guidance values. The Indoor IRM activities within the former dry cleaner area effectively mitigated this condition.

Additional indoor air sampling was completed between 2003 and 2005. Target compounds were identified at low concentrations (below NYSDOH guidance values) in indoor air at all locations, and within the background range for most interior spaces. Decision matrices that are provided in the Draft NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York indicate that mitigation would be recommended. The sub-slab depressurization (SSD) system which was installed as part of the Indoor IRM can maintain a negative pressure in the source area below the building floor to mitigate vapors from migrating into the building.

1.4 Site Topography

The ground surface topography at the Site is generally level and according to the USGS Topographic Map of this area the Site is located at an elevation of approximately 205 feet above mean sea level. A large asphalt parking area is located in the front of the shopping plaza and a driveway and service entrance is located in the rear of the plaza. A steep embankment is located immediately behind (west) the Plaza which rises approximately 110 feet in less than 500 linear feet. A moderate hill is present to the east of the Site, across North Central Avenue that rises approximately 100 feet in 900 linear feet. The Site is located in a local valley which runs in an approximate north-south orientation. The closest surface water body to the Site is the Bronx River that is located ½ mile to the east and 3/4 mile to the northeast.

1.5 Site Hydrogeology

Soil encountered in the borings generally consisted of a medium size brown sand. The boring logs for intermediate and deep wells identified a greater silt content in soil samples collected from increased depths. Thin silt layers (2 to 4 inches thick) were present at varying depths between 10 and 24 feet below grade. The silt content gradually increased from 24 to 26 feet below grade and a layer of silt with fine sand was present from 26 to 30+ feet below grade. This silt layer was presumed to act as a confining unit for vertical migration of contaminants.

Groundwater is typically present throughout the Site between 3.5 and 5 feet below grade. Based on water table elevation data, shallow groundwater within the Site area has been determined to flow toward the east/northeast.

A drainage culvert is present in the front (eastern) parking area of the Site that runs in a north-south orientation. The size of the drainage culvert, based on field measurements, was five feet (5') in diameter. Based on surveyed elevation data for the culvert in the area of the Dalewood I driveway, the top of the culvert was at an elevation approximately 1.5 to 2 feet above the groundwater table and extended 3 to 3.5 feet into the groundwater table. Therefore, the culvert extended into the shallow groundwater table and appeared to act as a shallow barrier in this area of the Site. Historic topographic maps indicated that a stream was present in the front area of the Site in the approximate location of the culvert.

2.0 Institutional and Engineering Control Plan

As the Site investigation identified residual contamination in soil and groundwater above unrestricted levels, certain Institutional and Engineering Controls will be required. The applicable Institutional and Engineering Controls are described in the following sections of this SMP.

2.1 Institutional Controls

Institutional Controls (IC) are typically defined as any non-physical means of enforcing a restriction on the use of real property that limits human or environmental exposure, restricts the use of groundwater, provides notice to potential owners, operators, or members of the public, or prevents actions that would interfere with the effectiveness of a remedial program or with the effectiveness and/or integrity of operation, maintenance, or monitoring activities at or pertaining to a Site.

The Institutional Control that will be utilized at this Site includes a Soil Management Plan as described in Section 2.1.1.

An Environmental Easement (Deed Restriction) may be applicable for the Site when formal Site Closure is requested from the NYSDEC. The purpose of an Environmental Easement will be to provide notification to future property owners and/or lessees regarding the Site condition and activities which may be affected by such condition. Any such documents will be completed pursuant to the NYSDEC DER-10 Technical Guidance and the Environmental Easement template as published by the NYSDEC Division of Environmental Remediation.

2.1.1 Soil Management Plan

The objective of the Soil Management Plan is to establish guidelines for management of impacted soil material during any future site activities which would breach the cover system at the site and expose impacted soil. The cover system at the Site consists of the existing Site building and asphalt paved parking and driveway areas.

2.1.1.1 Nature and extent of contamination

Section 1.3.1 of this SMP describes the areas of residual soil concentrations. Based on data obtained from previous investigations and the historical IRMs completed at the site, areas exhibiting residual concentrations of COCs are under the building, asphalt pavement areas, and/or at a depth below the groundwater table. The area indicated on Figure 3 – Soil Management Area Map, includes areas of known impacted soil.

2.1.1.2 Constituents of Concern

Section 1.3.1 of this SMP described the COCs which consist of dry cleaning related compounds such as Tetrachloroethylene (PCE) and its breakdown products trichloroethylene (TCE), dichloroethylene (DCE), and vinyl chloride (VC).

2.1.1.3 Contemplated Use

Future use of the Site is anticipated to remain unchanged. The retail shopping center is currently used by various businesses including restaurants, retail sales, and a grocery store. Any variation in future use or significant on-site construction activities would require a thorough Site review and potential protective measures for construction activities and future site occupants.

2.1.1.4 Purpose and description of surface cover system

The purpose of the surface cover system is to eliminate the potential for direct human contact with residual impacted soil, mitigate vapor intrusion and eliminate the potential for contaminated runoff from the property. The cover system consists of:

- Asphalt: paved parking and driveway areas include a minimum of 6 inches of material (asphalt and sub-base material)
- Concrete: The building floor and sidewalk areas include a minimum of 6 inches of material (concrete and sub-base)

2.1.1.5 Management of soils and long term maintenance of cover system

The purpose of this section is to provide guidelines for the management of subsurface soils/fill and the repair/replacement of the cover system during any future intrusive work which breaches the cover system within the designated Soil Management Area (see Figure 3).

<u>Excavation below the cover system</u>

During any future excavation activity at the Site, the excavation of soil material may be necessary for the construction or repair of utility corridors or building infrastructure. For excavation work below the cover system, a representative of the owner with construction/ remediation experience will monitor soil excavations or disturbances. The soil will be inspected for staining and will be field screened for the presence of VOCs with a photoionization detector (PID). Excavated soil that does not appear to be impacted may be used on-site as fill below the cover system. Soil that is excavated as part of construction which can not be used as fill below the cover system will be characterized prior to transportation off-site for disposal at a permitted facility. The owner's representative will provide signed certification that excavation work below the cover system and subsequent repair/replacement of the cover system was conducted in a manner consistent with this SMP. This certification will be included in the annual SMP certification report.

Excavated soil will be considered potentially contaminated and will be stockpiled on the property for further assessment. The potentially contaminated soil will be stockpiled) on polyethylene sheeting and will be completely covered using polyethylene sheeting to reduce the infiltration of precipitation and the migration of dust. The stockpiled soil will then be sampled for on-site reuse or off-site disposal.

Sampling

For excavated soil with visual evidence of contamination (staining or elevated PID measurements (>10ppm)), one composite sample will be collected for each 100 cubic yards of stockpiled soil. For excavated soil that does not exhibit visual evidence of contamination or elevated PID readings, but must be sent for off-site disposal, one composite sample will be collected for each 2000 cubic yards of stockpiled soil, and a minimum of 1 sample will be collected for volumes less than 2,000 cubic yards.

A composite sample will be collected from five different locations within each stockpile. The composite sample will be analyzed by a NYSDOH ELAP certified laboratory for volatile organic compounds, and any additional parameter required by the proposed disposal facility.

Soil that has been characterized and found to meet the applicable NYSDEC soil re-use criteria may be reused on-site as subgrade or excavation backfill. On-site soil may not be reused as backfill in landscaping berms to be used for planting of trees and shrubs. If the analysis of the soil samples reveals unacceptable constituent concentrations, the soil may not be used as on-site backfill, and additional analyses may be necessary to further classify the material for off-site re-use or disposal purposes. If the analytical results indicate that the soil is not a regulated hazardous waste, the soil will be properly disposed off-site at a non-hazardous waste facility permitted for this soil. If the analytical results indicate that concentrations exceed the standards for RCRA characteristics, the material will be considered a hazardous waste and will be disposed off-site at a permitted RCRA disposal facility within 90 days of excavation.

Subgrade Material

Off-site borrow soils will be documented as having originated from locations having no evidence of disposal or release of hazardous, toxic, or radioactive substances, wastes, or petroleum products. Off-site soil intended for use as backfill cannot otherwise be defined as a solid waste in accordance with 6 NYCRR Part 360-1.2(a).

If a contractor designates a source as "virgin" soil, it shall be further documented in writing to be native soil material from areas not having supported any known prior industrial or commercial development or agricultural use. Virgin soils shall be subject to collection of one representative composite sample per source. The sample should be analyzed for TCL VOCs, SVOCs, pesticides, PCBs, arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, and cyanide. The soil will be acceptable for use as backfill provided that all parameters meet the applicable NYSDEC criteria.

Non-virgin soils will be tested via collection of one composite sample per 500 cubic yards of material from each source area. If more than 1,000 cubic yards of soil are provided from an off-site non-virgin soil source area and both samples of the first 1,000 cubic yards meet criteria, the sample collection frequency will be reduced to one composite for every 2,500 cubic yards of additional soils from the same source.

Cover System Specifications

Based on the current Site construction, no area of the site Soil Management Area will consist of soil as cover material. Asphalt will be replaced with a minimum cross sectional thickness of 6 inches of material (asphalt and clean sub-base) for protection from exposure to the underlying soil. Concrete may be used in areas that will become slab on grade structures, utilities, footings, foundations, or signs. Concrete may also be used instead of asphalt for roads, sidewalks, and parking lots. Where concrete will be used as the cover material, a minimum cross sectional thickness of 6 inches of material (concrete and clean sub-base material) is required for protection from exposure to the underlying soil. A vapor barrier consisting of polyethylene sheeting with a minimum thickness of 8 mils will be installed under all occupied buildings. Type and thickness of concrete and sub-base material will be determined based on intended use of the area.

Erosion Control

Proven soil conservation practices will be incorporated in the construction and development plans to mitigate soil erosion, off-site migration, and water pollution from erosion. The use of appropriate temporary erosion control measures, such as silt fencing and/or hay bales, will be required around all soil stockpiles and exposed soil surfaces during redevelopment activities.

Dust Control

The surface of exposed soil areas will be wetted with water or other dust suppressive agents to control dust during construction. Any subgrade material left exposed during extended interim periods (greater than 90 days) prior to placement of final cover shall be covered with a temporary cover system (i.e., tarps, spray type cover system, etc.) or planted with vegetation to control fugitive dust to the extent practicable. Particulate monitoring will be performed along the downwind occupied perimeter of the sub-parcel during subgrade excavation, grading, and handling activities in accordance with the "Community Air Monitoring Plan" described below, and in accordance with NYSDEC TAGM 4031 (Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites).

Construction Water Management

Pumping of water from excavations, if necessary, will be performed in such a manner as to prevent the migration of particulates, soil, or concrete materials, and to prevent damage to the existing subgrade. Water pumped from excavations will be managed

properly in accordance with all applicable regulations so as to prevent endangerment of public health, property, or any portion of the construction.

In areas where groundwater may be contaminated, the groundwater in excavations will be field screened for VOCs and observed for any noticeable sheens. Water in the excavations will not be discharged to the ground surface if staining or PID measurements above background are observed in the excavation, or a sheen is present on the water surface.

If any of these conditions exist, the water pumped from the excavations will be containerized and analyzed in accordance with the "Surface Water and Ground Water Quality Standards" set forth in 6 NYCRR Part 703.5 and the local sewer authority discharge permit. If the water meets the surface water and groundwater quality standards, it may be discharged to the ground surface. If the water does not meet the surface water and groundwater quality standards, it may be discharged to the local sewer authority under a discharge permit. If the water quality is such that the local sewer authority discharge permit requirements will be exceeded, or the local sewer authority will not approve the discharge to a sewer, it will be transported off-site for proper disposal or treated on-site via an approved treatment system. Runoff from surface discharges shall be controlled. No discharges shall enter a surface water body without proper permits.

Access Controls

Access to soil on the property will be controlled until final cover is placed to prevent direct contact with subgrade materials. Excavated subgrade material that is stockpiled on site will be temporarily covered to limit access to that material.

Cover Maintenance

Maintenance of the asphalt and concrete cover will be the responsibility of the property owner. Cover materials, fencing, and signs will be inspected annually and repaired as needed.

The main features of the OM&M Plan are:

- Inspection procedures
- Evaluation of the final cover system (e.g., roads, buildings, parking lots) for sloughing, cracks, settlement, damaged fencing, gates or signs
- Repair of any deficiencies found
- Inspection
- Annual reporting

2.1.1.6 Health and Safety

Invasive work performed at the property will be performed in accordance with all applicable local, state, and federal regulations to protect worker health and safety. If intrusive work is expected to breach the cover system, all contractors performing

redevelopment or maintenance activities will be required to prepare a site-specific, activity-specific, Health and Safety Plan (HASP). The HASP must also include provisions for protection of the community as described the below.

Construction personnel protection

Contractors engaged in subsurface construction or maintenance activities (e.g., foundation and utility workers) will be required to implement appropriate health and safety procedures. These procedures will involve, at a minimum, donning adequate personal protective equipment, performing appropriate air monitoring, and implementing other engineering controls as necessary to mitigate potential ingestion, inhalation and contact with residual constituents in the soils. Recommended health and safety procedures include, but may not be limited to, the following:

- While conducting invasive work at the Site, the Contractor shall provide safe and healthful working conditions. The Contractor shall comply with all New York State Department of Labor regulations and published recommendations and regulations promulgated under the Federal Occupational Safety and Health Act of 1970 and the Construction Safety Act of 1969, as amended, and with laws, rules, and regulations of other authorities having jurisdiction. Compliance with governmental requirements is mandated by law and considered only a minimum level of safety performance. The Contractor shall insure that all work is performed in accordance with recognized safe work practices.

- The Contractor shall be responsible for the safety of the Contractor's employees and the public. The Contractor shall be solely responsible for the adequacy and safety of all construction methods, materials, equipment and the safe prosecution of the work.

- The Contractor is responsible to ensure that all project personnel have been trained in accordance with 29 CFR 1910.120.

- The Contractor shall have a HASP, written in accordance with 29 CFR 1926.65, prepared, signed and sealed by a safety professional; a safety professional and/or a trained safety representative(s) active on the job whenever the work is in progress; an effective and documented safety training program; and a safety work method check list system.

- Recognition as a safety professional shall be based on a minimum of certification by the Board of Certified Safety Professionals as a Certified Safety Professional and 5 years of professional safety management experience in the types of construction and conditions expected to be encountered on the Site.

- All personnel employed by the Contractor or his subcontractors or any visitors whenever entering the job site, shall be required to wear appropriate personal protection equipment required for that area.

Community Air Monitoring Program

Air monitoring will be performed during redevelopment activities in accordance with the New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan (CAMP). All air monitoring readings will be recorded in a logbook and will be available for review by the NYSDEC and NYSDOH.

Quality Assurance / Quality Control and Analytical Data

All groundwater and soil characterization samples collected during site construction activities will be analyzed using the most recent NYSDEC Analytical Services Protocol (ASP), consistent with Section 2 of DER-10, the Technical Guidance for Site Investigation and Remediation.

The laboratory proposed to perform the analyses will be certified through the New York State Department of Health Environmental Laboratory Approval Program (ELAP) to perform Contract Laboratory Program (CLP) analysis and Solid Waste and Hazardous Waste Analytical testing on all media to be sampled during this investigation. The laboratory will maintain this certification for the duration of the project.

Procedures for chain of custody, laboratory instrumentation calibration, laboratory analyses, reporting of data, internal quality control, and corrective actions shall be followed as per NYSDEC ASP and as per the laboratory's Quality Assurance Plan. Where appropriate, trip blanks, field blanks, field duplicates, and matrix spike, matrix spike duplicate shall be performed at a rate of 5% (1 per up to 20 samples) and will be used to assess the quality of the data. The laboratory's in-house QA/QC limits will be utilized whenever they are more stringent than those suggested by the EPA methods.

The building and paved parking areas will be maintained in good condition for continued Site use as a retail facility, therefore specific cover maintenance plans are not deemed necessary as part of this plan.

2.1.1.7 Reporting and Annual Certification

The Owner will complete and submit to the Department an Annual Site Status Report by January 15th of each year. Such annual report shall contain certification that the institutional controls put in place pursuant to this Site Management Plan are still in place, have not been altered, and are still effective; that the remedy and protective cover have been maintained; and that the conditions at the Site are fully protective of public health and the environment. The annual certification is further described in Section 5.0 of this SMP.

If the cover system has been breached during the year covered by that Annual Report, the owner of the property shall include the following in that annual report:

- A certification that all work was performed in conformance with this SMP.
- Plans showing areas and depth of fill removal.
- Copies of daily inspection reports for soil-related issues.
- Description of erosion control measures.
- A text narrative describing the excavation activities performed, health and safety monitoring performed (both site specified and Community Air Monitoring), quantities and locations of soil/fill excavated, disposal locations for the soil/fill, soil sampling locations and results, a description of any problems encountered, location and acceptability test results for backfill sources, and other pertinent information necessary to document that the site activities were carried out properly.

2.2 Engineering Controls

Engineering Controls (EC) include any physical barriers or methods employed to actively or passively contain, stabilize, or monitor hazardous waste or petroleum, restrict the movement of hazardous waste or petroleum to ensure the long-term effectiveness of a remedial program, and/or eliminate potential exposure pathways to hazardous waste or petroleum.

Engineering controls that will be employed at this Site are provided for protection of Site occupants from potential vapor intrusion into the building. The most effective means of addressing the presence of and the potential for sub slab vapor migration into the occupied tenant space will be the use of passive and active techniques. As noted in the background discussion for the Site, source removal of soils beneath the former dry cleaner and in the upgradient end of the Site has been completed. It is anticipated over time that groundwater concentrations of CVOCs will decrease thereby reducing the potential for volatilization from groundwater migration beneath the building.

2.2.1 Vapor Intrusion Mitigation – Passive Measures

Each tenant space will be thoroughly inspected both visually and with a photoionization detector (PID) to locate any penetrations through the floor that may act as a pathway for vapor migration. All accessible cracks, utility conduits and sumps will be inspected, documented, and sealed. Annual inspections will be conducted and documented to ensure that penetrations through the

floor remain properly sealed and that new penetrations have not developed. Indoor areas have been reviewed on previous occasions and a summary of such areas is provided in Appendix A.

Heating, Ventilating, and Air Conditioning (HVAC) equipment will be inspected by a qualified HVAC technician and where possible the HVAC systems will be adjusted to increase fresh air intake rates in order to maintain a positive pressure differential between the building interior and exterior. Periodic (annual) inspections will be conducted and documented to ensure that the HVAC systems are properly operating with respect to fresh air intake rates, damper settings, and efficiency.

