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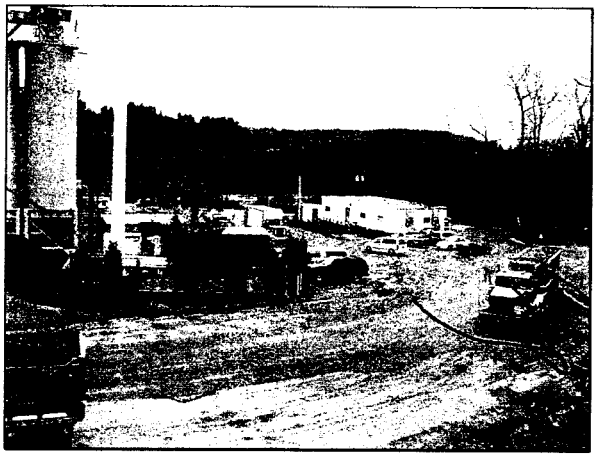
Westchester Colprovia Corporation

BEDFORD HILLS, NEW YORK

GROUNDWATER MONITORING & MAINTENANCE PLAN

REVISION A



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March 2002

Westchester Colprovia Corporation
Groundwater Monitoring & Maintenance Plan
Revision A
March 2002

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1.0 INTRODUCTION

This Groundwater Monitoring and Maintenance Plan (GWMMP) will be used as a guide for monitoring the groundwater quality at the former Westchester Colprovia site in Bedford, New York. Additionally, this GWMMP will be used to evaluate the continued effectiveness of the interim remedial measures that have been implemented at the site. This plan will also be used as a guide for assessing monitoring well integrity and well maintenance, if required. To achieve the objectives of this GWMMP, for post-remediation groundwater monitoring, this proposed program will consist of semi-annual sampling for two years in accordance with the New York State Department of Environmental Conservation (NYSDEC) Record of Decision (ROD), March 1999. This GWMMP is intended to provide detailed guidance and direction for:

- Groundwater sampling
- Chemical analysis
- Monitoring well inspection
- Maintenance (as required)

1.1 SITE DESCRIPTION & PREVIOUS STUDIES

Westchester Colprovia Corporation formerly owned and operated an asphalt production plant in the Town of Bedford, Westchester County, New York (Figure 1). This facility is currently owned and operated by Peckham Materials Corp.

In December 1986, trichloroethylene (TCE) contamination was detected on the property of Colonial Sand & Gravel (CS&G), located near the western boundary of the Westchester Colprovia site and downgradient of suspected sources. In November 1987, Malcolm Pirnie issued a *Report of Site Investigations at Westchester Colprovia Corporation* in which the results of Phase I and II ground water investigations, the underground storage tank investigation, and the soil gas investigation were presented and interpreted.

A *Predesign Study Work Plan* was issued in December 1987. This described the additional investigations necessary for the remedial design of the site. Additional soil and groundwater samples were collected to further define site conditions. Slug tests to determine aquifer characteristics were also completed. These data were used for locating and designing a ground water recovery system.

Since the time of these investigations the CS&G facility has been removed and a roadway currently runs through part of the former facility. Both CS&G and the Westchester Colprovia site have undergone some redevelopment and site grading (topographic changes). A major decline in elevation occurred around the former shop area.

Based on the results of prior investigations, interim remedial measures, and the criteria for evaluating alternatives, the NYSDEC has selected a no further action with continued groundwater monitoring as the preferred remedial alternative. This decision was issued in the March 1999 ROD (Appendix A). The components of the remedy include:

- Semiannual groundwater monitoring for two years to evaluate continued effectiveness of the remedial measures performed at the site
- Reclassification of the site from a Class 2 to a Class 4 on the New York state Registry of Inactive Hazardous Waste Disposal Sites

A Class 2 means that the site poses a significant threat to human health and/or the environment, while a Class 4 indicates that the site is properly remediated but requires continuous monitoring.

1.2 SITE GEOLOGY

1.2.1 Bedrock Geology

The Westchester Colprovia Corporation site is located within the Manhattan Prong region of the New England Physiographic region, an area of faulted metamorphic rock highlands and valleys typically filled with glacial deposits. The Manhattan Prong is principally

made up of the Manhattan Formation, a banded granitic gneiss which grades to a schist, the Inwood Marble, a low-grade course grained marble, and the Fordham Gneiss, a massive grantic gneiss. The bedrock at the site is gneissic schist and forms a shelf below a relatively thin layer of unconsolidated deposits.

1.2.2 Unconsolidated Geology & Hydrogeology

Unconsolidated deposits in the vicinity of the Westchester Colprovia site range from the fine-grained silts and sands to highly transmissive gravels located in the valley to the west of the site, where the former CS&G had its operations. There is a sharp drop in topography of about 40 feet from Colprovia to the former CS&G. The unconsolidated materials were deposited by glacial meltwaters during the recessional stages of the last period of glaciation. The fine grained materials are more widespread and are deposited in lens-shape bodies the size of which depend on the size of the lakes or ponds during the quiescent periods of glaciations.

Overburden groundwater flow direction was based on the round of water level measurements collected from 15 wells during March 1988. Plate 1 was developed from these measurements and shows that groundwater flow converged from the east, south and southwest in the area between former wells MW-3 and W-11. Groundwater flow from the Westchester Colprovia property is west-northwest to north as it enters the more permeable sand and gravel deposits in the valley.

Overburden permeability values were determined using slug test data from previous investigations at the site. The values ranged from 0.7×10^{-4} cm^2/sec to 0.2×10^{-3} cm^2/sec that indicate silty, fine to medium sand. Boring logs are provided as Appendix B and identify these types of materials. Monitoring wells that were located on the CS&G property indicate higher permeability consistent with coarse sand and gravel as described on the boring logs.

2.0 SITE INTERIM REMEDIAL ACTION

As part of the interim remedial measures, groundwater was pumped and treated for volatile organic compounds (VOCs) using a diffused bubble aeration system. The impacted soils in the area of the Westchester Colprovia laboratory were remediated using a soil gas extraction system.