Pressure differential readings will be obtained and documented on a semi-annual basis (summer and winter). The pressure differential will be measured between the indoor air environment and the outdoor ambient air. The measurements will be obtained utilizing a portable digital micro-manometer with a resolution of 0.001 inches of water column ("wc"). The pressure range of the instrument is -3.0 "wc to +2.2 "wc.

Where possible existing HVAC air filters will be replaced by the HVAC technician with an activated carbon type filter. Certain HVAC systems may not contain air filtration components and/or may be non-standard sizes, thereby prohibiting carbon filter installations. HVAC systems that have been modified with the installation of activated carbon filters will be monitored and documented on a regular basis to ensure proper operation and filters will be replaced twice each year.

2.2.2 Sub Slab Depressurization System

A Sub Slab Depressurization System (SSDS) has been installed at the Site. A Westchester County Department of Health (WCDOH) Air Emission permit to construct was issued on April 28, 2006. Final permit documents, including "As-built" figures have been submitted as of September 12, 2006 and a "Certificate to Operate" is pending issuance from the Westchester County Department of Health. The system's extraction components were installed in the area of the former dry cleaning facility space (#357) and the adjacent "Verizon" space (#355). Figure 4 illustrates the systems extraction locations.

An operation and maintenance plan for the SSDS is provided in Section 4.1 of this SMP.

3.0 Monitoring Plan

Environmental monitoring will be performed that will include field measurements, sampling, laboratory analyses, and documentation of groundwater, indoor air, and sub slab vapor conditions. The purpose of the continued monitoring will be to determine the effectiveness of the proposed remedial action and protective measures, and to monitor trends of various chemical and biological parameters over time.

3.1 Air Monitoring

On-going air monitoring data will consist of two components, sub-slab soil vapor and indoor ambient air. The sub-slab soil vapor data will be utilized to periodically monitor the potential for vapor intrusion to the indoor building spaces. Indoor air sampling will then be completed (concurrently with the sub-slab vapor sampling) within the tenant spaces.

Indoor air screening will be completed with a photoionization detector (PID) capable of providing results down to 0.1 parts per billion volume (ppbv). Sub slab sample points and other field screening will be completed with a PID capable of providing results between 0.1 and 9,999 parts per million volume (ppmv). The PID will detect any volatile organic compound (VOC) with an ionization potential that is at or below the rating of the lamp that is installed in the PID. The PID to be utilized will contain a 10.6 eV lamp which is capable of detecting the target chlorinated compounds as well as most gasoline related constituents and a variety of other common products.

In addition, sub slab vapor and indoor air samples will be collected and will be analyzed by GCMS via Method TO-14A (Modified). The target compound list for each of the samples will include tetrachloroethylene (PCE), trichloroethylene (TCE), cis-1,2 dichloroethylene (c-DCE), trans-1,2 dichloroethylene (t-DCE), and vinyl chloride (VC). Six (6) Liter Summa type canisters will be utilized for sub slab soil vapor and indoor air sample collection over a period of not less than 2 hours (flow rate of 50 cc/minute).

The New York State Department of Health (NYSDOH) document "Guidance for Evaluating Soil Vapor Intrusion in the State of New York", (Working Draft February 2005) will be utilized for screening evaluations completed as part of this monitoring plan. Data will be compared to the decision matrices provided in the NYSDOH document. The United States Environmental Protection Agency (USEPA) Office of Solid Waste and Emergency Response (OSWER) document "Draft Guidance for Evaluation The Vapor Intrusion To Indoor Air Pathway From Groundwater And Soils" (dated November 2002) will also be referenced, as needed for this monitoring plan.

3.1.1 Indoor Air Monitoring

On an annual basis, an indoor ambient air sample will be collected within each of the tenant spaces where the Sub Slab Soil Vapor screening data indicates that the potential exists for vapor intrusion to occur based on the existing NYSDOH Guidance documents. The indoor

ambient air samples will be collected following the procedure provided in Appendix B – Indoor Air Sampling Standard Operating Procedure. The sample canisters will be placed at an elevation between three and four feet above ground level. The samples will be collected from locations within the tenant spaces as shown on Figure 7.

Annual sampling within tenant spaces 355 and 357 will be discontinued following the first event assuming the following:

- The SSDS/SVE system remains active and within operational parameters on a continuous basis; and
- Initial confirmatory indoor air sample results are within the NYSDOH guidelines

Monitoring of the SSDS/SVE system will be completed as described in Section 4.1 of this SMP. A vacuum gauge (needle display) is present on the outdoor system piping, as shown on Figure 5, where building occupants will be able to verify system operation.

Site details regarding building layout and a brief description of product inventories has been previously obtained and is described in Section 2.2.1 and in Appendix A of this SMP. The indoor area uses and descriptions will be reviewed and updated as part of the indoor air monitoring procedure. Kroll identified products containing potential air contaminants throughout Unit 365 (Sally Beauty Supply), and various types and quantities of cleaning supplies were present in the remaining tenant spaces. A list of the specific compounds previously found and the indoor vapor readings within the tenant areas will be recorded for each tenant space at the time of the air sample collection. Potential indoor air sample collection within Unit 365 will require visual observation during sample collection and/or a reduced sampling time in order to verify that the stored products are not released during the sampling event.

3.1.2 Sub Slab Soil Vapor Monitoring

On an annual basis, one (1) Sub Slab Soil vapor sample will be collected from one sampling location already established in each of the tenant spaces within the building, and one (1) sample will be collected from each of the two (2) sampling locations in the Pathmark tenant space. This sampling will be completed following the procedures provided in Appendix B – Sub Slab Soil Vapor Sampling Standard Operating Procedure. Annual sampling of soil vapor will not be completed from tenant spaces 355 and 357 while the SSDS/SVE system remains active. The samples will be collected from locations within the tenant spaces as shown on Figure 7.

3.2 Groundwater Monitoring

The existing groundwater sampling data indicates that Monitored Natural Attenuation and Enhanced Bioremediation are likely the most effective remedial alternatives for this Site. However, additional data is required to further establish baseline site conditions and degradation rates. Additional monitoring events and parameters, as described in the following document: Wiedemeier, et al., September 1998, Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water, USEPA Office of Research and Development,

Washington, DC EPA/600/R-98/128 (TPENA), are included in the groundwater monitoring program.

3.2.1 Sample Method, Quality Assurance, and Quality Control

Groundwater samples will be collected from select monitoring wells and analyzed utilizing laboratory and field methods described below. Monitoring wells will be sampled and analyzed from the following Site locations targeting the following general areas: background, source area, plume area, cross gradient, and a sentinel. Table 1 provides a list of the existing site wells and the proposed sampling intervals.

Table 1 - Groundwater Monitoring Plan

ID	Laboratory Analysis	Microbial Assessment	Field Parameters	Elevation / Gauge Only
SHALLOW WELLS				
MW-1S	Q	A	Q	Q
MW-2S			Q	Q
MW-3				Q
MW-4	A		Q	Q
MW-6				Q
MW-7	Q		Q	Q
MW-8	A		Q	Q
MW-9	A		Q	Q
MW-10	Q	A	Q	Q
MW-20	Q	A	Q	Q
MW-200	Q		Q	Q
MW-201	Q		Q	Q
MW-202	Q		Q	Q
MW-203			Q	Q
MW-204	Q		Q	Q
MW-205	Q		Q	Q
MW-206	Q	A	Q	Q
MW-207				Q
MW-208	A		Q	Q
MW-209				Q
MW-210	A		Q	Q
MW-211	Q	A	Q	Q
MW-212	Q		Q	Q
MW-214	Q	A	Q	Q
MW-216				Q
MW-300				Q
MW-303	Q		Q	Q
INTERMEDIATE AND DEEP WELLS				
MW-1D	A		Q	Q
MW-2D	A		Q	Q
MW-5	A		Q	Q
MW-215	A		Q	Q

Blank = Sampling not proposed
A = Proposed annual sample interval
Q = Proposed quarterly sample interval

A trip blank and equipment blank will be collected and laboratory analyzed for Chlorinated VOCs by EPA Method 8021 in accordance with NYSDEC technical guidelines as well as certain field and other parameters.

Kroll personnel will complete the well sampling following a low-flow or low stress method of groundwater sample collection. Prior to groundwater purging or sampling, the depth to static water in each well will be recorded to the nearest 0.01 feet using a sonic water level indicator probe. Between wells the probe will be decontaminated using standard procedures as described in Appendix B.

Groundwater sampling will be performed using the low-flow or low-stress method of groundwater monitoring well purging and sampling. The procedure generally follows the "Low Stress (Low Flow) Purging and Sampling Procedure" as published by the USEPA and described in Appendix B of this SMP.

Decontamination and purge water will be placed in a DOT rated drum, labeled, and stored on-site pending characterization and subsequent off-site disposal. The drums will be temporarily stored in the rear, outside area, behind Unit number 357 until removed from off-site disposal.

Groundwater samples, the trip blank, and the equipment blank will be placed into clean collection containers and maintained in an iced cooler. Chain-of-Custody documentation will be established and the samples will be transported on the day of sample collection to a New York ELAP certified laboratory for analysis.

3.2.2 Analytical Methods

Retrieved samples will be logged by the field staff and placed directly in laboratory supplied glassware and kept in an iced cooler; the cooler and samples will be transported to an independent New York State ELAP Certified laboratory under Chain-of- Custody documentation. Groundwater samples will be analyzed utilizing both field instruments and methods as well as laboratory based methods as specified on Table 2. Groundwater sampling events are intended to target the parameters identified below, based on anticipated analytical method. The parameters listed below are based on the USEPA TPENA Document and are intended to establish a thorough baseline condition for the Site. The results of each sampling event will be reviewed and utilized to assess the need for modifying the target parameters and sampling points.

Field Analysis:

Temperature, conductivity, dissolved oxygen (DO), pH, and oxidation reduction potential (ORP), Iron II, Sulfide

Laboratory Analysis:

Nitrate, Nitrite, Total Nitrate/Nitrite, Ammonium, total iron, chloride, sulfate, Total Organic Carbon (TOC), Total Inorganic Carbon (TIC), Manganese, methane, ethane, ethane, Orthophosphate, Hydrolyzable phosphate, microbial populations, and Aromatic and/or Chlorinated Volatile Organic Compounds (VOCs)

The laboratories intended to be utilized for this project are:

Contest Analytical Laboratory (New York ELAP 10899)
East Longmeadow, MA.
Chemical parameter analysis

EAS Laboratories (New York ELAP 10916), Watertown, CT
Chemical parameter analysis

Geovation Technologies, Inc, Florida, NY
N/P Species, microbial populations

Microseeps, Pittsburgh, PA
Methane, ethane, and ethene analysis

The analytical procedures that will be utilized to obtain the above described parameters will follow available EPA prescribed methodologies (where available). The methodologies include appropriate sample preservation, holding times, and analysis procedures. The field methods will follow manufacturer instructions and established procedures for the equipment utilized or test kits employed. The specific methods utilized will be described in the Annual Site Status Report.

TABLE 2

ANALTYICAL METHODS

PARAMETER	METHOD
Temperature	Field / YSI Instrument
Conductivity	Field / YSI Instrument
Dissolved oxygen (DO),	Field / YSI Instrument
pH	Field / YSI Instrument
oxidation reduction potential (ORP)	Field / YSI Instrument
Iron II	Hach Kit IR-18C
Sulfide	Hach Kit HS-C
Nitrate	Difference
Nitrite	EPA Colorimetric
Total Nitrate/Nitrite	Spongy Cadmium
Ammonium	EPA Colorimetric
Arsenic	MCAWW 206.2
total iron	MCAWW 200.7
chloride	SM 4500 Cl
sulfate	SM 4500 SO4
Total Organic Carbon (TOC)	SM 5310
Total Inorganic Carbon (TIC)	SM 5310
Manganese	MCAWW 200.7
Methane	AM20GAX
ethane	AM20GAX
ethane	AM20GAX
Orthophosphate	EPA Colorimetric
Hydrolyzable phosphate	Sulfuric acid digestion
microbial populations	DAPI Count
Aromatic and/or Chlorinated VOCs	SW-846 8260

4.0 Operation and Maintenance (O&M) Plan

Operation and Maintenance (O&M) of the SSDS/SVE system will be required during periods of system operation in order to evaluate the system effectiveness and maintain continued operation. Maintenance of other Site components including monitoring wells and sub slab vapor points is also required to maintain data integrity and sample point availability.

4.1 Sub Slab Depressurization System (SSDS)/Soil Vapor Extraction (SVE) System

The SSDS/SVE system consists of ten PVC extraction points installed below the building floor in the area of tenant spaces 355 and 357. The extraction points are then connected to a single header, one 19 gallon moisture separator tank, a particulate filter, a 2 horsepower regenerative type blower, and two (2) granular activated carbon (GAC) units (200 pounds each) for treatment of the air stream prior to discharge. All equipment is specified to operate unattended and equipment failsafes are incorporated into the design to terminate operation if undesired deviations occur. The SSDS/SVE is required to operate under a permit from the Westchester County Department of Health. A "Certificate to Construct" (number 52-6712, emission point SVE01) was issued as of April 28, 2006. As-built figures of the system components and extraction point locations are included as Figures 4, 5, and 6 of this SMP.

The calculated carbon life expectancy is 150 days for each 200 pound GAC unit when under constant maximum operation. When in operation, the SSDS/SVE system O&M will be completed on a monthly schedule during the first year of operation and may be revised based on system operational data and actual GAC usage. All routine and non-routine maintenance must be documented and included in the Annual Site Status Report.

The O&M procedures will include the following:

- Operational condition (on/off/irregularities) will be noted on arrival at the Site.
- General system operation will be noted (irregular vibration, noises, leaks, etc) as well as valve positions and visual condition of fittings, piping, discharge point, labeling, and equipment components.
- The area of the discharge point will be visually inspected to verify no air intakes have been located nearby.
- The air stream will be monitored at the pre equipment (SP-1), influent (SP-2), mid point (SP-3), and effluent (SP-4) sample points of the SSDS utilizing a handheld PID.
- System parameters including vacuum or pressure levels will be recorded at points GA-V1, GA-P1, and GA-P2.
- The system will be shut down and water within the moisture separator tank will be drained. Drained water will be collected and placed within an on-site storage drum for temporary storage pending off-site disposal. Estimated water volume removed will be recorded.
- The inlet particulate filter will be removed and cleaned based on visual inspection. The filter condition and potential need for replacement will be recorded.

- Adjustments of valves or bleed in will be made to maintain operation of the equipment within the specified design parameters.
- Operational condition (on/off/changes/irregularities) will be noted prior to departure from the Site.

The "Installation and Operating Instructions for GAST Hazardous Duty Regenair Blowers" procedures were prepared by the manufacturer and are included within Appendix C of this SMP. The GAST instructions indicate that inlet and exhaust filters may need cleaning or replacement of the elements. Additional servicing of the inside of the blower unit, if required, will be completed by an authorized service center. Specific fan or motor replacement intervals are not specified within the instructions. Equipment replacement or repair will be based upon operational data obtained as part of the O&M procedures.

On a quarterly basis the existing sub slab soil vapor points will be monitored utilizing a PID and vacuum gauge. Available points are located in units 357, 359, 361 and 365. The monitoring data will be utilized to verify effectiveness of the SSDS.

4.2 Monitoring Well Maintenance

Monitoring well and sub slab vapor point condition will be recorded during regular sample events. At a minimum, the condition of metal covers, bolts, concrete, and PVC components will be noted. Necessary repairs will be recommended to the Site owner. Completed repairs will be documented and noted as part of the Annual Site Status Report.

5.0 Annual Certification and Summary Reports

The Owner will complete and submit to the department an annual certification report by January 15th of each year until the NYSDEC notifies the owner in writing that the remedial process is concluded and/or there is no further need for such Engineering Controls or Institutional Controls.

Such annual report shall contain a certification that the institutional and engineering controls put in place pursuant to this Site Management Plan are still in place, have not been altered, and are still effective; that the remedy and protective cover have been maintained; and that the conditions at the Site are fully protective of public health and the environment. The annual certification will further include:

a. An annual status of each engineering and institutional control;
b. An annual status of groundwater monitoring activities;
c. An Institutional Control/Engineering Control certification by Kroll or another site representative acceptable to the Department. The Certification will confirm that the Institutional Controls and Engineering Controls put in place are unchanged from the previous certification and nothing has occurred that would impair the ability of the control to protect public health or the environment or constitute a violation or failure to comply with an Operation and Maintenance Plan or Soil Management Plan; and
d. If the soil management cover system has been breached during the year covered by the Annual Report, the owner of the property will include a certification that all work was performed in conformance with this Site Management Plan.

An Annual Site Status Report will be submitted for the sub slab depressurization system, groundwater sampling, sub slab soil vapor sampling, and indoor air sampling. The Annual Site Status Report will include site plans illustrating sample locations and tabular results. The summary will include copies of field readings, analytical data, and appropriate QA/QC. The Annual Site Status Report will include an evaluation of data trends and apparent system effectiveness.

Figure 1 – Site Locus Map

Dalewood I Shopping Plaza
357 North Central Avenue
Hartsdale, NY
VCP Site V00457-3

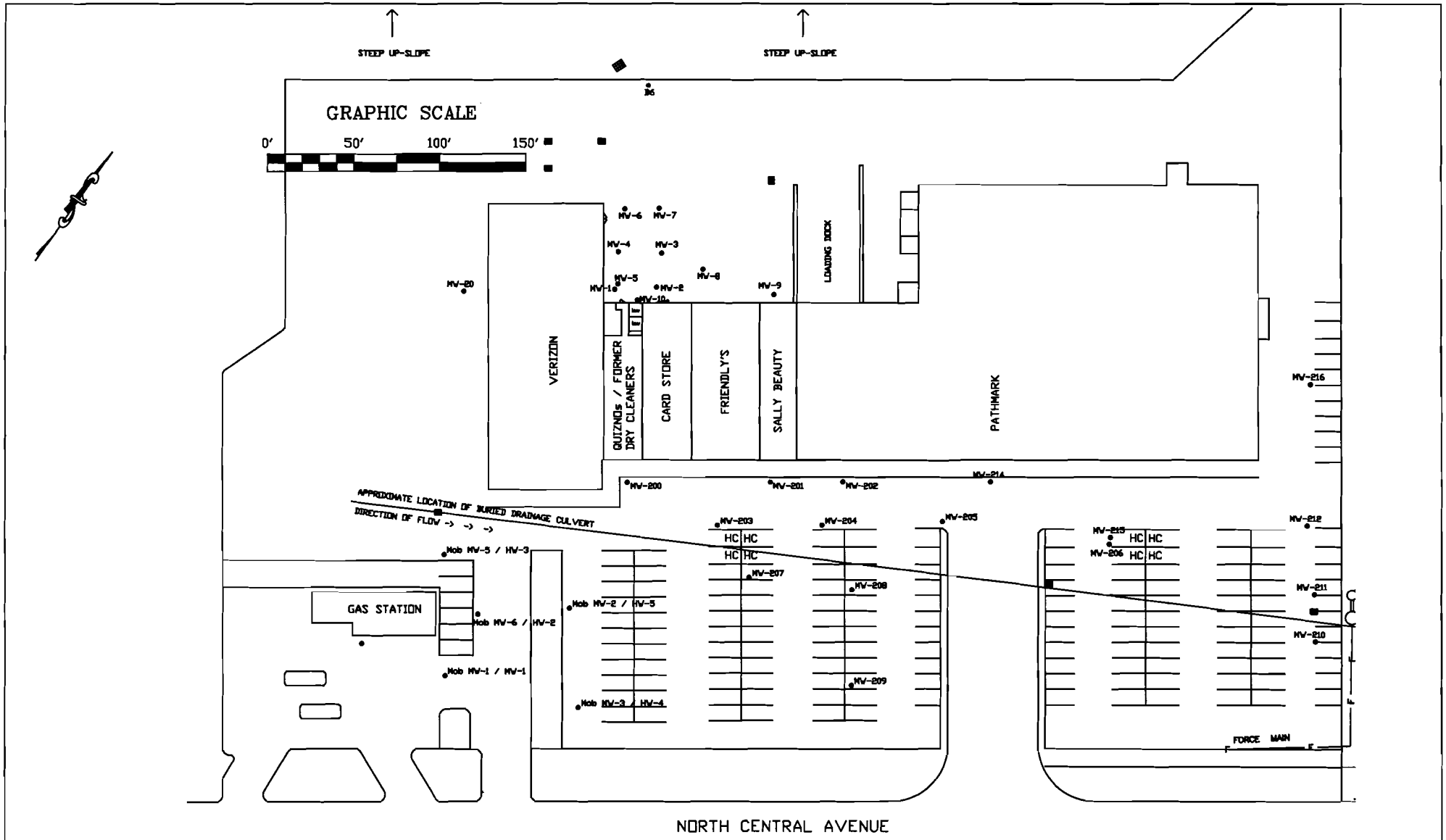

FIGURE 2
SITE MAP
DALEWOOD PLAZA
HARTSDALE, NEW YORK

LEGEND:

SCALE:
DATE 3/3/00
DRAWN BY: PMR
CHECKED BY:

KROLL ASSOCIATES, INC.

PROJECT NO.: 81789.09
FILE NAME:
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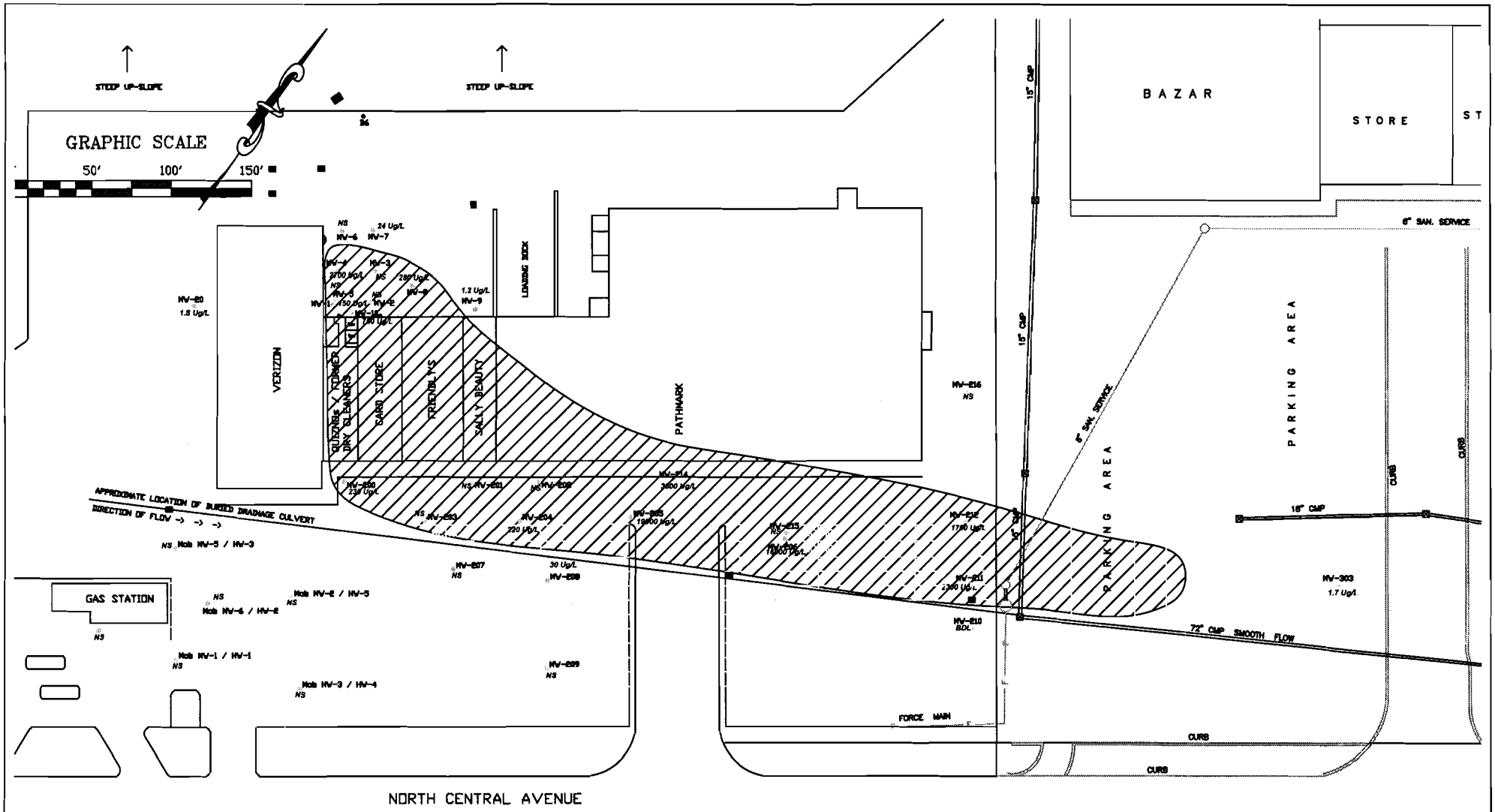

FIGURE 3
SOIL MANAGEMENT PLAN AREA

DALEWOOD PLAZA
HARTSDALE, NEW YORK

LEGEND:

▨ = SOIL MANAGEMENT AREA

SCALE:
DATE: 1/12/2005
DRAWN BY: PMR
CHECKED BY: RPM

REVISIONS

PROJECT NO.: HT 1094

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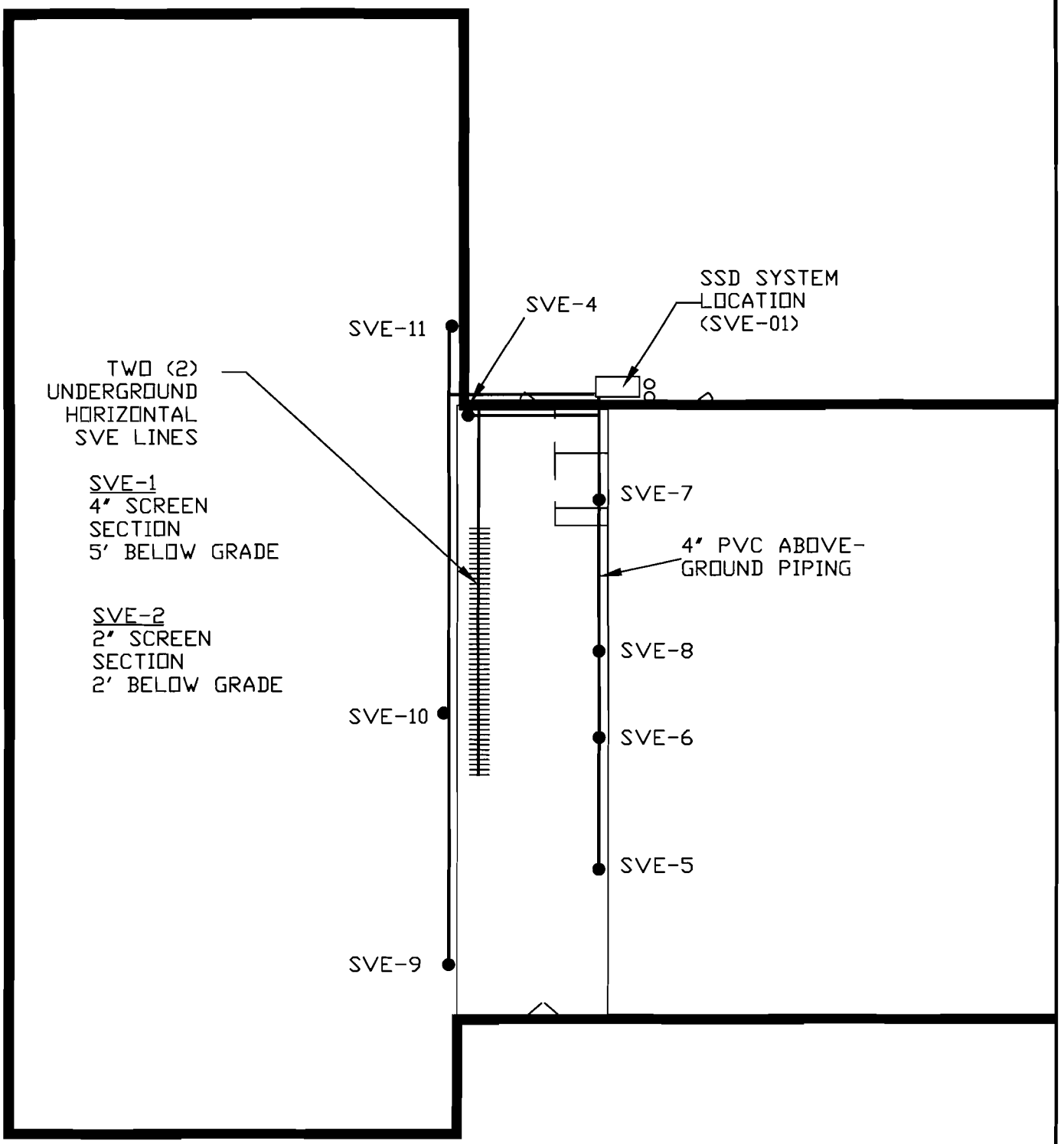
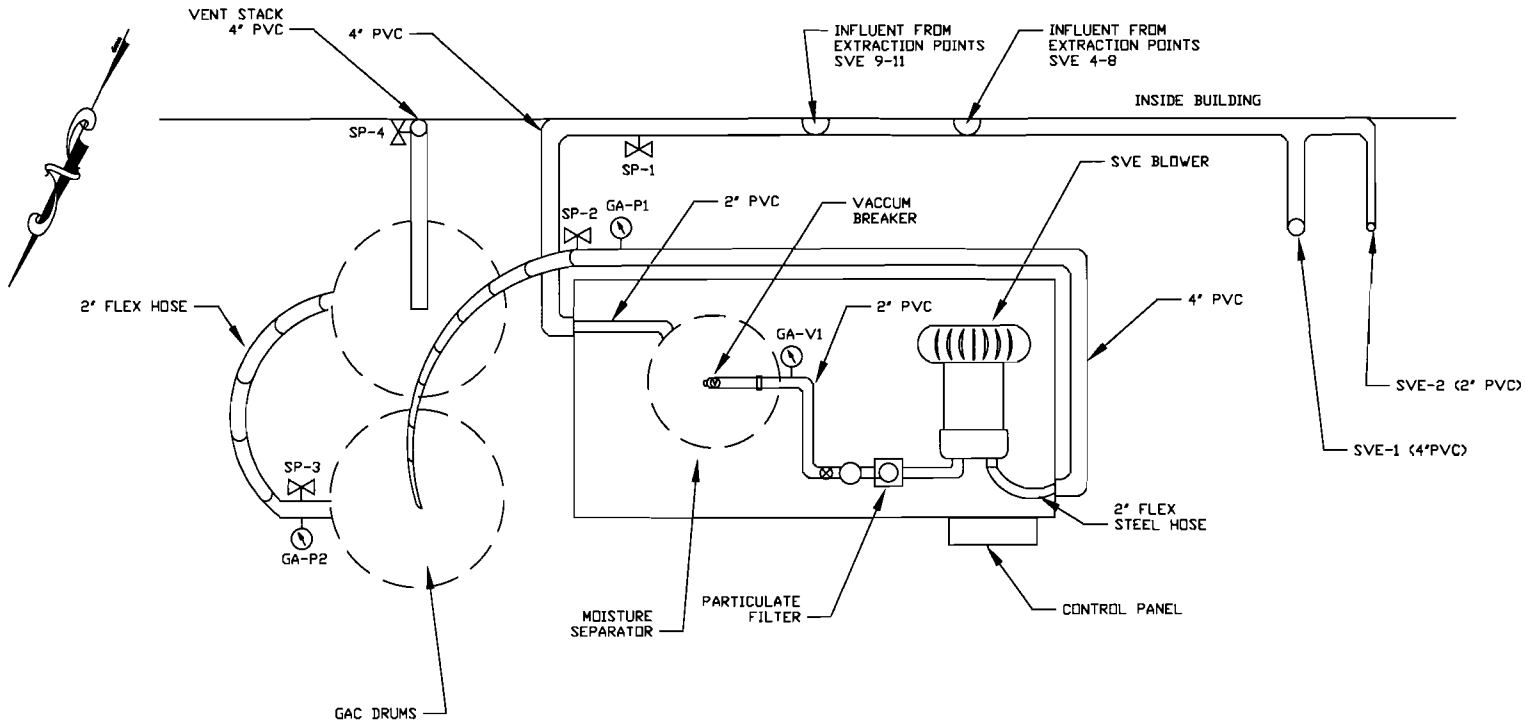
900 THIRD AVENUE, NEW YORK, NEW YORK 10022

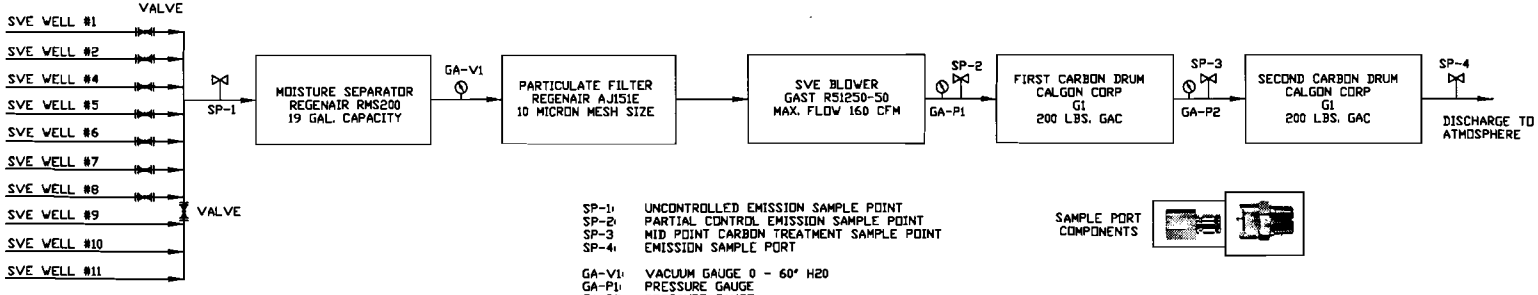
1 OF 1 SHEETS



FLOOR PLAN DALEWOOD PLAZA 357 N. CENTRAL AVE. HARTSDALE, NEW YORK	SCALE: NTS DATE: 9/9/05 DRAWN BY: RPM CHECKED BY:	REVISIONS	PROJECT NO.: 81769.06 FILE NAME: FLOOR PLAN.DWG FIGURE 4
	KROLL ASSOCIATES, INC. 900 THIRD AVENUE, NEW YORK, NEW YORK 10022		



FLOW DIAGRAM



SP-1: UNCONTROLLED EMISSION SAMPLE POINT
SP-2: PARTIAL CONTROL EMISSION SAMPLE POINT
SP-3: MID POINT CARBON TREATMENT SAMPLE POINT
SP-4: EMISSION SAMPLE PORT

GA-V1: VACUUM GAUGE 0 - 60" H20
GA-P1: PRESSURE GAUGE
GA-P2: PRESSURE GAUGE

SAMPLE PORT COMPONENTS

EQUIPMENT PLAN VIEW
DALEWOOD PLAZA

357 NORTH CENTRAL AVENUE
HARTSDALE, NEW YORK

1. SUB SLAB DEPRESSURIZATION SYSTEM PUMP SPECIFICATIONS

   PUMP: GAST REGENAIR MODEL R5125Q-50
   SINGLE PHASE, 2 HP, 60 HZ
   MAX FLOW: 160 CFM

2. CONTROL EQUIPMENT

   REGENAIR RMS200 MOISTURE SEPARATOR

   2 CARBTROL 200 LB VAPOR PHASE
   (or BARNEBY SUTCLIFFE or EQUIVALENT)
   GRANULAR ACTIVATED CARBON DRUMS

3. STACK HEIGHT IS 17.2' FROM THE GROUND AND 2.2' ABOVE THE ROOF OF THE BUILDING.

WARNING

IT IS A VIOLATION OF THE NEW YORK STATE LAW FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR, TO ALTER AN ITEM ON THESE PLANS, SPECIFICATIONS, PLATES, OR REPORTS IN ANY WAY.