The diffused bubble aeration system selected was a Lowry modular unit for groundwater VOC treatment using a polyethylene and stainless steel aeration unit. The unit was matched with a regenerative air blower to provide the necessary air to water ratios to remove volatile organic contaminants from the recovery well influent. Organic contaminants were removed by through the aeration of the groundwater causing volatilization of the contaminants.

Soils in the area of the Westchester Colprovia office and laboratory were remediated via a soil vapor extraction (SVE) system. The treatment units, both the air stripper and the SVE systems, are no longer in use due to diminishing recovery. Both systems were removed from operation with the concurrence of NYSDEC.

3.0 MONITORING PLAN PURPOSE and OBJECTIVES

The purpose and objectives for monitoring the groundwater quality at the site is to evaluate the continued effectiveness of the interim remedial measures that were used to address soil and groundwater at the former Westchester Colprovia site. Data will be collected and assessed to demonstrate that the completed interim remedial measures at the site were effective to remove source and groundwater contamination resulting from the source area. Six monitoring wells were selected for groundwater sampling based on their location to the former source area. The selected monitoring wells include W-5 (former laboratory source area), W-1 (background), W-3 and W-4 (sidegradient) and Production Well and W-12 (immediately downgradient of source area). Monitoring well W-12 has historically had the highest concentrations of contaminants. Locations of the groundwater monitoring wells are shown on Figure 2. The following sections discuss procedures for the analysis and evaluation of data.

3.1 Analytical Program

New York State Analytical Services Protocol (NYSASP), Category B analysis will be used to monitor the groundwater quality of this site. This level of analysis is characterized by Quality Assurance/Quality Control (QA/QC) protocols and provides documentation used to validate sample results. Groundwater will be sampled and analyzed for Target Compound List (TCL) volatile organic compounds

(VOC) and natural attenuation parameters. Natural attenuation refers to naturally occurring processes in soil and groundwater environments that act without intervention to reduce the volume, concentration and toxicity of the contaminants. Table 3-1 presents the analytical procedures, detection limits, holding times, preservation and sample containers by parameter for groundwater analysis. The laboratory will analyze the environmental samples in a standard 21-day turn-around time.

The laboratory used for the sample analysis will have a New York State Department of Health (DOH) Environmental Laboratory Approval Program (ELAP) certification for all subcategories of solid and hazardous waste including NYSDEC Analytical Services Protocol.

3.1.1 Data Quality Objectives

Data quality objectives (DQOs) are developed to achieve the level of quality required for anticipated data use. The site-specific development of DQOs must consider project needs, data usability, and methods of data acquisition. Guidance documents outlining sampling protocols, sample documentation, and handling procedures must be followed to safeguard data quality. At the former Westchester Colprovia site, analytical methods selected will have detection limits below NYS MCLs for Class GA groundwater. The data generated will be used to assess the condition of the groundwater and to demonstrate that the site has been adequately remediated.

3.1.2 Quality Assurance Quality Control

The QA/QC samples required for the sampling program are outlined below. Each sampling round will consist of collecting groundwater from the six selected monitoring wells (W-1, W-3, W-4, W-5, Production Well and W-12).

Sample containers will be certified pre-cleaned by the manufacturer. The analytical laboratory's sample custodian will pre-preserve the aqueous sample containers with the appropriate acid. QA samples consisting of field duplicates, laboratory prepared trip blanks, and Matrix Spike/Matrix Spike Duplicates (MS/MSD) are to be collected during each groundwater sampling event. The QA/QC samples collected to provide assurance and control over the collection methods and analytical measurements of environmental samples, and the interpretation of the analytical data generated.

Field Sample - The total sample collected at a specific site location. This sample may be any matrix and may be divided to provide material for QA/QC analysis.

Trip blanks - The purpose of the trip blank is to assess the potential of sample contamination during transit to and from the site and the laboratory and during sample collection. Trip blanks are prepared by the laboratory, shipped with the sample containers, maintained with the containers and samples in the field and finally returned to the laboratory with the samples. Trip blanks are only required to accompany aqueous VOC samples, and will be analyzed for the associated VOC samples. Trip blanks will be sent on a one set-per-cooler basis when sampling for aqueous VOCs.

Split/Duplicate Samples - Samples collected as a single sample, divided into two or more equal parts and placed into separate containers. A duplicate is a second sample of the same media, taken at the same time and location. Split/duplicate samples will be taken at a frequency of one per sampling event to measure the laboratory's ability to reproduce sample results.

Rinsate Blanks - These samples are intended to provide a measure of ambient conditions that may potentially affect sample quality as well as decontamination procedures. The rinsate blank will be prepared for sampling equipment used to collect and prepare samples for chemical analyses. To prepare an equipment blank, the decontaminated equipment used to retrieve the sample will be rinsed with laboratory prepared analyte-free water. The rinsate will be placed directly into containers specified for groundwater samples. The rinsate blank will be analyzed for the same parameters as the primary sample.

3.1.3 Data Summary Reports

A Groundwater Sampling Report will be generated for samples collected after each event and will summarize and address the overall quality of the data generated. The report will be submitted 30 days after receipt of the last data package from the laboratory. It will include a discussion of the following:

- A summary of qualified data and positive detections in tabular format, including date of collection, well designation, water quality standards and method detection limits.
- Any deviations from the approved sampling procedures, handling and custody, in addition to an explanation of the potential effect on the resultant data.
- Groundwater sampling log sheets and a groundwater contour map for each event.
- Data analysis and validation with any modifications discussed in detail. Data validation principles and QC limits for each analyte will be discussed, as well as any results outside the QC limits. The report will identify QC result deviations greater than normal, as well as recommendations associated with the usability of the results generated.
- Discussion and comparison of current data to NYS MCLs and data prior to interim remedial measures.