PROJECT NO.: 81769.06

FILE NAME: EQUIP PLAN.DWG

FIGURE 5

		REVISIONS
SCALE:	NTS	
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CHECKED BY:	PMR	

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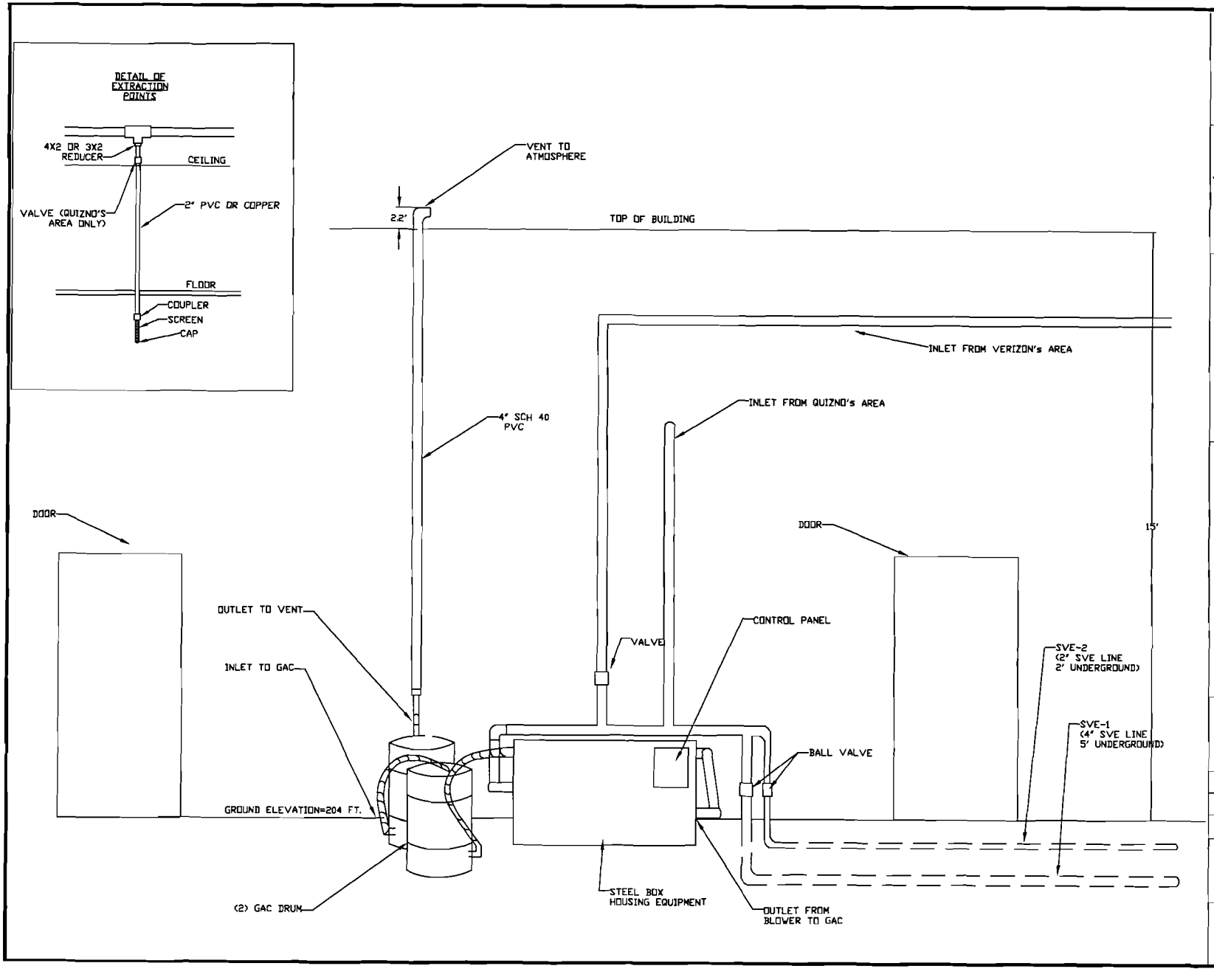
800 THIRD AVENUE, NEW YORK, NEW YORK 10022



SIDE ELEVATION

DALEWOOD PLAZA

357 NORTH CENTRAL AVENUE
HARTSDALE, NEW YORK

1. SUB SURFACE DEPRESSURIZATION SYSTEM PUMP SPECIFICATIONS

   PUMP: GAST REGENAIR MODEL R5125Q-50 SINGLE PHASE, 2 HP, 60 HZ MAX FLOW: 160 CFM

2. CONTROL EQUIPMENT

   REGENAIR RMS200 MOISTURE SEPARATOR

   2 CARBTROL 200 LB VAPOR PHASE (or BARNEBY SUTCLIFFE or EQUIVALENT) GRANULAR ACTIVATED CARBON DRUMS

3. STACK HEIGHT IS 17.2' ABOVE THE GROUND AND 2.2' ABOVE THE ROOF OF THE BUILDING.

PROJECT NO.: 81769.06

FILE NAME: SIDE ELEVATION.DWG

FIGURE 6

		REVISIONS
SCALE:	NTS	
DATE:	9/9/05	
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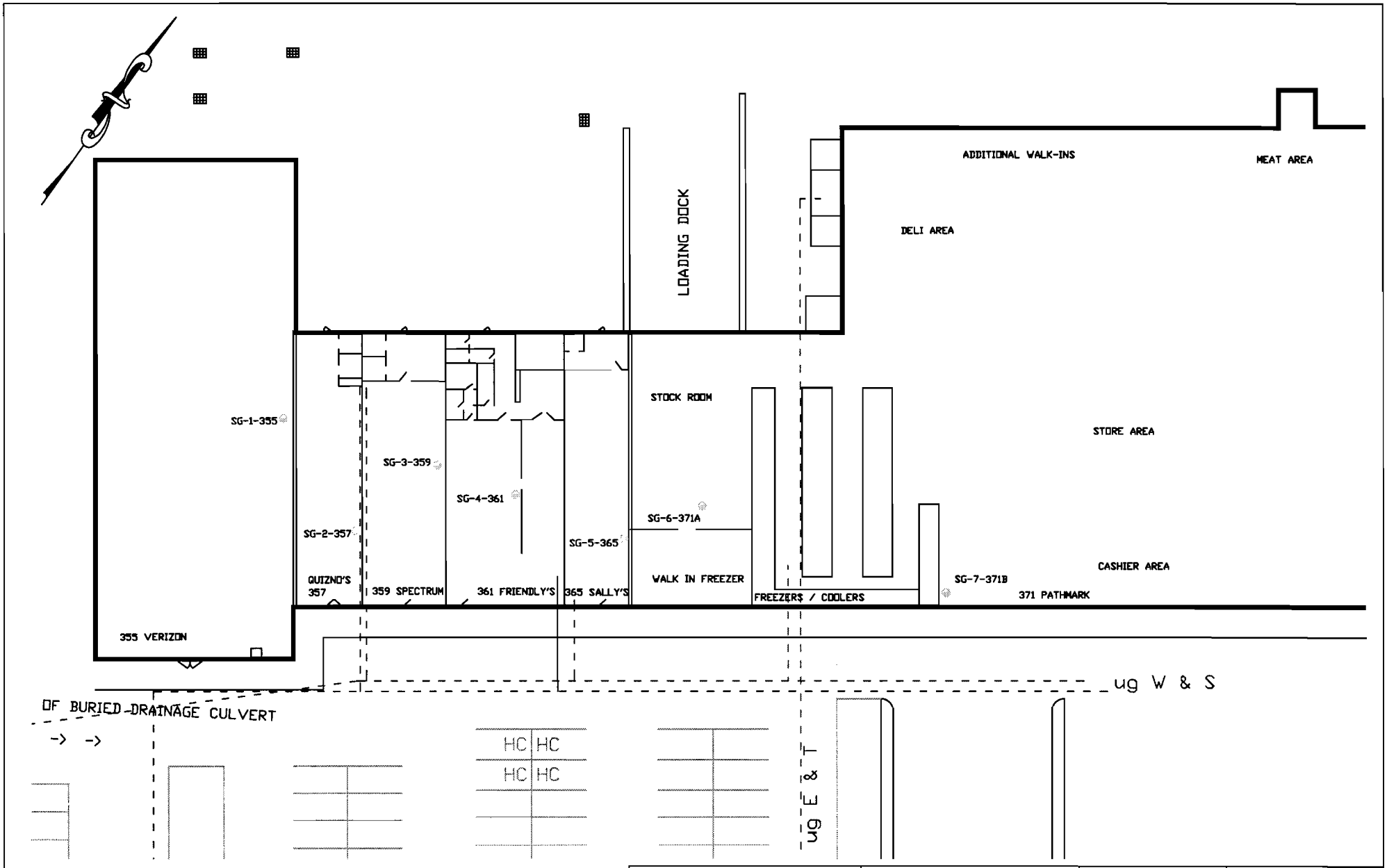


FIGURE 7
INDOOR AIR / SOIL VAPOR SAMPLE POINTS
DALEWOOD PLAZA
HARTSDALE, NY

INDOOR AIR SAMPLE AND SUB SLAB VAPOR LOCATION

SCALE:
DATE: 3/1/05
DRAWN BY: PMR
CHECKED BY: RPM

REVISIONS

PROJECT NO.: 81769.06

FILE NAME: Dalewood Sub Slab

KROLL ASSOCIATES, INC.
900 THIRD AVENUE, NEW YORK, NEW YORK 10022

1 OF 1 SHEETS

APPENDIX A

Indoor Area Inspection Summaries

The shopping center construction generally consists of slab on grade with standard subsurface footing walls located below the outside structural walls and certain internal structural walls. Internal concrete block structural walls are known to exist between Units 355 and 357, and Units 365 and 371. Basements are not present in any areas of the retail building. Individual subsurface utilities are generally limited to sewer and water connections. These connections generally enter from the front of the building and service areas in the rear section (west) of each unit. According to Town records, the property has been connected to municipal water and sewer systems since the Dalewood I Site was developed in 1966.

Inspections of the Site building have been completed by Kroll during the Remedial Action Work Plan activities. The areas of the building are briefly described as follows:

355 N. Central Avenue (Verizon Store) This area was renovated during 2005 and a Verizon Wireless phone store and service center began occupancy of the space. This area of the building encompasses approximately 10,700 square feet and is reported to have been a movie theater when the shopping center originally opened.

Prior to the 2005 renovation the space was occupied by a retail music and video store. During this time the space was divided into two areas with a rear storage, shipping, receiving area that was roughly 10% of the total unit area. The remainder of the space included a retail sales area that was undivided and the entrance was located in the front of the store (northeast sector). A finished ceiling was not present, as the roof joists were visible throughout the unit and the roof height was approximately 20'. A utility hatch was identified in the front area of the store, behind the former cash register area. The utility hatch consists of a square steel plate located adjacent to the front wall of the unit area. The utility area was approximately two to three feet deep and contains cast iron sewer type piping with clean outs present. The construction of the utility hatch area consisted of concrete side walls and a soil bottom.

The 2005 renovation to a Verizon Wireless store and service center included installation of numerous walls, a drop ceiling, new HVAC system, bathrooms, kitchen area, and other utility modifications. The unit consists of a retail sales area, service counter, offices, merchandise stock room, bathrooms, and a single bay garage space where equipment installations are performed. Flooring includes carpet within the retail sales and most office areas; vinyl type tile flooring is present throughout the stock room, certain offices, and hallways.

The main electric service enters the unit through the floor in the center of the rear area. Sewer and water services enter through the floor in the bathroom and kitchen spaces. Wall penetrations are present in various locations where electric boxes are installed.

Typical cleaning compounds and materials are present in appropriate locations within the rear service areas. The materials include cleaners for floors, bathrooms, glass, and counters.

Sub slab vapor and indoor air sampling was completed in the main portion (retail sales area) prior to the 2005 renovation. The samples were collected near the building side wall (north

side) adjacent to the exterior contaminant source area on the west side of the building. The sub slab vapor sample point was installed approximately five feet out from the wall. The concrete floor was approximately 8" thick at the sample point location. Additional sub slab vapor and indoor air sampling has been completed following occupation by Verizon Wireless. The samples were collected from the same approximate location, which is now the merchandise stock room.

357 N. Central Avenue (Quizno's Sub)- This area was renovated during 2004 and a Quizno's Sub (sandwich) store now occupies the space. This area was formerly occupied by Huntington Learning Center, and was the location of a dry cleaner establishment prior to Huntington.

This area of the building encompassed approximately 2,000 square feet and is generally divided into two areas with two separate bathrooms located in the rear portion of the space. The two main areas consist of a customer service area for ordering, sandwich preparation, and eating and a kitchen area consisting of material storage, sinks, refrigeration units, and counters.

Water and sewer utilities enter through the floor adjacent to the bathroom area along the wall adjacent to Unit 359. Electric utilities entered the unit from overhead, through the ceiling space, in the rear area of the unit. A drop ceiling is present at a height of approximately 10'. The area above the drop ceiling is open to the roof, which is located at a height of approximately 14'. Ceramic tile flooring is present throughout the unit area. The HVAC system is roof mounted, natural gas fired, and consists of air supply ducts with a common plenum return.

Typical cleaning compounds and materials are present in appropriate locations within the rear service areas. The materials include cleaners for floors, bathrooms, glass, and counters.

Sub slab vapor and indoor air sampling was completed in the main customer area near to the wall adjacent to Unit 359. The sub slab sample point was installed approximately one foot out from the wall. The concrete floor was approximately 6" thick at the sample point location.

359 N. Central Avenue (Spectrum / Hallmark Cards)- This area of the building encompasses approximately 2,500 square feet and is divided into two areas. There is a rear storage, shipping, receiving area which is roughly 10% of the total unit area. The rear storage area contains two rooms, one bathroom, which is located in the southwest corner of the unit and a small office space adjacent to the bathroom.

A drop ceiling is present throughout the retail area of the unit at a height of approximately 10'. The area above the drop ceiling is open to the roof, which is located at a height of approximately 14'. The HVAC system is roof mounted; natural gas fired, and consists of supply and return air ducts. Supply ducts are provided to retail and storage areas, individual ducts were not observed to the office and bathroom areas. Tile is present in the rear area covering the storage, bathroom, and office sections. Electrical utilities enter the unit from overhead, through the ceiling space, in the center of the rear storage area. Water and sewer utilities enter through the floor in the bathroom area along the wall adjacent to Unit 357. Typical cleaning compounds and materials were present in the rear storage area. The materials include cleaners for floors, bathrooms, glass, and counters.

The retail sales area is undivided (with the exception of sales racks and aisles) and the entrance and sales register are located in the front of the store (northwest sector) where the employees are generally present. Wall to wall carpet is present throughout the retail section of this unit. Retail merchandise consists of greeting cards, small gift and collectible type items, newspapers, and magazines.

No penetrations were noted in the floor and side walls of the unit space. Very few electrical boxes are present throughout the unit with the locations noted to be in a front wall, counter area, and a building column in the middle of the space.

Sub slab vapor and indoor air sampling was completed in the main portion (retail sales area) of this unit. The samples were collected near the building side wall (north side) that is shared with Unit 361 (Friendly's). The sub slab vapor sample point was installed approximately two feet out from the wall and was placed under a display shelving unit.

The concrete floor thickness was noted to be greater (approx 6 – 8") than other portions of the building. Additionally, the subsurface soil remained stiff and was also not characteristic of other areas at the Site.

361 N. Central Avenue (Friendly's Restaurant) - This area of the building encompasses approximately 3,600 square feet and is divided into several areas. The front portion, approximately 67% of the total unit area, consists of the main restaurant, serving area, and kitchen. The rear portion (approximately 33% of the total unit area) is divided into public restrooms; storage, office, dishwashing, walk in refrigerator, and a boiler room (natural gas fired) for hot water supply. A drop ceiling is present in the rear area of the unit at approximately 7', in the eating area at approximately 10', and in the kitchen area at approximately 8.5'. The area above the drop ceiling is open to the roof, which is located at a height of approximately 14'. The HVAC system is roof mounted; natural gas fired, and consists of supply and return air ducts. Supply ducts are provided to each of the unit spaces.

Tile is present throughout the rear area and the kitchen area. Carpet is present in the restaurant and serving area. Electrical utilities enter the unit from overhead, through the ceiling space, in the center of the rear storage area. Water and sewer utilities enter through the floor in the bathroom area along the wall adjacent to Unit 359 and throughout the kitchen and dishwashing areas

Typical cleaning compounds and materials were present in the rear storage area. The materials include cleaners for floors, bathrooms, tables, counters, and dishes.

Sub slab vapor and indoor air sampling was completed in the main restaurant area adjacent to the kitchen. The sub slab sample point was installed approximately two feet out from the kitchen wall and was placed under a booth seat. The concrete floor was approximately 6" thick at the sample point location.

365 N. Central Avenue (Sally Beauty Supply)- Sally Beauty Supply consists of a retail beauty supply store. This area of the building encompasses approximately 1,800 square feet and is divided into two areas. There is a rear storage, shipping, receiving area, which is roughly 10% of the total unit area. The rear area is not designed or intended for continued employee occupancy. A desk is present in the middle of the storage area for employee use. One bathroom is located in the rear area toward the southwest sector of the unit.

A drop ceiling is present throughout the retail area of the unit at a height of approximately 11'. The area above the drop ceiling is open to the roof, which is located at a height of approximately 14'. The HVAC system is roof mounted; natural gas fired, and consists of supply and return air ducts. Supply ducts are provided to the retail and storage areas, individual ducts were not observed to the bathroom area. Electrical utilities enter the unit from overhead, through the ceiling space, in the center of the rear storage area. Water and sewer utilities enter through the floor in the bathroom area along the wall adjacent to Unit 361. A utility hatch is present below the front cash register area of the unit space. The hatch is partially covered with a counter and was therefore not opened. A sewer cleanout is reportedly located within this hatch. Typical cleaning compounds and materials were present in the rear storage area. The materials include cleaners for floors, bathrooms, glass, and counters. Unopened hair care products are present throughout the retail and storage sections of this unit.

The retail sales area is undivided and the entrance and sales register are located in the front of the store (southeast sector) where the employees are generally present. Tile is present throughout the unit area covering the storage, bathroom, and retail sections.

No penetrations were noted in the floor and side walls of the unit space. Very few electrical boxes are present throughout the unit with the locations noted to be in a front wall, cash register area, and in the rear of the space.

Sub slab vapor and indoor air sampling was completed toward the front of the main portion (retail sales area) of this unit. The samples were collected near the building side wall (north side) that is shared with Unit 371 (Pathmark). The sub slab vapor sample point was installed approximately two feet out from the wall and was placed under a display shelving unit. The concrete floor was approximately 6" thick at the sample point location.

371 N. Central Avenue (Pathmark Grocery Store)- This area of the building encompasses approximately 37,000 square feet and is divided into several areas. The front and central portion, approximately 67% of the total unit area, consist of the retail sales, cash register, and office area. The rear and southern portions (approximately 33% of the total unit area) are divided into storage, shipping, receiving, meat/produce preparation, maintenance, and walk in refrigerator areas. A drop ceiling is not present in the rear storage and receiving areas of the unit. A drop ceiling is present in the retail sales area at approximately 11'. The area above the drop ceiling is open to the roof, which is located at a height of approximately 14'. The HVAC system is roof mounted; natural gas fired, and consists of supply and return air ducts. Supply ducts are provided to each of the unit spaces.