Final destination of all sample documentation and field forms collected during this project will be in the project files at Malcolm Pirnie, Inc., White Plains, New York office. All project files will be stored in an organized and accessible manner.

3.2 GROUNDWATER SAMPLE COLLECTION

Implementing proper sampling procedures is essential to obtain the quality of analytical data necessary to meet NYSDEC requirements. The samplers will be trained in groundwater sampling protocols and will conduct the events in teams of at least two samplers. Groundwater monitoring will consist of semiannual sampling for two years, as well as monitoring well integrity inspection, as stated in the NYSDEC issued ROD.

A total of 15 monitoring wells were installed at various times (1987 through 1990) during previous investigations at the Westchester Colprovia site. Since the redevelopment of the site and surrounding property during the road construction in 1990, several of these wells have been destroyed. Figure 2 shows the approximate location of these wells. The groundwater wells available for sampling include the following: W-1, W-3, W-4, W-5, the Production Well, and W-12.

In accordance with the ROD, these wells will be sampled on a semi-annual basis for two years beginning in March 2002. The remainder of the sampling will be conducted in September 2002, March 2003 and September 2003. At the completion of this sampling is anticipated that the site will be reclassified to Class 4 on the New York State Registry of Inactive Hazardous Waste Sites.

The following sections describe the sampling equipment and methods to be used for the collection of groundwater samples from the six selected wells. These sampling methods will be consistently performed each time a well is sampled; this will ensure comparability of the data collected.

3.2.1 Sampling Equipment

The following equipment will be used for the collection of groundwater samples for laboratory analysis:

- Electric water level indicator meter
- Peristaltic pump
- Combination meter, Horiba Model U10 - (temperature, pH, Eh, conductivity, dissolved oxygen, and turbidity) with flow through cell and polyethelene tubing
- Photoionization Detector (PID) and calibration gas
- Field logbook, reporting forms and indelible pens
- Certified pre-cleaned, pre-preserved laboratory prepared sample containers
- Roll of polyethylene sheeting

- Latex gloves (disposable)

3.2.2 Sampling Procedures

Preparation - A sheet of polyethylene, large enough to accommodate the personnel conducting well sampling and field equipment, will be perforated in the center and placed over the monitoring well to be sampled. The sampling equipment will be placed on the polyethylene sheeting.

Field Measurements - Prior to taking any field measurements, the well cap will be removed, and the concentration of volatile organic vapors from the well will be measured with the PID. The PID will be calibrated at the beginning of each sampling day and recalibrated as needed.

The depth to water will be measured from the rim of the well riser by lowering an electric water level indicator meter from a survey mark until an audible signal is heard. This process will be repeated three times for accuracy. A permanent mark will be made on the rim of each well riser so that successive measurements are made from the same point. Water elevations (measured to the 1/100 of a foot) will be recorded on the monitoring well purge logs (Refer to Appendix C).

Measurements of field the parameters such as pH, redox potential , Dissolved Oxygen (DO), conductivity, turbidity, temperature and water levels will be recorded prior to, during, and after purging. The meter will be calibrated before each sampling round. Instrument calibration will be performed at the beginning of each sampling day and recalibrated as needed.

Low Flow Well Purging – Before a groundwater sample is collected the static water must be removed from the well to ensure that a representative sample is being collected. The monitoring wells will be purged with a peristaltic pump. New and dedicated polyethelene tubing will be attached to the pump and the tube lowered into the well and

suspended about midpoint of the screened interval. Low flow purging at a rate of 200 to 500 milliliters per minute will be used. The purge water will be collected in 15-gallon polyethylene drums and disposal alternatives will be determined based on the results of the laboratory analyses. Each monitoring well will be purged until field parameters stabilize (typically three to five well volumes).

Stabilization of field parameters as defined by EPA Ground Water Issue: *Low-Flow (Minimal draw-down) Ground-water Sampling Procedures, December 1995; EPA540-S-95-504* is three consecutive measurements within:

- +/-0.1 unit for pH
- +/- 1^0C for temperature
- +/-3% for conductivity
- +/-10 mV for redox potential
- +/-10% for turbidity and DO

Turbidity should be under 50 nephelometric units (NTUs) for purging to be complete. When each of these parameters have stabilized, purging will stop, the volume of water removed will be recorded, and the well will be sampled. Samples will be collected within two hours of purging.

Sample Collection - The groundwater samples will be collected (low flow) directly through polyethelne tubing using a peristaltic pump. Volatile organic compounds will be collected first, in two 40-ml vials without leaving headspace or air bubbles, at each well location.

Pre-cleaned, laboratory prepared sample containers must be provided by the laboratory conducting the sample analyses. In addition, the laboratory will provide an adequate supply of trip blanks for the duration of the sampling event. Samples requiring preservation (VOCs and Metals) will be pre-preserved to a pH of less than 2. The samples will be immediately placed in an iced cooler and held at 4° C. Samples must be

delivered to the laboratory promptly to avoid exceeding the required holding times. Chain-of-custody documentation must be provided for all samples collected (Refer to Appendix D for example chain-of-custody forms). Disposable gloves worn by the sampling personnel must be changed between sampling locations. Reporting forms for groundwater sampling will include the following information:

- Designation and location of monitoring well
- Names of personnel conducting sampling activities
- Date, time and weather during sample collection
- Depth to static water level
- Purging and sampling methods
- Sample designation as recorded on the chain of custody
- Volume of water removed during purging (refer to purging logs for conversion)
- Field parameter measurements and PID readings
- Other sample characteristics (i.e. color, presence of product, odor, etc.)

Health and Safety Requirements- The execution of sampling activities will be accompanied by health and safety procedures designed to minimize personnel exposure to site contaminants and to protect against physical hazards encountered on-site, such as slip/trip/fall hazards associated with each sampling event. A comprehensive health and safety plan is provided in Section 5.0.

Field Documentation - A bound field logbook will be maintained to record daily activities. Entries will be made in indelible ink and the notebook pages will be consecutively numbered. Incorrect entries will be corrected by a single stroke through the error and will be verified with the recorder's initials and date of correction. Entries to the log book will include:

- Date, start and finish times, weather
- Summary of work performed (including samples collected)

- Names of personnel present on site, including any visitors
- Level of personal protection used and any upgrades during various activities and reasons for upgrade
- Calibration of equipment
- Observations and remarks
- Sample designation
- Selected analyses, time and date of sampling
- Field measurements and monitoring

Decontamination Procedures - To avoid cross-contamination of samples, it is anticipated that all equipment used in sampling will be dedicated and/or disposable and certified clean. If non-dedicated sampling equipment must be used then it will be decontaminated initially, and prior to being reused. If decontamination procedures are necessary for any equipment, it will be completed at the Malcolm Pirnie Equipment Facility prior to site mobilization and during the sampling events to avoid the use of hazardous decontamination fluids on site. The following sequential process will be used for the decontamination of environmental sampling equipment:

1. Wash and scrub equipment with non-phosphate laboratory grade detergent
2. Rinse with tap water
3. Rinse with deionized demonstrated analyte free water
4. Rinse with methanol
5. Rinse thoroughly with deionized demonstrated analyte-free water (the volume of water used during this rinse must be at least 5 times the volume of solvent used in step (4) above)
6. Rinse with a 10% solution of nitric acid (if metals are being collected with nonmetallic sampling equipment)
7. Rinse again, thoroughly with deionized demonstrated analyte-free water
8. Air dry
9. Wrap in aluminum foil for transport if not being used immediately

While performing equipment decontamination, phthalate-free gloves (neoprene or natural rubber) will be worn prevent potential phthalate contamination of the sampling equipment by interaction between the gloves and the organic solvent(s).

3.2.3 Sampling Documentation and Chain of Custody (COC)

Sample custody during the field sampling events will be completed in three phases. The first phase includes sample collection, labeling, preservation, packing, and recording identification on the chain-of-custody (COC). The second phase includes sample shipment, documentation of shipment, air bill numbers, courier, dates and times. The third custody phase involves the custody procedures used by the laboratory which include cross-referencing labels to the COC record, noting any inconsistencies on the custody record, and immediately notifying the Malcolm Pirnie Quality Control Officer, Field Manager or the Project Manager if such inconsistencies arise. All three phases of sample custody are conducted to provide that: all samples are uniquely identified, the correct samples are tested and traceable to their source, samples are protected from loss or damage, and a record of sample custody and integrity is established and maintained through the entire custody process.

The COC provides an accurate written record to trace the possession and handling of the sample from the time of collection to analysis. The COC records will be maintained by the personnel conducting the monitoring activities, from the time that samples are collected until they are delivered to the courier, laboratory or transferred to an authorized custodian. The COC records will be kept in the cooler with the sample containers.

3.2.4 Sample Shipment

Custody of samples must be maintained through the shipment of samples to the selected laboratory. Samples will be delivered directly to the laboratory by sampling personnel or shipped via the following procedures:

- Use waterproof high-strength plastic ice chests or coolers only
- Fill out pertinent information on the sample label and tag
- Place about 2 inches of cushioning material (bubble wrap) in the bottom of the cooler
- Place the sample containers in clear plastic bags and sealing them
- Place the bottles upright in the cooler in such a way that they do not touch and will not touch during shipment
- Tape the cooler drain shut
- Place ice in double layered bags to prevent leakage of water onto samples collected
- Arrange bags of ice around, among, and on top of the sample bottles
- Fill the remaining space in the cooler with cushioning material
- Sign the chain-of-custody under "Relinquished by," enter the carrier name and air bill number, retain a copy for field records and put the chain-of-custody record in a waterproof plastic "ziplock" bag and tape it to the inside lid of the cooler
- Apply custody seals to the front and back of the cooler across the lid.
- Secure lid by taping the cooler completely with strapping tape at a minimum of two locations
- Attach completed shipping label to top of the cooler

In accordance with the regulations governed by the International Air Transportation Administration, "ENVIRONMENTAL SAMPLES" shall be labeled on each cooler to identify contents of shipment.

4.0 MONITORING WELL MAINTENANCE

The purpose of this maintenance plan is to inspect the condition and integrity of the monitoring wells used for groundwater monitoring and perform maintenance, if required. A site reconnaissance was performed on April 17, 2001 for an initial/baseline survey. Photographs of the current conditions of the site and monitoring wells as of this date are included as Appendix E. Table 4-1 presents a summary of existing monitoring wells for surface conditions only. During a subsequent site visit on October 10, 2001 it was discovered that other former monitoring wells W-8, MW-10, MW-14 and MW-15 (located east of Route 117) had been buried by fill material during recent site development work by that property's owner.

Well inspections will be conducted during each sampling event to evaluate surface conditions (i.e., protective casing, riser pipe, pad, cap and lock) and identify wells that may require repair. A checklist for this task is provided as Appendix F. Malcolm Pirnie will also conduct sounding of each monitoring well for sediment accumulation and measure water levels with an electronic water level indicator. If sediment is greater than 10% of well screen length then redevelopment is recommended. Well alignment or well casing restrictions or blockages will also be checked by lowering a bailer to the bottom of each well. The sampling team should have the following items for inspection:

- Flashlight
- Lock keys
- Camera
- Logbook
- Bailer and cord
- Water level meter

The well condition will be reported in the Groundwater Sampling Report and will include any recommendation for repairing, improving or abandoning the well should it be damaged to the degree that it has lost integrity.

5.0 HEALTH & SAFETY

This Site Safety and Health Plan (SSHP) has been developed by Malcolm Pirnie to protect the health and safety of Malcolm Pirnie field personnel during activities associated with groundwater sampling at the Westchester Colprovia Site.