The main electric and telephone utilities for the Site building pass under this unit (from the front

to the rear) and enter a separate utility room adjacent to the loading dock. Water and sewer utilities enter through the floor in the bathrooms and other locations where water is utilized (deli, meat/produce preparation).

Tile is present throughout the retail portion of the unit area. The remaining unit areas include bare or coated concrete. Typical cleaning compounds and materials were present in the rear storage area. Certain retail areas of this store include displays of unopened cleaning, health, and beauty supplies as well. Refrigerated and frozen food display units are present in the southern portion of the unit with continuous units located along the exterior and interior walls.

Few penetrations were noted in visible portions of the floor and side walls of the unit space. Electrical boxes are present in the wall in front of the cash register area. The wall and floor area around the refrigerated and frozen food sections is generally not visible.

Sub slab vapor and indoor air sampling was completed in two areas of this unit, including a rear stock room toward the end that is adjacent to Unit 371 (Sally Beauty Supply) and in the front of the main portion (cash register area) of this unit. The stock room sample was collected in an area toward the center of the room. The front samples were collected near the building front wall (east side). The concrete floor was approximately 4 ½" thick at the front sample point location and 6" thick at the stock room location.

APPENDIX B

Low Flow Groundwater Sample Procedure

Equipment Decontamination Procedure

Air Sample Procedures

Sub Slab Soil Vapor Sampling SOP
Indoor Air Sampling SOP

Low Flow Sampling

Statement of Purpose

The purpose of low flow (low stress) sampling is to collect groundwater samples that are representative of groundwater quality under natural flow conditions. In particular, the presence and concentration of dissolved organic and inorganic pollutants as well as the pollutants associated with mobile particulates are most accurately revealed through low flow sampling. Historic sample collection techniques often cause stress on an aquifer causing changes in the water chemistry and an inaccurate or incomplete analysis of site conditions. Low flow sampling techniques minimize stress on the aquifer by utilizing low pumping rates that result in minimal water level drawdown.

Low Flow Approach

This guidance presents a generalized approach to low flow sampling. Typically, screen lengths are limited to 10 feet and the pump intake is located at the midpoint of the saturated screen length. The location of the pump intake should be adjusted if strata of higher permeability or areas of higher concentrations of pollutants can be identified. When possible, pump intakes should be located at least 2 feet above the bottom of the well in order to minimize the possibility of mobilizing sediment from the bottom of the well. Dedicated sampling equipment insures that samples are collected from the same location within the well during each sampling event.

Sampling Procedure

1. Measure static water level in the well

2. Purge the well utilizing a peristaltic pump and starting at the lowest speed and increasing the speed until discharge occurs. Monitor drawdown. If water is drawn down greater than 0.3 feet, the system should be operated intermittently so that drawdown does not exceed 0.3 feet.

3. The pump discharges through a flow-through cell where a YSI 600XI (or equal) is used to measure water quality parameters during pumping. Measurements should include: turbidity, DO, specific conductance, temperature, pH, and ORP/Eh.
4. Purging is complete when field parameters have stabilized. The parameters are stabilized when three consecutive readings taken at 3 to 5 minute intervals, are within the following limits:
    - Turbidity (10% for values greater than 1 NTU)
    - DO (10%)
    - Specific conductance (3%)
    - Temperature (3%)
    - pH (+0.1 units)
    - ORP/Eh (+ millivolts)
5. Water samples should be collected before it passes through the Flow-through-cell. VOCs should be collected first into appropriately preserved vials.
6. The equipment will be decontaminated between sampling locations to prevent cross-contamination.

7. An equipment blank will be collected consisting of distilled water that has been used as a final equipment rinse in the decontamination process.
8. Groundwater samples are placed into clean collection containers and maintained in an iced cooler. Chain of custody documentation is established and the samples are transported to a state certified laboratory for analysis on the day of sample collection
9. The output of the YSI 600XL datalogger is downloaded to a PC, tabulated and graphed.

Chain of Custody

A chain of custody (COC) program must be followed during sample handling activities from the field through laboratory operations. This program is designed to assure that each sample is accounted for at all times. Field data sheets, chain of custody records, and sample labels must also be completed by the appropriate sampling and laboratory personnel for each sample. The objective of the sample custody identification and control system is to assure, to the extent practicable, that:

- all samples are uniquely identified
- the correct samples are analyzed for the correct parameters and are traceable through their records
- important sample characteristics are preserved
- samples are protected from loss or damage
- any processing of samples (e.g., filtration, preservation) is documented
- a defensible forensic record of sample integrity is established
- client confidentiality is maintained

Standard Chain of Custody Protocol

Prepare labels for each sample that includes identification, date and time of collection, sample parameters to be analyzed, any preservatives added, and the name of the sample collector. Record the date and time of sampling, sample locations, sample bottle identification, sample matrix (soil, water, etc.), type of sample (grab/composite), and specific instructions on the Chain of Custody forms.

Holding Times and Preservation

Sample holding times are specified for the initiation of chemical analyses, usually beginning at the time of sample collection. Unless the proper sample bottle preparation and sample preservation are taken in the field, sample composition can be altered by contamination, degradation, biological transformation, chemical interactions, and other factors during the time between sample collection and analysis. Steps taken to maintain the in situ characteristics required for analysis may include refrigeration of samples at 4 degrees C, freezing, pH adjustment, and chemical fixation. Samples are preserved according to the protocol established for the specific analytical method and for the specific regulatory requirements selected to obtain the desired data.

Unless specified in a site specific sampling plan, the standard policy for the preservation of environmental samples includes maintaining the samples at a temperature no greater than 4 degrees Celsius until they are transferred to the laboratory.

Decontamination of Sampling Equipment

Where possible and where budgetary constraints allow, sampling equipment will be dedicated to each sampling location and precleaned prior to a sampling episode, thus eliminating the need for field decontamination of sampling equipment. When this is not possible, field decontamination of equipment must occur prior to collection of each set of samples.

In general, decontamination should allow for adequate cleaning of the sampling tools for the contaminants found at any given site. Different chemicals or mixtures of chemicals will require the use of different cleaning methods or compounds.

The following steps will be used, as a minimum:

1. Wash equipment with a non phosphate detergent solution (e.g., Alconox) and a brush.
2. Rinse with tap water (potable).
3. Rinse thoroughly with deionized water.
4. For water samples, rinse the equipment two to three times with the media being sampled before collecting a sample.
5. Repeat this procedure for each location.

Soil Gas Probe Materials/Construction

Materials: stainless steel tubing, nylon tubing, or Teflon tubing

Diameter: nominally 1/8" OD or ¼" OD

Length: Just below base of slab

Tip: SS, Al, ceramic, plastic (typically no tip required for sub-slab Sampling).

Surface Termination: Swagelok (or comparable) fittings or valve

Notes:

- Stainless steel and nylon tubing are preferred over Teflon due to lower adsorption. Nylon tubing is more flexible and easier to work with than stainless steel tubing.
- Tips (aluminum, ceramic, SS) can be put on the end if desired to give a longer screen interval, but typically are not used for sub-slab samples.
- Various surface terminations are available and the selection often depends on whether the probes are temporary or permanent.

Probe Installation Protocol

1. Ensure all sub-slab utilities (public and building specific) are marked prior to installation.
2. Drill a ½" to ¾" OD hole through the slab with a drill and spline bit. Do not use water. If dust prevention necessary, cover the location with a towel/cloth and drill through a pre-cut hole in the cloth.
3. Measure slab thickness. Cut probe tubing to appropriate length to reach base of slab and to give required type of surface termination (flush, recessed, protruding). If a flush or recessed surface termination is required, a larger diameter hole in the upper 1 inch of the slab may be required to leave enough room for the fitting on the probe tubing.
4. Insert tubing. Add sand to cover tip with about 1 inch of sand.
5. Grout to the surface using bentonite (if temporary installation) or cement (if permanent installation).
6. Wait 30 to 60 minutes prior to sampling.

Soil Gas Sample Collection

Since sub-slab sampling is from very shallow depths (typically 2" to 6" below surface), minimum purge volumes and low volume samples are preferred to minimize potential breakthrough from the surface. Tracer/leak gas is necessary to ensure breakthrough does not occur.

Materials: 1/8" or ¼" OD nylon or Teflon tubing.

Sample Canister: syringe, tedlar bag, SS canister, gas-tight glass.

Plastic or stainless 3-way valve.

Vacuum gauge and pump as necessary.

Notes: If canisters with flow chokes are used, ensure flow chokes are dedicated to the canister or cleaned before reuse on another canister.

1. Connect fresh tubing to top of probe and to a 60 cc syringe using a 3-way valve.
2. Purge out 4 tubing dead-volumes (~ 4 cc/ft for 1/8"OD tubing and 15 cc/ft for ¼" OD tubing).
3. Close 3-way valve. Remove syringe and connect soil gas sampling container to valve. If SS canisters are used, check canister vacuum with gauge immediately before use. If flow chokes are used on the canisters, ensure they are clean and all connections are tight.
4. Place tracer/leak compound, typically iso-propanol, butane, or difluoroethane, around the probe at the ground surface and at connections in the sampling system. Liquid tracers are easily emplaced by wetting a paper towel and wrapping around the test locations. Vapor tracers require either multiple canisters for each test location or a device to hold the vapor near the test location (such as a cover at the surface).
5. Once tracer compound in place, open 3-way valve and collect soil gas sample and any duplicate samples.
6. If measurements with a portable meter to be made (e.g. oxygen), conduct measurements after collection of the soil gas sample(s) for VOC analysis.

Notes:

- Sample flow rates are not to exceed 200 ml/min to minimize potential for vacuum extraction of contaminants from the soil phase.

- The presence of the tracer compound in the analysis confirms a leak and another sample is collected until no leak is detected (if on-site analysis exists).
- If large volume canisters used (3 or more liters), a purge volume test may be required to ensure sample dilution from other zones is not occurring.

Field Records

The field technician maintains a log sheet summarizing:

- Sample identification
- Probe location
- Date and time of sample collection
- Sampling depth
- Identity of samplers
- Weather conditions
- Sampling methods and devices
- Soil gas purge volumes
- Volume of soil gas extracted
- Vacuum of canisters before and after samples collected.
- Apparent moisture content (dry, moist or saturated etc.) of the sampling zone
- Chain of custody protocols and records used to track samples from sampling point to analysis.

1.0 - Background

This plan has been prepared following the NYSDOH Indoor Air Sampling & Analysis Guidance dated August 8, 2001. The NYSDOH Guidance includes the following task breakdown:

1. Pre-sampling inspection and preparation of indoor sample collection areas
2. Product Inventories Stored On-Site
3. Collection of Samples
    - 3a. Quality Assurance/Quality Control
    - 3b. Sampling Information
    - 3c. Sample Analysis

Attachment - Indoor Air Quality Questionnaire and Building Inventory

Portions of the NYSDOH Guidance are intended for residential type buildings and are not applicable to commercial type buildings and therefore are not included.

2.0 - Collection of Samples

Samples will be collected utilizing Summa type canisters, which will be placed in locations described in a detailed Site sampling plan. The samples will be collected by placing the canisters at an elevation approximately three feet above the floor level. The sample will be collected over a period between two and twenty-four hours. The sampling and preparation personnel will not linger in the immediate sampling area following placement of the sampling device.

The sample events will take place on an average weekday. Sampling will not take place on a day with extreme weather conditions (heat, cold, or precipitation).

2.1 - Quality Assurance / Quality Control

A New York State ELAP certified laboratory will be utilized for sample analysis. Summa canisters will be prepared and provided by the laboratory directly to the sampling personnel. Sampling personnel will follow appropriate handling and storage protocols. Sampling personnel will avoid actions such as pumping gas prior to testing or using permanent marking pens in the field.

A trip blank and field duplicate will each be collected. The field duplicate will be collected from an appropriate sample location at the Site. The Site specific sampling plan will determine if a background (outdoor / upgradient) sample is required.

Chain-of-Custody documentation will be established and the samples will be transported on the day of sample collection to a New York ELAP certified laboratory for analysis.

2.2 - Sampling Information

Detailed information will be gathered at the time of sample collection to document conditions in order to aid in interpretation of the test results. The information to be recorded will include additional floor plan details such as doorways, floor drains, chemical storage areas, and compass orientation (north). The wind direction, temperature, and general atmospheric conditions will be documented. Any pertinent observations such as odors or PID readings will be recorded.

2.3 - Sample Analysis

A New York State ELAP certified laboratory will be utilized for analysis of air samples. Air samples will be collected utilizing Summa type canisters and analyzed for target compounds by EPA Method TO-14. The target compounds will include halogenated volatile organic compounds (HVOCs), such as the EPA Method 8021 HVOC compounds list, and including: tetrachloroethylene, trichloroethylene, vinyl chloride and dichloroethylene.

3.0 – Records

The summary will include copies of field readings, analytical data, and QA/QC

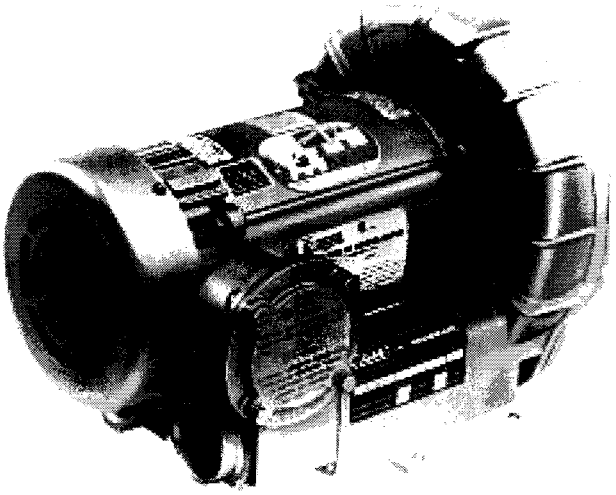
- The sampling technician will maintains a log sheet summarizing:
- Sample identification
- Sample location
- Date and time of sample collection
- Sampling Elevation / Depth
- Identity of samplers
- Weather conditions
- Sampling methods and devices
- Vacuum of canisters before and after samples collected.
- Apparent moisture content (dry, moist or saturated etc.) of the sampling zone
- Chain of custody protocols and records used to track samples from sampling point to analysis..

APPENDIX C

Installation and Operating Instructions for
GAST Hazardous Duty Regenair Blowers

Post Office Box 97
Benton Habor, MI 49023-0097
Ph: 616-926-6171
Fax: 616-925-8288

70-6100/F2-205
AK811 (Rev. G)



INSTALLATION AND OPERATING INSTRUCTIONS FOR GAST HAZARDOUS DUTY REGENAIR BLOWERS

This instruction applies to the following models ONLY: R3105N-50, R4110N-50, R4310P-50, R4P115N-50, R5125Q-50, R5325R-50, R6130Q-50, R6P155Q-50, R6340R-50, R6P355R-50 and R7100R-50.

AUTHORIZED SERVICE FACILITIES

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FAX: 616-925-8288
www.gastmfg.com

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Canada H9R 4R7
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FAX: 514-697-3070

Gast Manufacturing Inc.
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Carlstadt, NJ 07072
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FAX: 201-933-5545
www.gastmfg.com

Wainbee Limited
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Canada L4Z 3S6
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FAX: 905/568-0083
http://www.wainbee.ca

Brenner Fiedler & Assoc
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Cerritos, CA 90701
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TEL: 310-404-2721
FAX: 310-404-7975
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Japan Machinery Co., Ltd
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Tokyo, 100-91 Japan
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Gast Manufacturing Co., Ltd.
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Loudwater, High Wycombe
Bucks, England HP10 9SD
TEL: 011-44 1628 532600
FAX: 011-44 1628 532470
http://www.gastltd.com

NOTE: *General correspondence should be sent to—*
Gast Mfg. Inc./A Unit of IDEX Corporation
P O Box 97
Benton Harbor, MI 49023-0097

SAFETY

This is the safety alert symbol: ⚠. When you see this symbol, be aware that personal injury or property damage is possible. The hazard is explained in the text following the symbol.

The following is an explanation of the three different types of hazards:

⚠ **DANGER**	Severe personal injury or death will occur if hazard is ignored.
⚠ **WARNING**	Severe personal injury or death can occur if hazard is ignored.
⚠ **CAUTION**	Minor injury or property damage can occur if hazard is ignored.

Read the information carefully before operating.

GENERAL INFORMATION

This instruction applies to the following models ONLY: R3105N-50, R4110N-50, R4310P-50, R4P115N-50, R5125Q-50, R5325R-50, R6130Q-50, R6P155Q-50, R6340R-50, R6P355R-50 and R7100R-50. These blowers are intended for use in Soil Vapor Extraction Systems. The blowers are sealed at the factory for very low leakage. They are powered with a U.L. listed electric motor Class 1 Div. 1 Group D for Hazardous Duty locations. Ambient temperature for normal full load operation should not exced 40^{C} (105^{0}F). For higher ambient operation, contact the factory.

Gast Manufacturing Incorporated may offer general application guidance: however, suitability of the particular blower and/or accessories is ultimately the responsibility of the user, not the manufacturer of the blower.

INSTALLATION

⚠ **DANGER** Models R5325R-50, R6130Q-50, R6340R-50, R5125Q-50, R6P155Q-50, R6P355R-50 and R7100R-50 use Pilot Duty Thermal Overload Protection. Connecting this protection to the proper control circuitry is mandated by UL674 and NEC501. Failure to do so could/may result in an EXPLOSION. Se pages 3 and 4 for recommended wiring schematic for these models.

⚠ **WARNING** Electric shock can result from bad wiring. A qualified person must install all wiring, conforming to all required safety codes. Grounding is necessary.

⚠ **WARNING** This blower is intended for use on soil vapor extraction equipment. Any other use must be approved in writing by Gast Manufacturing, Inc.

Install this blower in any mounting position. Do no block the flow of cooling air over the blower and motor.

PLUMBING

Use the threaded pipe ports for connection only. They will not support the plumbing. Be sure to use the same or larger size pipe to prevent air flow restriction and overheating of the blower. When installing fittings, be sure to use pipe thread sealant. This protects the threads in the blower housing and prevents leakage. Dirt and chips are often found in new plumbing. Do not allow them to enter the blower.

NOISE

Mount the unit on a solid surface that will not increase the sound. This will reduce noise and vibration. We suggest the use of shock mounts or vibration isolation material for mounting.

ROTATION

The Gast Regenair Blower should only rotate clockwise as viewed from the electric motor side. The casting has an arrow showing the correct direction. Confirm the proper rotation by checking air flow at the IN and OUT ports. If needed reverse rotation of three phase motors by changing the position of any two of the power line wires.