Safety, health and emergency response procedures are provided to protect Malcolm Pirnie personnel from injury and occupational illness. This SSHP includes sections describing the assignment of responsibilities, personal protection equipment ensembles, safe work practices, Malcolm Pirnie's health and safety training and medical monitoring programs, site specific emergency response procedures, and standard safety procedures. This SSHP is based on available historical information and the assessment of potential physical and chemical hazards associated with the site. A copy of this entire document will be maintained on site for the duration of each groundwater-sampling event.

5.1 Regulatory Requirement and Guidelines

The procedures outlined in this section comply with the Occupational Safety and Health Administration (OSHA) requirements contained in 29 CFR 1910 including the final rule contained in 29 CFR 1910.120. The procedures are also consistent with the Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities jointly prepared by the National Institute of Occupational Safety and Health (NIOSH), OSHA, and the U.S. Environmental Protection Agency's Standard Operating Safety Guides.

In previous investigations 15 monitoring wells were installed on site at various times. However, only six of the wells (including the facility's Production Well) still exist. It is assumed that the missing wells have been destroyed during redevelopment and construction activities. Site field activities will consist of water level measurements, groundwater sampling and site surveying.

5.2 Project Personnel Assignments and Telephone Numbers

Responsibilities of Field Personnel

The Project Officer, Project Manager, Corporate Health and Safety Manager, Site Field Leader and Site Safety and Health Officer will be responsible for the development, implementation and oversight of this SSHP. The descriptions of each person's role in the organizational structure are as follows:

Project Officer

The Project Officer is the representative of Malcolm Pirnie with contract authority who is responsible for the commitment of resources required to fulfill Malcolm Pirnie's obligation to complete these sampling events and providing consulting services on behalf of Westchester Colprovia to the NYSDEC.

Project Manager

The Project Manager has full responsibility for implementing and executing an effective program of site-specific personnel protection and accident prevention. The Project Manager will supervise the allocation of resources and staffing to implement specific aspects of this SSHP, and may delegate authority to expedite and facilitate any application of the program.

Corporate Health and Safety Manager

The Corporate Health and Safety Manager (CHSM) serves as the administrator of Malcolm Pirnie's Corporate Health and Safety Program. Malcolm Pirnie's Corporate Health and Safety Manager is a Certified Industrial Hygienist (CIH) and a Certified Safety Professional (CSP) with experience in hazardous waste site studies and remedial efforts. The CHSM will have the assistance of Health and Safety Specialists throughout the duration of the project. The CHSM is responsible for developing and managing the Malcolm Pirnie Health and Safety Program, and maintenance of corporate health and safety training and medical clearance records. The CHSM will also serve as a scientific advisor for the duration of the project, providing guidance on exposure monitoring

methodology, data interpretation and assistance in determining appropriate levels of worker protection.

Field Leader and Site Safety and Health Officer

The Site Field Leader (FL) is responsible for the safe completion of field team operations. Responsibilities include executing this groundwater monitoring plan and abiding by safety policies and procedures. The Site Field Leader will also double as the Site Safety and Health Officer (SSHO).

As the Site Safety and Health Officer this person is responsible for interpreting and implementing the field health and safety provisions set forth in this SSHP. The SSHO will guide the efforts of field personnel in their day to day compliance with this SSHP. The SSHO has the ability and authority to make necessary changes or additions to this SSHP. In general, the SSHO is responsible for:

- Providing on-site briefings on health and safety issues
- Announcing upgrades and downgrades of PPE levels (if necessary)
- Maintaining a daily log of work activities, monitoring results, PPE levels, individuals on-site, calibration data for monitoring instrumentation

Malcolm Pirnie Personnel

Any Field personnel entering the site to conduct fieldwork will have the following health and safety responsibilities:

- Take all reasonable precautions to prevent injury
- Perform only relevant tasks and report any accidents and/or unsafe conditions
- Implement the procedures set forth in the SSHP

The following Malcolm Pirnie personnel have health and safety responsibility for this project:

Project Officer
Name: **Richard P. Brownell, P.E.**
Affiliation: Malcolm Pirnie, Inc.
Telephone: (914) 641-2424 (W)

Project Manager
Name: **Kenneth J. Kaiser, P.E.**
Affiliation: Malcolm Pirnie, Inc.
Telephone: (914) 641-2962 (W)

Corporate Health and Safety Manager (CHSM) & Certified Industrial Hygienist
Name: **Mark A. McGowan, CIH, CSP**
Affiliation: Malcolm Pirnie, Inc.
Telephone: (914) 641-2484 (W)
(860) 350-2186 (H)

Field Leader (Hydrogeologist) and SSHO
To be determined prior to groundwater sampling events.

5.3 Subcontractors

Any on–site subcontractors, if needed, are required to comply with this site specific health and safety plan for their employees which meets the requirements of 29 CFR 1910, especially 29 CFR 1910.120, 29 CFR 1910.134, and 29 CFR 1910.141, and which include applicable provisions of 29 CFR 1926. Subcontractor personnel will be familiar with the proper use of protective equipment and devices.

5.4 Hazardous Substance Characteristics and Toxicology

The hazards/risks presented in this section are based on existing information about previous activities and investigations at Westchester Colprovia Site. The focus of the GWMMP is to monitor groundwater improvement set forth in the NYSDEC issued

ROD. This SSHP addresses activities associated with groundwater sampling and monitoring well inspection. The results of the Malcolm Pirnie investigation in 1988 reports that the primary contaminant detected in the groundwater was TCE, a volatile organic chemical compound found in highest concentrations in the vicinity of MW-3. This well was located on the former CS&G property but no longer exists due to redevelopment activity. However, MW-12 was installed as part of the active groundwater treatment system and is located within approximately 20 feet of MW-3.

5.5 Health/Risk Analysis

Malcolm Pirnie personnel must be cognizant of the health hazards and risks (safety, chemical, physical, and biological) associated with the individual field activities to be conducted and the physical environment in which the work will take place. Table 5-1 provides a hazard/risk analysis of each work task to be conducted. Section 5.6 provides safety procedures that should be used in completing any activities at the site.