OPERATION

⚠ **WARNING** Solid or liquid material exiting the blower or piping can cause eye damage or skin cuts. Keep away from air stream.

⚠ **WARNING** Gast Manufacturing, Incorporated will not knowingly specify, design or build any blower for installation in a hazardous, combustible or explosive location without a motor conforming to the proper NEMA or U.L. standards.

Blowers with standard TEFC motors should never be utilized for soil vapor extraction applications or where local, state and / or Federal codes specify the use of explosion-proof motors (as defined by the National Electric Code, Articles 100,500 c1990).

⚠ **CAUTION** Attach blower to solid surface before starting to prevent injury or damage from unit movement.

Air containing solid particles or liquid must pass through a filter before entering the blower. Blowers must have filters, other accessories and all piping attached before starting. Any foreign material passing through the blower may cause internal damage to the blower.

⚠ **CAUTION** Outlet piping can burn skin. Guard or limit access. Mark **"CAUTION Hot Surface. Can Cause Burns."**

Air temperature increases when passing through the blower. When run at duties above 50 in. H_2O, metal pipe may be required for hot exhaust air. The blower must not be operated above the limits for continuous duty. Only models R3105N-50, R4110N-50 and R4310P-50 can be operated continuously with no air flowing through the blower. Other units can only be run at the rating shown on the model number label. Do not close off inlet (for vacuum) to reduce extra air flow. This will cause added heat and motor load. Blower exhaust air in excess of 230°F indicates operation in excess of rating which can cause the blower to fail.

ACCESSORIES

Gast pressure gauge AJ496 and vacuum gauges AJ497 or AE134 show blower duty. The Gast pressure/vacuum relief valve, AG258 will limit the operating duty by admitting or relieving air. It also allows full flow through the blower when the relief valve closes.

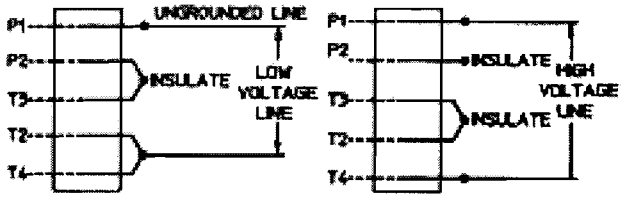
SERVICING

⚠ **WARNING** To retain their sealed construction they should be serviced by Gast authorized service centers ONLY. These models are sealed at the factory for very low leakage.

⚠ **WARNING** Turn off electric power before removing blower from service. Be sure rotating parts have stopped. Electric shock or severe cuts can result.

Inlet and exhaust filters attached to the blower may need cleaning or replacement of the elements. Failure to do so will result in more pressure drop, reduced air flow and hotter operation of the blower. The outside of the unit requires cleaning of dust and dirt. The inside of the blower also may need cleaning to remove foreign material coating the impeller and housing. This should be done at a Gast Authorized Service Center. This buildup can cause vibration, failure of the motor to operate or reduced flow.

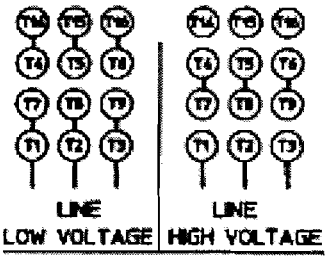
Motor Wiring Diaphragm for R4110N-50 & R3105N-50



>>* WARNING
This motor is thermally protected and will automatically restart when protector resets. Always disconnect power supply before servicing.

Motor Wiring Diaphragm for R4310P-50

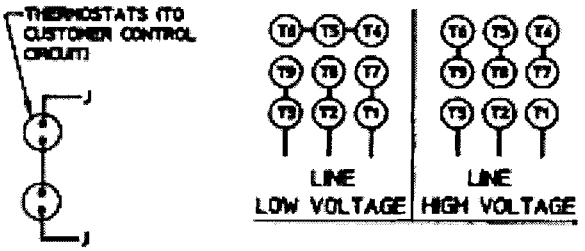
To reverse rotation, interchange the external connections to any two leads.



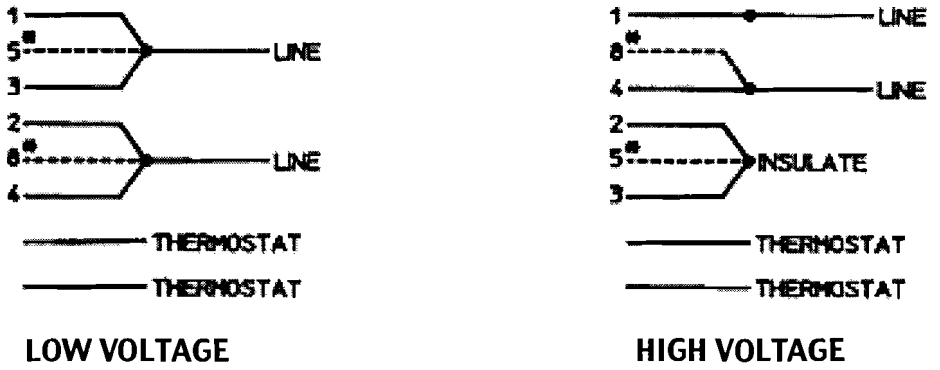
>>* WARNING
This motor is thermally protected and will automatically restart when protector resets. Always disconnect power supply before servicing.

Motor Wiring Diaphragm for R5325R-50, R6340R-50, R6P355R-50 & R7100R-50

To reverse rotation, interchange the external connections to any two leads.



Motor Wiring Diaphragm for R5125Q-50 & R4P115N-50

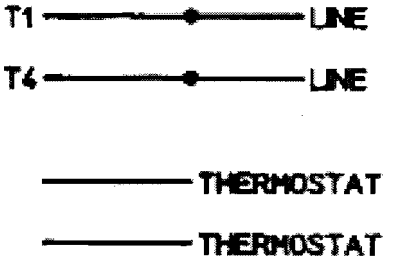


LOW VOLTAGE **HIGH VOLTAGE**

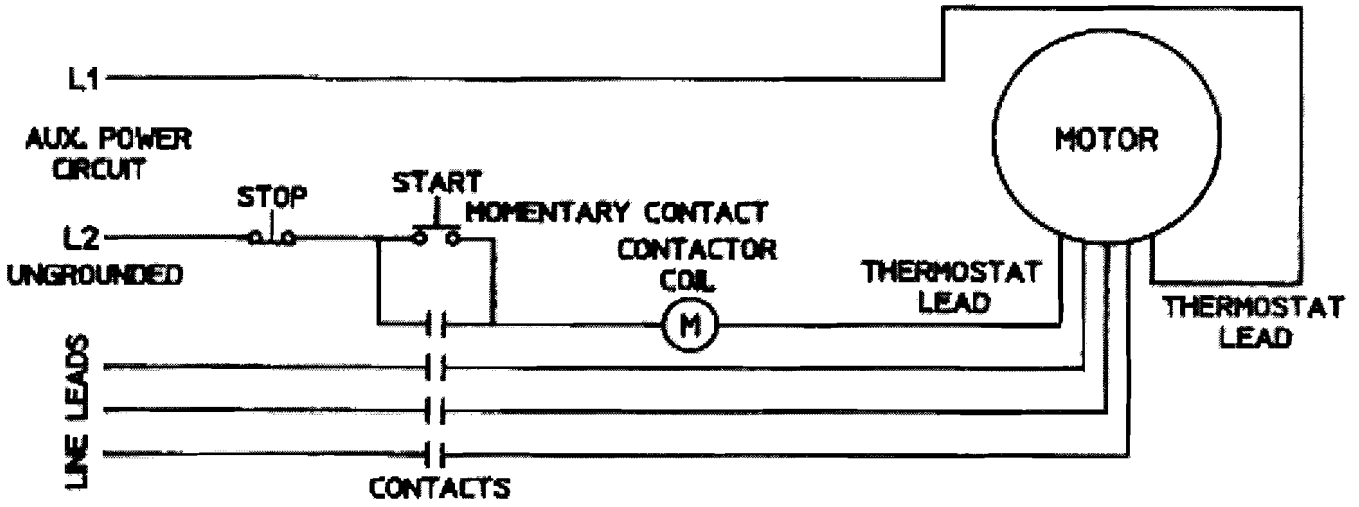
*R5125Q-50 Blowers produced after September 1992 (Serial No. 0992) do not have motor leads 5 & 8.

Motor Wiring Diaphragm forR6130Q-50 & R6P155Q-50

Connect Thermostat to Motor Proection Circuit



Connection for Thermostat Motor Protection



Thermostats to be connected in series with control as shown. Motor furnished with automatic thermostats rated A.C. 115-600V. 720VA circuit shown is for 3 phase motor. Single phase motor has two line leads in the above circuit.

APPENDIX D

Monitoring Well Records

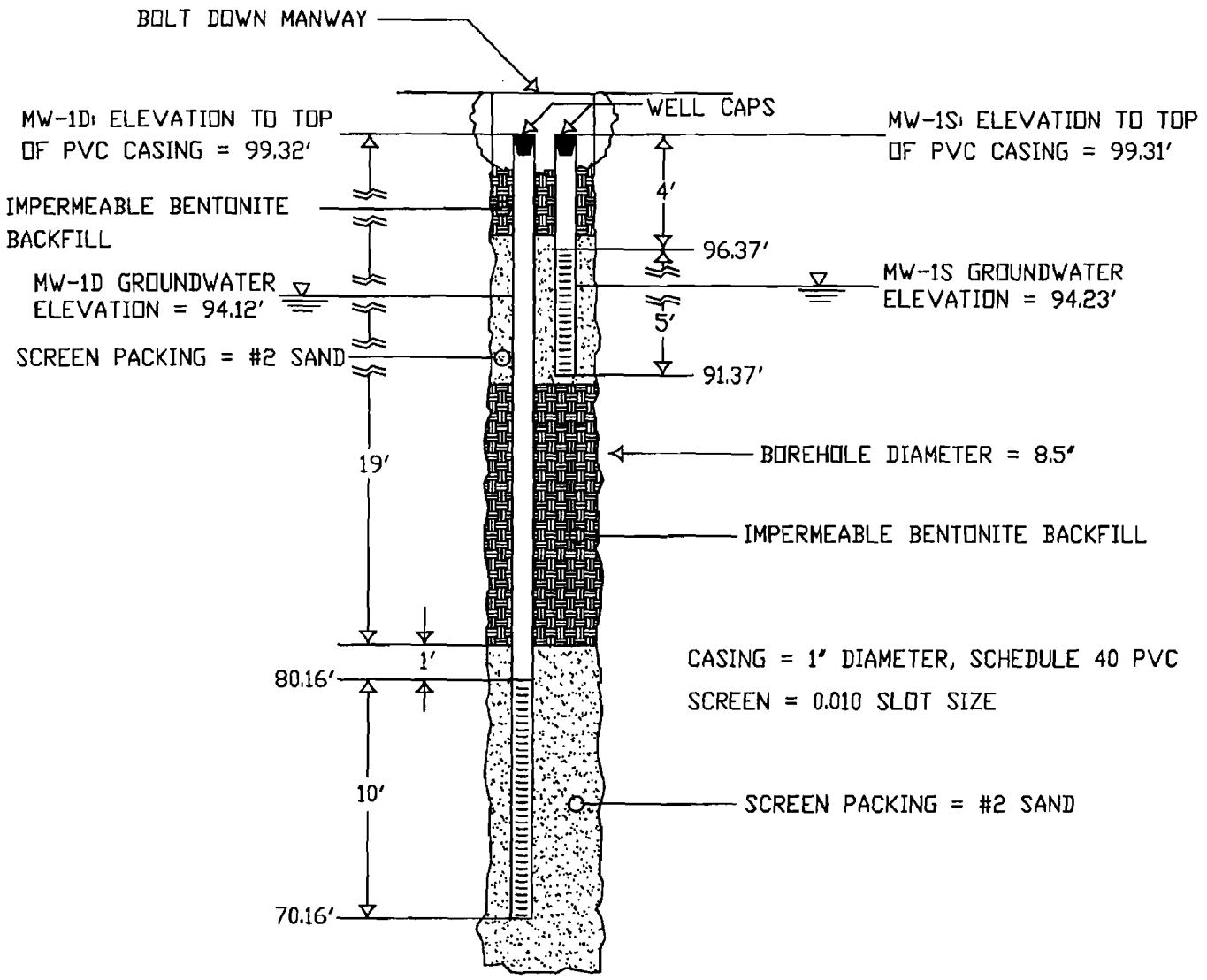
Boring Log Field Sheet

AARON Environmental	**Boring: MW-1D and MW-1S**	Sheet 1 of 2
		Permit: N/A
AARON Project: 2346F	Client: Heritage Realty	
Date Started: 7/27/00	Location: Dalewood Plaza, Hartsdale, New York	
Date Completed: 7/27/00		
Drilling Co: Subsurface	Screen (ft): MW-1D = 10'; MW-1S = 5'	
Rig: Auger	Riser (ft): MW-1D = 20'; MW-1S = 4'	
Operator: Brad	Screen Interval: MW-1D = 20-30' BG; MW-1S = 4-9' BG	
Helper: Jim	Filter Pack: #2 Sand	
Inspector: RM/PR	Annular Seal: Bentonite	Well Head: N/A

Sample Interval	Blow Counts	Sample Description	Field Screening	
			Depth	PID
0-2'	2-3-4-4	Fine brown sand and fill.		99.8
2-4'	1-2-3-9	Fine brown sand and fill.		45.9
4-6'	11-17-16-18	Medium brown sand.		82.6
6-8'	11-20-28-25	Dense grey sand (6-7'). Wet, medium brown sand (7-8'). Possible odor.		31.9
8-10'	26-39-37-25	Medium brown sand (8-9'). Dense grey stiff silt (9-10').		32.1
10-12'	5-8-11-9	Wet, medium brown sand.		26.8
12-14'	3-6-2-8	Wet, medium brown sand.		26.8
14-16'	1-1-2-4	Wet, medium brown sand.		13.5
16-18'	1-3-3-4	Wet, medium brown sand.		9.2
18-20'	4-4-4-5	Wet, medium brown sand.		8.1
20-22'	1-2-2-3	Medium/fine brown sand with amount of silt increasing with depth.		5.5
22-24'	3-4-5-8	Medium/fine brown sand with amount of silt increasing with depth.		8.4
24-26'	0-2-3-7	Medium/fine brown sand with amount of silt increasing with depth. 4" grey layer at 26'.		31.5
26-28'	6-9-11-16	Medium/fine brown sand with amount of silt increasing with depth.		5.5
28-30'	10-5-4-11	Brown fine sand. Dense silt layer at 30'.		4.7

Sample Method:	**Other Comments**
Split Spoon	Both wells are 1" diameter PVC.

MONITORING WELL INSTALLATION DETAIL



SITE: DALEWOOD PLAZA
HARTSDALE, NEW YORK

WELL IDENTIFICATION: MW-1D AND MW-1S

INSTALLATION DATE: JULY 27, 2000

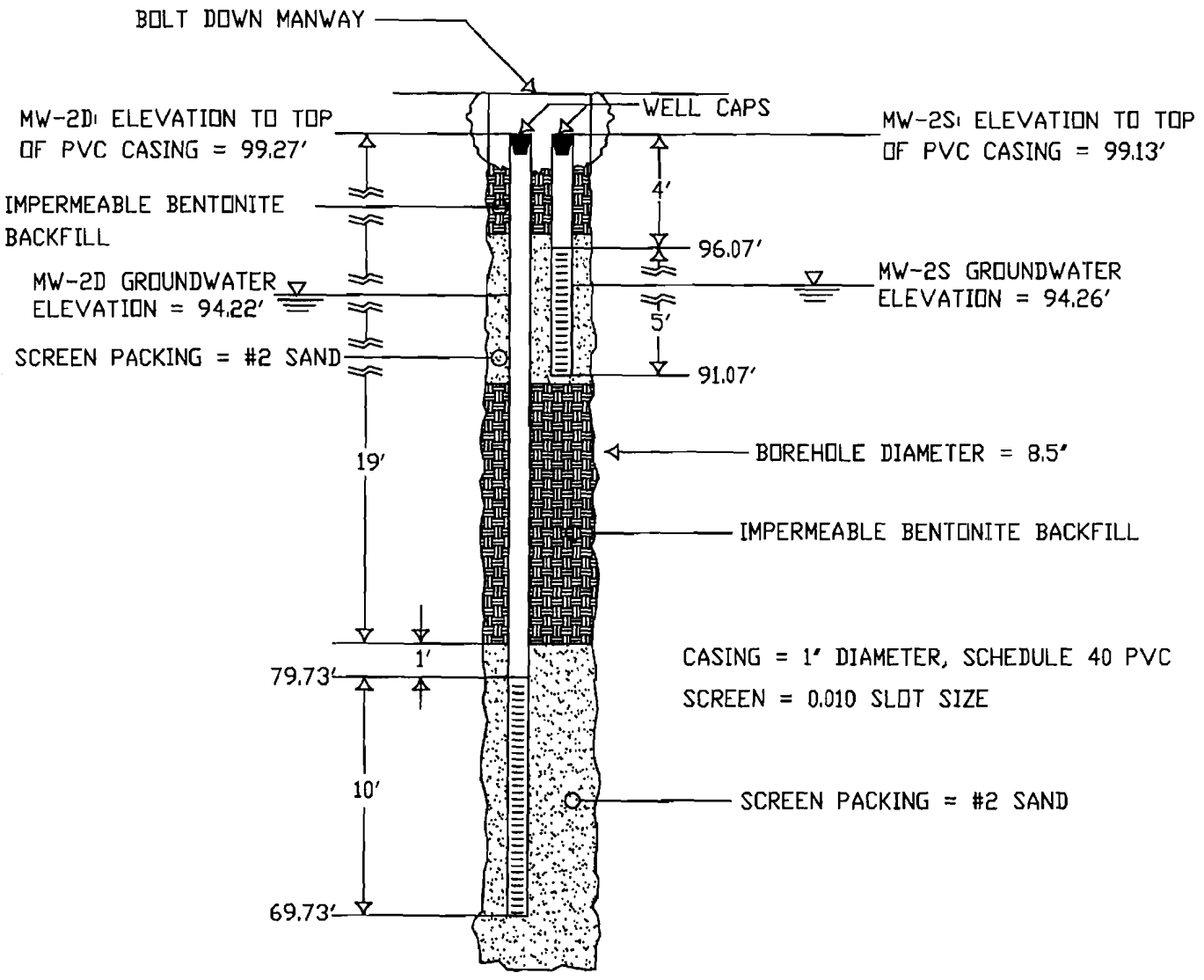
Boring Log Field Sheet

AARON Environmental	**Boring: MW-2D and MW-2S**	Sheet 1 of 2
		Permit: N/A
AARON Project: 2346F	Client: Heritage Realty	
Date Started: 7/27/00	Location: Dalewood Plaza, Hartsdale, New York	
Date Completed: 7/27/00		
Drilling Co: Subsurface	Screen (ft): MW-2D = 10' of 1" PVC; MW-2S = 5' of 1" PVC	
Rig: Auger	Riser (ft): MW-2D = 20' of 1" PVC; MW-2S = 4' of 1" PVC	
Operator: Brad	Screen Interval: MW-2D = 20-30' BG; MW-2S = 4-9' BG	
Helper: Jim	Filter Pack: #2 Sand	
Inspector: RM/PR	Annular Seal: Bentonite Well Head: N/A	

Sample Interval	Blow Counts	Sample Description	Field Screening	
			Depth	PID
0-2'	7-3-16-13	Medium brown sand.		
2-4'	9-7-21-21	Medium brown sand.		
4-6'	15-8-20-20	Medium brown sand.		
6-8'	16-14-18-34	Medium brown sand, fill material and brick.		
8-10'	9-6	Medium brown sand.		
10-12'	11-8	Medium brown sand.		
12-14'	13-12	Medium brown sand.		
14-16'		Medium brown sand.		
16-18'		Medium brown sand.		
18-20'		Medium brown sand.		
20-22'	3-3-2-2	Medium brown sand.		
22-24'	2-3-4-7	Medium brown sand.		
24-26'	6-5-6-9	Medium brown sand.		
26-28'	6-10-11-13	4" grey silty layer at 28'.		
28-30'	9-12-20-16	Medium brown sand.		

Sample Method:	**Other Comments**
Split Spoon	Split spoon sampling down to 14'. Augered down to 20'. Resumed split spoon sampling from 20' to 30'. Both wells are 1" diameter.

MONITORING WELL INSTALLATION DETAIL



SITE: DALEWOOD PLAZA
HARTSDALE, NEW YORK

WELL IDENTIFICATION: MW-2D AND MW-2S

INSTALLATION DATE: JULY 27, 2000

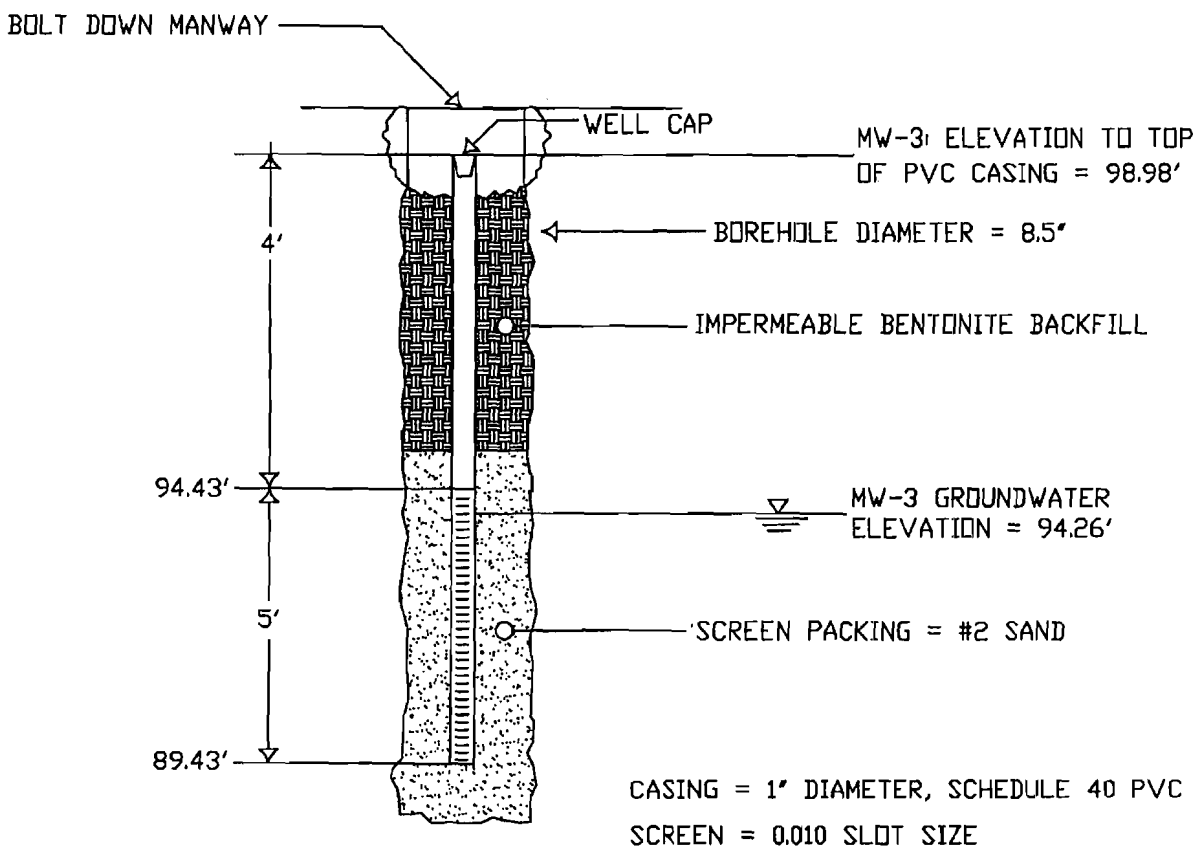
Boring Log Field Sheet

AARON Environmental	**Boring: MW-3**	Sheet 1 of 1
		Permit: N/A
AARON Project: 2346F	Client: Heritage Realty	
Date Started: 7/27/00	Location: Dalewood Plaza, Hartsdale, New York	
Date Completed: 7/27/00		
Drilling Co: Subsurface	Screen (ft): 5'	
Rig: Auger	Riser (ft): 5'	
Operator: Brad	Screen Interval: 5 - 10' BG	
Helper: Jim	Filter Pack: #2 Sand	
Inspector: RM/PR	Annular Seal: Bentonite	Well Head: N/A

Sample Interval	Blow Counts	Sample Description	Field Screening	
			Depth	PID
0-2'	10-12-8-7	Medium brown sand.		
2-4'	7-8-10-12	Medium brown sand.		
4-6'	10-13-15-19	Medium brown sand.		
6-8'	13-15-19-15	Medium brown sand.		
8-10'	8-10-9-10	Medium brown sand.		

Sample Method:	**Other Comments**
Split Spoon	Well is 2" diameter.

MONITORING WELL INSTALLATION DETAIL



SITE: DALEWOOD PLAZA
HARTSDALE, NEW YORK

WELL IDENTIFICATION: MW-3

INSTALLATION DATE: JULY 27, 2000

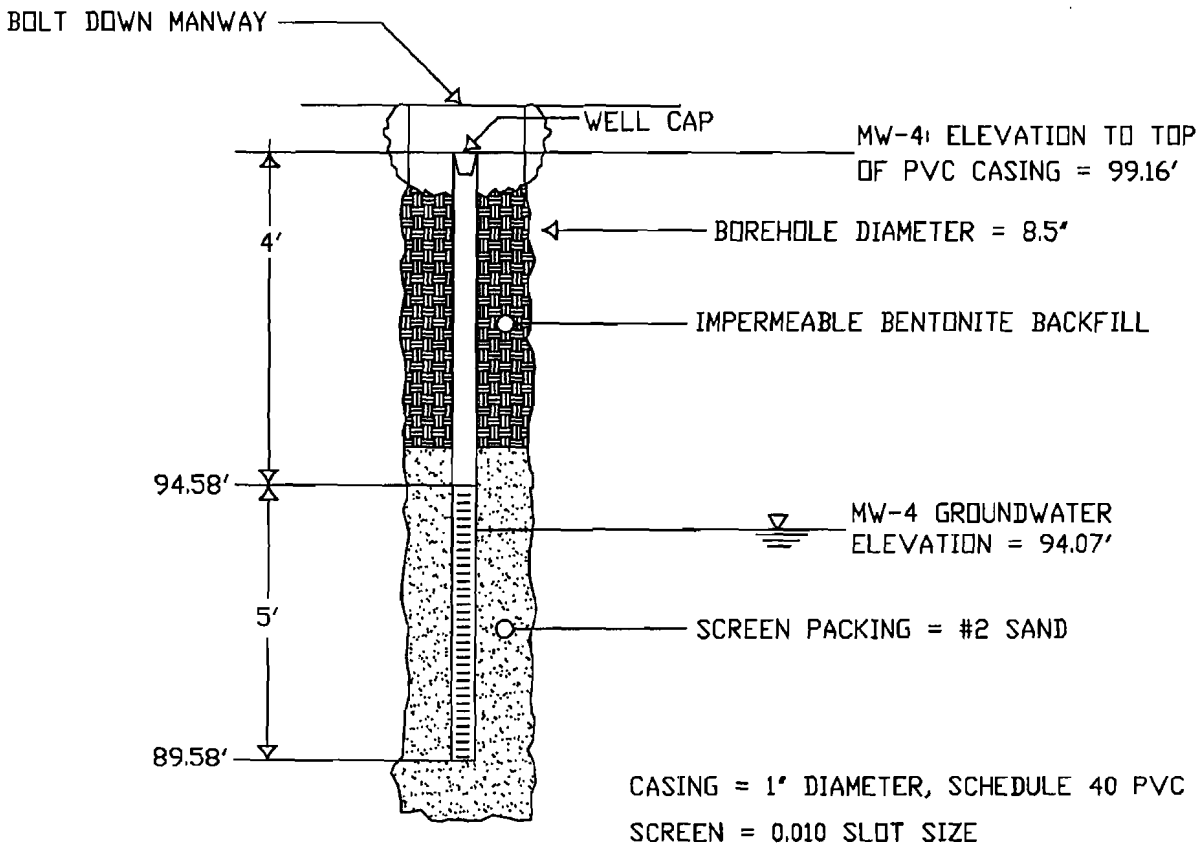
Boring Log Field Sheet

AARON Environmental	**Boring: MW-4**	Sheet 1 of 1
		Permit: N/A
AARON Project: 2346F	Client: Heritage Realty	
Date Started: 7/27/00	Location: Dalewood Plaza, Hartsdale, New York	
Date Completed: 7/27/00		
Drilling Co: Subsurface	Screen (ft): 5'	
Rig: Auger	Riser (ft): 5'	
Operator: Brad	Screen Interval: 5 - 10' BG	
Helper: Jim	Filter Pack: #2 Sand	
Inspector: RM/PR	Annular Seal: Bentonite	Well Head: N/A

Sample Interval	Blow Counts	Sample Description	Field Screening	
			Depth	PID
0-2'	5-4-8-6	Medium brown sand.		
2-4'	4-4-5-10	Medium brown sand.		
4-6'	22-20-19-19	Medium brown sand.		
6-8'	6-12-19-19	Medium brown sand.		
8-10'	20-29-30-41	Medium brown sand.		

Sample Method:	**Other Comments**
Split Spoon	Well is 2" diameter.

MONITORING WELL INSTALLATION DETAIL



SITE: DALEWOOD PLAZA
HARTSDALE, NEW YORK

WELL IDENTIFICATION: MW-4

INSTALLATION DATE: JULY 27, 2000

GeoProbe

Boring Log Field Sheet

AARON Environmental	**Boring: MW-5**	Sheet 1 of 1
		Permit: N/A
AARON Project: 2346F	Client: Kroll	
Date Started: 10/24/00	Location: Dalewood Plaza	
Date Completed: 10/24/00	Hartsdale, New York	
Drilling Co: Subsurface	Screen (ft): 10'	
Rig: B-61	Riser (ft): 39.5'	
Operator: Brad	Screen Interval: 39.5' - 49.5' BG	
Helper: Jim	Filter Pack: #2 Sand	
Inspector: PR	Annular Seal: Bentonite	Well Head: N/A

Sample Intervals			Sample Description	Field Screening Depth	Field Screening PID
0' - 24'			Roller bit and casings driven down to 24'. No samples were collected.		
24' - 26'			Wet dense brown sand. BC = (13-9-6-6).		
29' - 31'			Wet dense brown/grey sand and silt. BC = (13-7-7-9).		
34' - 36'			Wet dense grey silt. BC = (11-8-8-10).		
39' - 41'			Wet dense grey silt, clay, and rock. BC = (13-7-8-46).		
44' - 46'			Wet dense grey sand and silt. BC = (10-13-17-23).		
49' - 51'			Sand, quartz, and mica. BC = (47-24-18-104).		

Sample Method: Split spoon	**Other Comments** A 1" diameter PVC well was set at approximately 49.5' below grade. The well was finished at grade with a traffic-rated curb box and an 18" x 18" concrete pad. *Note: BC = Blow Count*

Soil Sampling Log

Date Started 2-9-04

Date Finish 2-9-04

Weight Of Hammer [X] 140 [ ] 300

Hammer Fall [X] 30' [ ] 24"

Ground Water Observations

Date	Time	Depth
		~ 6'

Sampler O.D. 2" I.D. 1 3/8"

Type Of Rig Truck Mounted Rig - CME-75

GLACIER DRILLING

78 Golden St.
Meriden, CT 06450
Phone/Fax 860-645-1304

Superior Environmental
135 Burnside Ave., Suite C-6
East Hartford, CT 06018

Sheet 1 Of 2

Proj. No.

Location 357 North Central Ave.-Rt 1
Hartsdale, NY

Offset

Ground Elevation

Hole No. MW - 215

	Casing	Sampler	Core Barrel
Type	HSA	SS	
Size I.D.	4 1/4"	1 3/8"	

Dept. Below Surface	Sample No. Depths Elev. Ft.	Type Of Sample	Blows Per 6" On Sample From 0-6	To 6-12	To 12-18	Density Or Consist Moisture	Profile Change Depth Elev.	Field Identification Of Soils Remarks	Sample No.	Pen	Rec	PID
								3" Asphalt.				
	0-2	SS	14	9	8	Med. Comp.	Top 3"	Brown fine sand, trace coarse sand, little silt.	1	24"	20"	
					8	Dry	Next 4"	Tan fractured soft rock.				
							Bottom 13"	Gray brown fine sand and silt.				
	2-4	SS	3	2	2	Loose		Same as bottom Sample 1.	2	24"	24"	
					2	Moist						
	4-6	SS	2	2	2	Loose		Brown to gray brown fine-medium sand, little silt.	3	24"	14"	
					2	Wet						
	6-8	SS	2	4	3	Loose		Grey medium-fine sand trace coarse sand, trace silt.	4	24"	16"	
					2	Wet						
	8-10	SS	3	3	5	Med. Comp.	Top 8"	Gray fine sand and silt..	5	24"	12"	
					7	Wet	Bottom 4"	Orange fine-medium sand, trace fractured cobble.				
	10-12	SS	1	2	3	Loose		Orange fine-medium sand, some coarse sand to fine gravel, little silt.	6	24"	10"	
					3	Wet						
	12-14	SS	4	3	3	Loose		Orange brown medium-coarse sand, little fine sand, trace fine gravel.	7	24"	18"	
					4	Wet						
	14-16	SS	2	2	2	Loose	Top 21"	Brown fine sand, little silt.	8	24"	24"	
					2	Wet	Bottom 3"	Very fine silty sand.				
	16-18	SS	3	4	5	Med. Comp.		Brown fine sand, little silt.	9	24"	22"	
					5	Wet						
	18-20	SS	5	5	6	Med. Comp.	Top 18"	Brown fine sand, little silt.	10	24"	24"	
					7	Wet	Bottom 6"	Brown very fine silty sand.				
	20-22	SS	7	7	8	Med. Comp.	Top 21"	Brown fine sand , trace medium sand.	11	24"	24"	
					10	Wet	Bottom 3"	Orange fine-medium-coarse sand, little fine gravel				
	22-24	SS	9	10	10	Med. Comp.	Top 21"	Varved layers of brown to tan to orange brown fine sand.	12	24"	24"	
					12	Wet	Bottom 3"	Layered fine-medium-coarse sand at top.				

Driller: Tim Sabo
Assistant: Marvin Tatum
Soils Engineer: Rob

Proportions used trace– 0.10%, little = 10.20%, some = 20.35%, and = 35.50%

Sample Type:
C = Cored W = Washed
SS = Split Spoon
UP = Undisturbed Piston

Cohesionless Density
0-10 Loose
10-30 Med. Comp.
30-50 Dense

Total Footage:
Earth Boring 32.0' Ft.
Rock Coring Ft.

Soil Sampling Log

Date Started 2-9-04

Date Finish 2-9-04

Weight Of Hammer [X] 140 [ ] 300

Hammer Fall [X] 30' [ ] 24"

Ground Water Observations

Date	Time	Depth
		~ 6'

Sampler O.D. 2" I.D. 1 3/8"

Type Of Rig Truck Mounted Rig - CME-75

GLACIER DRILLING

78 Golden St.
Meriden, CT 06450
Phone/Fax 860-645-1304

Superior Environmental
135 Burnside Ave., Suite C-6
East Hartford, CT 06018

Sheet 2 Of 2

Proj. No.

Location 357 North Central Ave.-Rt 1
Hartsdale, NY

Offset

Ground Elevation

Hole No. MW - 215

	Casing	Sampler	Core Barrel
Type	HSA	SS	
Size I.D.	4 1/4"	1 3/8"	

Dept. Below Surface	Sample No. Depths Elev. Ft.	Type Of Sample	Blows Per 6" On Sample From 0-6	To 6-12	To 12-18	Density Or Consist Moisture	Profile Change Depth Elev.	Field Identification Of Soils Remarks	Sample No.	Pen	Rec	PID
	24-26	SS	2	2	2	Loose		Gray brown fine sand, some silt.	13	24"	12"	
					2	Wet						
	26-28	SS	5	7	7	Med. Comp.		Same as sample 13.	14	24"	20"	
					9	Wet						
	28-30	SS	2	2	3	Loose		Same as sample 13.	15	24"	18"	
					3	Wet						
	30-32	SS	8	9	16	Med. Comp.		Same as Sample 13.	16	24"	24"	
					12	Wet						
							28.0'	B.O.B., Set a 2" PVC Monitoring Well to 28.0' using:				
								Threaded Plug				
								5' Screen, .010 slot				
								23' Riser				
								200 lbs. Sand				
								25 lbs. Bentonite Chips				
								Expandable Gripper				
								8" Road Box				
								160 lbs. Cement Mix				
								Note: Cuttings Drummed				

Driller: Tim Sabo
Assistant: Marvin Tatum
Soils Engineer: Rob

Proportions used trace = 0.10%, little = 10 20%, some = 20.35%, and = 35.50%

Sample Type:
C = Cored W = Washed
SS = Split Spoon
UP = Undisturbed Piston

Cohesionless Density
0-10 Loose
10-30 Med. Comp
30-50 Dense

Total Footage:
Earth Boring 32.0' Ft.
Rock Coring Ft.