5.6 Safety

Safety hazards/risks at the site include: slips, trips, falls, electricity, equipment and machines. Table 5-1 provides recommended controls that will be incorporated to minimize the hazards/risks. Controls for safety hazards will include careful performance of housekeeping duties during and at the conclusion of tasks and special concern in keeping designated pathways clearly identified and free of obstacles and debris.

5.7 Chemical Hazards

As indicated previously, potential exposure to VOCs will be minimum or no exposure. If field parameter measurements indicate the presence of VOCs in excess of background and at concentrations of concern, then inhalation and dermal contact with these

contaminants can be avoided through use of proper personal protection equipment as described in Personal Protective Equipment.

5.8 Physical Hazards

Physical hazards pose the threat of injury from such means as noise, slip/trip hazards around equipment or uneven terrain, impacts from objects, entanglement in machinery, and heat or cold stress, which may occur during the field activities. Any noise exposures will be controlled by the use of hearing protectors. Administrative controls such as reduced time spent in such areas during noisy operations may be applied. Employees will wear hearing protection near heavy equipment operations, when using high impact tools, or when working in the vicinity of air compressors, generators, or other noisy machinery. All work shall be conducted in accordance with applicable safety guidelines.

5.9 Biological Hazards

The two primary biological hazards that may be encountered at the Westchester Colprovia site are poison ivy and ticks. Poison ivy is a climbing plant with ternate leaves (arranged in three) with white berries. Poison oak is similar to poison ivy, but its leaves appear oak-like in form. The leaves of these poisonous plants produce irritating oil that causes an itchy skin rash and characteristic bulbous lesions.

Ticks are parasitic bloodsuckers, attaching themselves to warm-blooded vertebrates. Wood and dog ticks have been known to transmit this disease to man by their bite. Lyme Disease is a potentially serious disease caused by a bacterium called a spirochete that is transmitted by the deer tick. The spirochete can be found in nymphal and adult deer ticks, and only these stages are thought to be transmitters of Lyme Disease. Deer ticks are commonly found in woodland areas, which have deer, mice, and other animals, they feed on. The nymphal ticks may be found throughout the spring and summer, and into

the fall. Adult deer ticks are commonly found only during the spring and fall and occasionally during the winter. Nymphal deer ticks are black and about the size of a poppy seed. The adult females are black and red-orange; they are the size of an apple seed. The males are black and slightly smaller. The personal protective clothing worn during on-site activities should limit the potential for exposure to Lyme Disease. The following precautions should be taken to avoid tick bites:

- Avoid brush and tall grass, where possible; stay near the center of paths and roads
- Tuck pants into boots and tape, spray on tick repellent on clothes and skin
- Check frequently for crawling ticks; check creases in clothing; wear light colored clothing whenever possible to spot ticks easier

Ticks should be removed with fingers or a pair of tweezers. Do not squeeze the body of the tick or apply anything to the tick to remove it. Instead, grasp the mouthparts with a pair of fine-tipped tweezers as close to the skin as possible. Remove any remaining mouthparts as you would a splinter. Apply antiseptic to the bite area. Save the tick in a small container for later identification. Prompt removal of the tick is important.

If any member of the field team develops an unusual, expanding rash or flu-like symptoms or joint pain, the Health & Safety Coordinator should be immediately notified. Lyme Disease can effectively treated with antibiotics, especially when detected early. If untreated, cardiac and neurologic problems and even chronic arthritis may develop.

5.10 Health and Safety Orientation Training for Field Personnel

Malcolm Pirnie field personnel who monitor other subcontractor personnel conducting activities have the required training specified in 29 CFR 1910.120. These requirements include:

- A minimum of 40 hours of initial hazardous waste operation instruction

- A minimum of 3 days actual field experience
- Eight hours of annual refresher training
- Eight hours additional training for managers/supervisors directly responsible for employees engaged in hazardous waste operations

Prior to the start of work, any subcontractors will provide evidence of appropriate Health & Safety Training to the Malcolm Pirnie Site Health & Safety Officer for all employees conducting tasks or who will be working in the exclusion zone prior to the start of work.

5.11 Health and Safety Orientation Training for Visitors

Visitors will be required to read, understand and sign this SSHP prior to entering a designated work zone. Visitors will be properly oriented to existing site conditions, planned activities, and levels of personal protection and other procedures outlined in this SSHP. Those who enter exclusion zones, if established, will be trained in accordance with 29 CFR 1910.120.

5.12 First Aid and CPR

At least one member of the sample team will be First Aid/CPR trained and will be on-site at all times during the fieldwork. All First Aid/CPR providers are to use the Center of Disease Control's (CDCs) Universal Precautions when administering First Aid or CPR.

5.13 Hazard Communication Program

A copy of Malcolm Pirnie's written hazard communication program, which was established to meet the requirements of OSHA 29 CFR 1910.1200 will be maintained on site by field personnel during the initial field activities and each sampling event.

All Malcolm Pirnie personnel who work at hazardous waste sites participate in the Malcolm Pirnie Medical Monitoring Program. A copy of the Medical Monitoring Program can be obtained by request from the Corporate Health and Safety Manager.

5.14 Exposure Monitoring

The types of personal monitoring that will be conducted are described in the following paragraphs. The monitoring will determine the required level of protection for field investigation personnel.

Cold Stress Monitoring

Hypothermia is defined as a decrease in a person's body core temperature to 95° F (35° C). A freezing or rapidly dropping temperature is not needed to produce hypothermia. A person's ability to maintain normal body temperature may be affected by medications or drugs, alcohol, wind or wetness. Although the appropriate clothing provides protection from many sources of external wetting, perspiration is often increased while working causing the skin and clothing to become moist or wet. Wet clothes and skin can conduct body heat at a rapid rate and the effects of wind and water compound this by creating a condition for extreme loss of body heat.