Boring:	**MW-205**
Project: 2346F	Client: Kroll--Dalewood, 357 N. Central Ave., Hartsdale, NY
Started:	2/19/2003
Completed:	2/19/2003
Rig:	Geoprobe
Operator:	Izzy
Inspector:	Maureen Kerrigan
Screen (ft.):	5'
Riser (ft.):	5'
Screen Interval:	5'-10'
Filter Pack:	#2 Sand
Annular Seal:	Bentonite
Well Head:	6" manway

Interval (Feet)	Sample Description	PID
2-6'	moist, medium to fine brown SAND, little gravel, slight petroleum odor. Recovery-25%.	2.1
6-10'	medium to fine brown SAND, little gravel. Wet at 8'. Recovery-75%	0.8
10-12'	wet, medium to fine brown SAND, little gravel, some silt. Recovery-75%.	27.9

Sample Method:	**Other Comments**
Macro Core	A 1" diameter PVC well was set at approximately 12'5" below grade. The well was finished at grade with a 6" traffic-rated curb box and an 18" x 18" concrete pad. **Note**: NR = No response.

Boring:	MW-206
Project: 2346F	Client: Kroll--Dalewood, 357 N. Central Ave., Hartsdale, NY
Started:	2/19/2003
Completed:	2/19/2003
Rig:	Geoprobe
Operator:	Izzy
Inspector:	Maureen Kerrigan
Screen (ft.):	5'
Riser (ft.):	4'
Screen Interval:	4'-9'
Filter Pack:	#2 Sand
Annular Seal:	Bentonite
Well Head:	6" manway

Interval (Feet)	Sample Description	PID
0-2'	Macro core direct pushed to 2'. No samples were collected.	
2-6'	moist, medium to fine brown SAND, some silt, crushed rock and red brick at 4-5'. Recovery-75%.	1.6
6-9'	wet, medium to fine brown SAND mixed with gravel. Wet at 7'.5". Recovery-90%.	38.6

Sample Method:	Other Comments
Macro Core	A 1" diameter PVC well was set at approximately 12'5" below grade. The well was finished at grade with a 6" traffic-rated curb box and an 18" x 18" concrete pad. **Note**: NR = No response.

Boring:	**MW-207**
Project: 2346F	Client: Kroll--Dalewood, 357 N. Central Ave., Hartsdale, NY
Started:	2/19/2003
Completed:	2/19/2003
Rig:	Geoprobe
Operator:	Izzy
Inspector:	Maureen Kerrigan
Screen (ft.):	5'
Riser (ft.):	8'
Screen Interval:	8'-13'
Filter Pack:	#2 Sand
Annular Seal:	Bentonite
Well Head:	6" manway

Interval (Feet)	Sample Description	PID
0-2'	Macro core direct pushed to 2'. No samples were collected.	
2-6'	moist, medium to fine brown SAND. Recovery-25%.	0
6-10'	moist, medium to fine brown SAND. Recovery-50%.	0
10-13'	wet, medium to fine brown SAND. Wet at 11'. Recovery-25%.	0.3

Sample Method:	**Other Comments**
Macro Core	A 1" diameter PVC well was set at approximately 12'5" below grade. The well was finished at grade with a 6" traffic-rated curb box and an 18" x 18" concrete pad. **Note**: NR = No response.

Boring:	**MW-208**
Project: 2346F	Client: Kroll--Dalewood, 357 N. Central Ave., Hartsdale, NY
Started:	2/19/2003
Completed:	2/19/2003
Rig:	Geoprobe
Operator:	Izzy
Inspector:	Maureen Kerrigan
Screen (ft.):	5'
Riser (ft.):	7'5"
Screen Interval:	7'5"-12'5"
Filter Pack:	#2 Sand
Annular Seal:	Bentonite
Well Head:	6" manway

Interval (Feet)	Sample Description	PID
0-2'	Macro core direct pushed to 2'. No samples were collected.	
2-6'	moist, medium to fine brown SAND, little gravel. Recovery-60%.	0
6-10'	moist, medium to fine brown SAND, some silt, little gravel. Recovery-85%.	0.1
10-13'5"	wet, medium to fine brown SAND, little gravel. Wet at 11'. Recovery-90%.	0

Sample Method:	**Other Comments**
Macro Core	A 1" diameter PVC well was set at approximately 12'5" below grade. The well was finished at grade with a 6" traffic-rated curb box and an 18" x 18" concrete pad. **Note:** NR = No response.

Boring:	**MW-209**
Project: 2346F	Client: Kroll--Dalewood, 357 N. Central Ave., Hartsdale, NY
Started:	2/19/2003
Completed:	2/19/2003
Rig:	Geoprobe
Operator:	Izzy
Screen (ft.):	5'
Riser (ft.):	8'
Screen Interval:	8'-13'
Filter Pack:	#2 Sand
Annular Seal:	Bentonite
Well Head:	209

Interval (Feet)	Sample Description	PID
0-2'	Macro cored direct pushed down to 2'. No samples were collected.	
2-6'	moist, tight brown SAND, some silt, little gravel. Recovery-60%.	0
6-10'	moist, medium to fine brown SAND, some silt, little gravel. Recovery-100%.	0
10-13'5"	wet, medium to fine brown SAND, some silt. Wet at 11'. Recovery-100%.	0

Sample Method:	**Other Comments**
Macro Core	A 1" diameter PVC well was set at approximately 10' below grade. The well was finished at grade with a 6" traffic-rated curb box and an 18" x 18" concrete pad. **Note:** NR = No Response

Boring:	MW-210
Project: 2346F	Client: Kroll--Dalewood, 357 N. Central Ave., Hartsdale, NY
Started:	4/8/2003
Completed:	4/8/2003
Rig:	Geoprobe
Operator:	Carl Lurix
Screen (ft.):	5'
Riser (ft.):	10'
Screen Interval:	5'-15'
Filter Pack:	#2 Sand
Annular Seal:	Bentonite
Well Head:	6" manway

Interval (Feet)	Sample Description	PID
0-4'	Macro cored direct pushed through 3" of asphalt, and a layer of concrete. 100%.	0.2
4-8'	moist, medium to fine grey SAND, crushed rock. Recovery-25%	0
8-12'	wet, medium to fine grey SAND mixed with gravel, clay layer. Recovery-65%.	0
12-15'	wet, medium to fine grey SAND, little gravel. Recovery-20%	0

Sample Method:	Other Comments
Macro Core	A 1" diameter PVC well was set at approximately 15' below grade. The well was finished at grade with a 6" traffic-rated curb box and an 18" x 18" concrete pad. **Note:** NR = No Response

Boring:	**MW-211**
Project: 2346F	Client: Kroll--Dalewood, 357 N. Central Ave., Hartsdale, NY
Started:	4/8/2003
Completed:	4/8/2003
Rig:	Geoprobe
Operator:	Carl Lurix
Screen (ft.):	5'
Riser (ft.):	10'
Screen Interval:	5'-15'
Filter Pack:	#2 Sand
Annular Seal:	Bentonite
Well Head:	6" manway

Interval (Feet)	Sample Description	PID
0-4'	Macro cored direct through 3" of asphalt and a concrete layer. moist, medium to fine grey SAND, some silt, and gravel. Recovery-75%	0
4-8'	moist, medium to fine grey SAND, some silt. Recovery-30%. Wet at 8'.	0

Sample Method:	**Other Comments**
Macro Core	A 1" diameter PVC well was set at approximately 10' below grade. The well was finished at grade with a 6" traffic-rated curb box and an 18" x 18" concrete pad. **Note:** NR = No Response

Boring:	**MW-212**
Project: 2346F	Client: Kroll--Dalewood, 357 N. Central Ave., Hartsdale, NY
Started:	4/8/2003
Completed:	4/8/2003
Rig:	Geoprobe
Operator:	Carl Lurix
Screen (ft.):	5'
Riser (ft.):	10'
Screen Interval:	5'-15'
Filter Pack:	#2 Sand
Annular Seal:	Bentonite
Well Head:	6" manway

Interval (Feet)	Sample Description	PID
0-4'	Macro cored direct pushed through 3" asphalt and concrete layer. moist, medium to fine brown SAND, some silt, and gravel. Recovery-	0
4-8'	moist, medium to fine grey SAND, some silt, little gravel. Recovery-75%. Wet at 8'.	0

Sample Method:	**Other Comments**
Macro Core	A 1" diameter PVC well was set at approximately 10' below grade. The well was finished at grade with a 6" traffic-rated curb box and an 18" x 18" concrete pad. **Note:** NR = No Response

Boring:	**MW-213**
Project: 2346F	Client: Kroll--Dalewood, 357 N. Central Ave., Hartsdale, NY
Started:	4/8/2003
Completed:	4/8/2003
Rig:	Geoprobe
Operator:	Carl Lurix
Screen (ft.):	5'
Riser (ft.):	10'
Screen Interval:	5'-15'
Filter Pack:	#2 Sand
Annular Seal:	Bentonite
Well Head:	6" manway

Interval (Feet)	Sample Description	PID
0-4'	Macro cored direct through 3" asphalt and concrete layer.	0
	moist, medium to fine orangish brown SAND mixed with gravel. Recovery-60%.	
4-8'	moist, medium to fine orangish brown SAND, some silt, and gravel. Recovery-85%. Wet at 8'.	0

Sample Method:	**Other Comments**
Macro Core	A 1" diameter PVC well was set at approximately 10' below grade. The well was finished at grade with a 6" traffic-rated curb box and an 18" x 18" concrete pad. **Note:** NR = No Response

Boring:	**MW-214**
Project: 2346F	Client: Kroll--Dalewood, 357 N. Central Ave., Hartsdale, NY
Started:	4/8/2003
Completed:	4/8/2003
Rig:	Geoprobe
Operator:	Carl Lurix
Screen (ft.):	5'
Riser (ft.):	10'
Screen Interval:	5'-15'
Filter Pack:	#2 Sand
Annular Seal:	Bentonite
Well Head:	6" manway

Interval (Feet)	Sample Description	PID
0-4'	Macro cored direct through 3" asphalt and concrete layer.	0
	moist, medium to fine orangish brown SAND, some silt, and gravel. Recovery-50%.	
4-8'	moist, medium to fine golden brown SAND, some silt. Wet at 8'.	0

Sample Method:	**Other Comments**
Macro Core	A 1" diameter PVC well was set at approximately 10' below grade. The well was finished at grade with a 6" traffic-rated curb box and an 18" x 18" concrete pad. **Note:** NR = No Response

Boring:	**MW-20**
Project: HT1094	Client: Kroll - Dalewood 1, North Central Avenue, Hartsdale, NY
Started:	2/9/2004
Completed:	2/9/2004
Rig:	540UD Geoprobe
Operator:	Phil Rydel
Screen (ft.):	5'
Riser (ft.):	5'
Screen Interval:	5' - 10'
Filter Pack:	#2 Sand
Annular Seal:	Bentonite
Well Head:	6" manway

Interval (Feet)	Sample Description
0' - 4'	0' - 0.5' Asphalt & base material.
	0.5 '- 4.0' Medium grain, brown sand.
4' - 8'	4.0' - 5.5' Medium grain, brown sand.
	5.5' Groundwater interface.
	5.5' - 8.0' Medium grain, brown sand.
8' - 12'	8.0' - 10.0' Medium grain, brown sand.
	10.0' - 12.0' Silty fine sands & black organic(?) material.

Sample Method:	**Other Comments**
Macro Core	A 1" diameter PVC well was set at approximately 10' below grade. The well was finished at grade with a 6" traffic-rated curb box and an 18" x 18" concrete pad.

Boring:	**MW-216**
Project: HT1094	Client: Kroll - Dalewood 1, North Central Avenue, Hartsdale, NY
Started:	2/19/2004
Completed:	2/19/2004
Rig:	540UD Geoprobe
Operator:	Phil Rydel
Screen (ft.):	5'
Riser (ft.):	5'
Screen Interval:	5' - 10'
Filter Pack:	#2 Sand
Annular Seal:	Bentonite
Well Head:	

Interval (Feet)	Sample Description
0' - 4'	0' - 0.5' Asphalt & base material.
	0.5 '- 4.0' Medium grain, brown sand.
4' - 8'	4.0' - 6.0' Medium grain, brown sand.
	6.0' Groundwater interface.
	6.0' - 8.0' Medium grain, brown sand.
8' - 10'	8.0' - 10.0' Medium & fine grain brown sand.

Sample Method:	**Other Comments**
Macro Core	A 1" diameter PVC well was set at approximately 10' below grade.

Boring:	**MW-300**
Project: HT1094	Client: Kroll - Dalewood 2, North Central Avenue, Hartsdale, NY
Started:	2/9/2004
Completed:	2/9/2004
Rig:	540UD Geoprobe
Operator:	Phil Rydel
Screen (ft.):	5'
Riser (ft.):	5'
Screen Interval:	5 '- 10'
Filter Pack:	#2 Sand
Annular Seal:	Bentonite
Well Head:	6" manway

Interval (Feet)	Sample Description
0' - 4'	0' - 0.5' Asphalt & base material.
	0.5 '- 4.0' Medium grain, brown sand.
4' - 8'	4.0' - 6.0' Medium grain, brown sand.
	6.0' Groundwater interface.
	6.0' - 7.0' Medium grain, brown sand.
	7.0' - 8.0' Fine silt and sand.
8' - 10'	8.0' - 10.0' Medium & fine grain brown sand.

Sample Method:	**Other Comments**
Macro Core	A 1" diameter PVC well was set at approximately 10' below grade. The well was finished at grade with a 6" traffic-rated curb box and an 18" x 18" concrete pad.

Boring:	**MW-301**
Project: HT1094	Client: Kroll - Dalewood 2, North Central Avenue, Hartsdale, NY
Started:	2/9/2004
Completed:	2/9/2004
Rig:	540UD Geoprobe
Operator:	Phil Rydel
Screen (ft.):	5'
Riser (ft.):	5'
Screen Interval:	5' - 10'
Filter Pack:	#2 Sand
Annular Seal:	Bentonite
Well Head:	6" manway

Interval (Feet)	Sample Description
0' - 4'	0' - 0.5' Asphalt & base material.
	0.5 '- 4.0' Medium grain, brown sand.
4' - 8'	4.0' - 6.0' Medium grain, brown sand.
	6.0' Groundwater interface.
	6.0' - 7.0' Medium grain, brown sand.
	7.0' - 8.0' Fine silt and sand.
8' - 10'	8.0' - 10.0' Medium & fine grain brown sand.

Sample Method:	**Other Comments**
Macro Core	A 1" diameter PVC well was set at approximately 10' below grade. The well was finished at grade with a 6" traffic-rated curb box and an 18" x 18" concrete pad.

Boring:	**MW-302**
Project: HT1094	Client: Kroll - Dalewood 2, North Central Avenue, Hartsdale, NY
Started:	2/9/2004
Completed:	2/9/2004
Rig:	540UD Geoprobe
Operator:	Phil Rydel
Screen (ft.):	5'
Riser (ft.):	5'
Screen Interval:	5' - 10'
Filter Pack:	#2 Sand
Annular Seal:	Bentonite
Well Head:	6" manway

Interval (Feet)	Sample Description
0' - 4'	0' - 0.5' Asphalt & base material. 0.5 '- 4.0' Medium grain, brown sand.
4' - 8'	4.0' - 4.5' Medium grain, brown sand. 4.5' - 6.0' Golf ball size cobbles & sand. 6.0' Groundwater interface. 6.0' - 7.0' Medium grain, brown sand. 7.0' - 8.0' Fine silt and sand.
8' - 10'	8.0' - 10.0' Medium & fine grain brown sand.

Sample Method:	**Other Comments**
Macro Core	A 1" diameter PVC well was set at approximately 10' below grade. The well was finished at grade with a 6" traffic-rated curb box and an 18" x 18" concrete pad.

Boring:	**MW-303**
Project: HT1094	Client: Kroll - Dalewood 2, North Central Avenue, Hartsdale, NY
Started:	2/9/2004
Completed:	2/9/2004
Rig:	540UD Geoprobe
Operator:	Phil Rydel
Screen (ft.):	5'
Riser (ft.):	5'
Screen Interval:	5' - 10'
Filter Pack:	#2 Sand
Annular Seal:	Bentonite
Well Head:	6" manway

Interval (Feet)	Sample Description
	Initial boring encountered boulder refusal at 4.0'. Moved 15' south.
0' - 4'	0' - 0.5' Asphalt & base material.
	0.5 '- 4.0' Medium grain, brown sand.
4' - 8'	4.0' - 6.0' Medium grain, brown sand.
	6.0' Groundwater interface.
	6.0' - 8.0' Medium grain, brown sand.
8' - 10'	8.0' - 10.0' Medium & fine grain brown sand.

Sample Method:	**Other Comments**
Macro Core	A 1" diameter PVC well was set at approximately 10' below grade. The well was finished at grade with a 6" traffic-rated curb box and an 18" x 18" concrete pad.

Boring:	**MW-304**
Project: HT1094	Client: Kroll - Dalewood 3, North Central Avenue, Hartsdale, NY
Started:	2/19/2004
Completed:	2/19/2004
Rig:	540UD Geoprobe
Operator:	Phil Rydel
Screen (ft.):	5'
Riser (ft.):	5'
Screen Interval:	5' - 10'
Filter Pack:	#2 Sand
Annular Seal:	Bentonite
Well Head:	

Interval (Feet)	Sample Description
0' - 4'	0' - 0.5' Asphalt & base material.
	0.5 '- 3.5' Medium grain, brown sand.
	3.5' - 4.0' Probed & pushed by boulder.
4' - 8'	4.0' - 5.0' Probed & pushed by boulder.
	5.0' - 6.0' Mediun grain, brown sand.
	6.0' Groundwater interface.
	6.0' - 7.5' Medium grain, brown sand.
	7.5' - 8.0' Wood & black organic(?) material.
8' - 10'	8.0' - 10.0' Silty sand & black organic(?) material.

Sample Method:	**Other Comments**
Macro Core	A 1" diameter PVC well was set at approximately 10' below grade.