In addition, dehydration, or the loss of body fluids, also occurs in a cold environment and may increase the susceptibility of the worker to cold injury due to a significant change in blood flow to the extremities. With proper surveillance, hypothermia can be identified in its earliest stage, thus preventing a potential hazard to the worker. The single most important sign of hypothermia is a change in behavior, often subtle and best recognized by other personnel. Physical and behavioral symptoms of hypothermia include:

- Pain in the extremities, may be the first warning of danger from cold stress
- Decrease in usual efficiency

- Forgetfulness and a decreased level of communication
- Decline in manual dexterity
- Poor motor skills or repetitive behavior
- Poor judgement
- Lack of concern for physical needs
- Cold, pale skin appearance, shivering and "goose flesh"

Maximum severe shivering develops when the body temperature has fallen to 95° F. This must be taken as a sign of danger to workers and exposure to cold should be immediately terminated

Frostbite is a local cold injury that rarely occurs unless environmental temperatures are less than freezing and usually less than 20° F (-6.7° C). Frostbite commonly occurs on the exposed portions of flesh (e.g., ears, nose, hands) and is recognized by a whitened area which, in mild cases, is slightly burning or painful.

5.14.1 Preventive Actions/Monitoring

The following actions will be taken to reduce the potential for workers to develop cold stress injuries, such as frostbite and hypothermia, in cold environments:

- The work areas will be shielded from the wind to reduce wind chill effect
- The skin should not be exposed when the wind chill factor results in a relative temperature of -25° F or below
- The field personnel will frequently inspect each other for signs of frostbite

If the available clothing does not give adequate protection to prevent hypothermia or frostbite, work shall be modified or suspended until adequate clothing is made available or until weather conditions improve.

5.14.2 Treatment/Response

Mild hypothermia is treated by rewarming the affected person by:

- Moving to a protected area
- Removing wet or damp clothing
- Providing hot fluids
- Wrapping in dry blankets

More severe cases of hypothermia require prompt intervention by medical personnel in addition to the above activities.

Mild cases of frostbite, where the affected area is still painful, may be treated in the field by as slow rewarming. More serious cases of frostbite should be treated at a medical facility, since attempting to thaw the frozen area can cause severe damage. A victim of serious frostbite should be protected from the environment and further heat loss prevented, but the skin should not be rubbed or thawed with warm water or dry heat.

5.14.3 Heat Stress Monitoring

Heat stress is probably one of the most common and potentially serious illnesses resulting from field activities. The potential for heat stress is dependent on a number of factors, including environmental conditions, clothing, workload, physical conditioning, and age. The effects of heat stress can range from mild symptoms, such as fatigue, irritability, and decreased mobility, to death.

Recognition/Symptoms

The body's response to heat stress includes the following:

- **Heat Rash**: A result of continuous exposure to heat and humidity. Heat rash decreases the body's ability to tolerate heat.
- **Heat Cramps**: A result of profuse perspiration with inadequate fluid intake and chemical replacement, heat cramps are signaled by muscle spasms and pain in the abdomen and the extremities.
- **Heat Exhaustion**: A result of increased stress on various organs. The signs of heat exhaustion include shallow breathing; pale, cool, moist skin; profuse sweating; dizziness and lassitude.
- **Heat Stroke**: The most severe form of heat stress, heat stroke must be relieved immediately to prevent severe injury or death. The signs of heat stroke are red, hot, dry skin; no perspiration; nausea; dizziness and confusion; strong, rapid pulse; and/or coma. The body must be cooled and medical attention sought immediately.

5.14.4 Preventive Actions/Monitoring

Measures to avoid heat stress include, regular work breaks during field activities, regular fluid replenishment, and availability of shaded shelter. Heat stress monitoring of all personnel will begin when the ambient temperature during field operations is above 90 F. The frequency of heat stress monitoring will depend initially on ambient air temperature and the degree of physical work. A standard mercury-in-glass thermometer will be available on site to measure air temperature.

All personnel will be made aware of the symptoms of heat stress. Should one or more symptoms be detected, the affected worker will be assisted to seek shade, drink plenty of fluids, and seek medical attention, as required.

5.15 General Personal Protective Equipment Requirements

Site activities at Westchester Colprovia are anticipated to be conducted in modified Level D. However, the following are general PPE requirements that apply to all work being conducted at Malcolm Pirnie work sites:

- Malcolm Pirnie will provide eye, face and foot protective equipment when operations present potential eye or face injury from physical and/or chemical agents. Eye and face protective equipment will meet the requirements in American National Standards Institute (ANSI) Z87.1, Practice for Occupational and Educational Eye and Face Protection. Protective footwear will consist of chemical-resistant boots or shoes with steel toe and shank.

- All protective headgear will meet the requirements ANSI Z89.1, Class A or ANSI Z89.2, Class B.

- Persons requiring corrective eyewear, when required to wear eye protection, will be protected by one of the following:
  - Eyeglasses with protective lenses that also provide optical correction
  - Goggles that incorporate corrective lenses mounted behind the protective lenses

- Hearing protection will be provided when working around any excessively noisy equipment.

- Persons handling rough, sharp-edged, abrasive materials where the potential of lacerations, punctures, burns, or bruises exist, shall use general purpose outer hand protection in addition to the chemical resistant inner and outer gloves.

- Employees will wear clothing/PPE suitable for the weather and work conditions at hand. Canvas athletic or deck shoes are not acceptable.

5.16 Description of Levels of Protection

Four levels of protection, Levels A through D, have been established based on varying needs for protection from known or anticipated chemical hazards. It is expected that only Level D and Modified Level D will be used. However, other levels are described below.

Level C Personal Protection

Equipment Requirements for Level C are as follows:

- Air-purifying respirator, full-face, equipped with chemical cartridges that are MSHA/NIOSH approved for organic vapors, acid gases, dusts, fumes, mists
- Chemical-resistant clothing (disposable, hooded chemical-resistant coveralls such as Saranex)
- Coveralls (optional)
- Gloves (outer), polyvinyl alcohol (PVA)
- Gloves (inner), latex
- Boots, chemical-resistant, steel toe and shank
- Boot covers (outer), nitrile rubber
- Hard hat

Modified Level D

Equipment for Modified Level D are as follows:

- Semi-permeable disposable coveralls, such as Tyvek (optional)
- Gloves (outer), PVA
- Gloves (inner), latex
- Boots, chemical-resistant, steel toe and shank
- Boot covers, chemical-resistant (NR, optional)
- Safety glasses or chemical splash goggles (optional)
- Hard hat (face shield optional)

Level D

Equipment Requirements for Level D are as follows:

- Coveralls or appropriate work uniform
- Gloves (optional)
- Boots/shoes with steel toe and shank, leather or chemical-resistant
- Safety glasses or chemical splash goggles (optional)
- Hard hat (face shield optional)

5.17 PPE Selection Criteria

Selection of the proper level of protection is defined in Section 2.2, Protection Exposure Standards based primarily on the following two criteria:

- Types and measured concentrations of the chemical substances at the site and their associated toxicity
- Potential exposure to substances in air, splashes of liquids or other indirect contact with material due to the task being performed

5.18 Level A, B and C Selection Criteria

Based on previous site investigations, it is not anticipated that use of Level A, B or C protection will be required at the site. Should physical evidence of previously unknown sources or types of contaminants be discovered at this site, then work will be stopped until the hazard is eliminated or arrangements for use of the appropriate level of protection and air monitoring are completed. There will be no on-site availability Level A, B or C protection.

5.19 Level D and Modified Level D PPE Selection

Level D protection consists primarily of an ordinary work uniform that provides minimal protection from dermal hazards. The following criteria must be met at all times if the use of Level D protection is to be implemented:

- No respiratory or dermal hazards are suspected or known to exist
- Work functions preclude splashes, immersion, or potential for unexpected inhalation of any chemicals

Modified Level D PPE is selected when no respiratory hazards are suspected or known to exist, yet the potential for dermal hazards including splashes exists. If the potential for minor splashes exists, coated-type chemical resistant coveralls (such as Saranex) and hard hats with face shields should be selected.

5.20 Inspection/In-use Monitoring

If an upgrade of PPE is required, site personnel will visually inspect themselves and their co-workers for deficiencies or damage to their PPE continuously throughout the duration of the work. If PPE becomes damaged or torn, the individual will leave the work area and redress and then re-enter the work area.

5.21 Maintenance, Re-Use and Storage

With the exception of respirators, hard hats, eye protection and safety shoes/boots, should they be required, PPE to be used at the Westchester Colprovia Site will be disposable. Coveralls, boot covers, and gloves are to be appropriately discarded at the end of the workday, or when damaged.

5.22 Upgrades/Downgrades

The SSHO may upgrade the level of PPE based on site conditions; however, only the Corporate Health and Safety Manager or CIH may downgrade levels of protection. Based on field PPE expected to be available on site, upgrade to Level A, B or C protection will not be required. If situations arise which would require such protection, all work is to be stopped and workers shall secure and evacuate the area.

5.23 Required Levels of Protection

Modified Level D (with regular Tyvek or other semi-permeable coveralls) has been selected as the minimum preferred level of protection for all persons conducting environmental sampling. Level D shall be required for all persons conducting survey work, reconnaissance or other non-intrusive activities. Initial PPE ensembles may not be downgraded without the approval of the Corporate Health and Safety Manager.

5.24 Monitoring Equipment

Emergency response actions and personal protective equipment selection will be based on monitoring results. Monitoring with a Photoionization Detector (PID) will be conducted only during the opening of monitoring wells to make quantitative determinations of contaminant concentrations. Monitoring instruments will be calibrated and maintained in accordance with the manufacturer's recommendations.

5.25 Decontamination of Personnel

Decontamination will not be necessary if Level D protection is used. Disposable gloves used during sampling events will be removed and disposed as regular trash. Sampling personnel will wash hands prior to eating and before leaving the site. Discarded materials, waste materials, or other objects shall be handled in such a way as to prevent a sanitary hazard, or causing litter to be left on-site. Grossly contaminated material is not anticipated. All non-contaminated materials shall be collected and bagged for disposal as domestic waste.

5.26 Emergency Planning and Emergency Responsibilities

The SSHO shall check that emergency equipment is readily accessible and distinctly marked. In addition, the Site Safety and Health Officer (SSHO) shall conduct/organize the following emergency measures whenever conditions at the site warrant such action:

- Emergency medical treatment
- Emergency transport of site personnel as necessary
- Notification of emergency response units via cell phone,
- Notification of appropriate Malcolm Pirnie, Inc. corporate staff
- Completion of appropriate incident reports

Emergency equipment that will be available on-site includes:

- Fire Extinguishers
  A Class ABC dry chemical fire extinguisher will be maintained at the site in the field vehicle. Fire extinguishers will be inspected, serviced, and maintained in accordance with the manufacturer's instructions.
- First Aid Kits
  One First Aid Kit will be maintained in the field vehicle and will conform to Red Cross and other applicable good health standards, and shall consist of a weatherproof container with individually sealed packages for each type of item. First Aid Kits will be fully equipped before being sent out for each sampling event and will be checked by the SSHO to ensure that the expended items are replaced.
- Eye Wash
  To provide emergency treatment for eye injuries due to contact with dust particles during soil sampling or accidental splashing during groundwater sampling procedures, emergency eyewash will be available on-site during all field activities. Portable emergency eyewashes will meet the minimum ANSI Z358.1 requirements.
- Communication Equipment
  The Peckham Materials Corp. facility is a fully manned operating business. As such, telephones are available on-site in the office for contacting emergency response services, should the need arise.

5.27 Personal Injury

In the event of personal injury the SSHO will administer appropriate first aid or transport the injured to the hospital. The following emergency procedures are to be followed in the case of personnel exposure to either caustic materials or site contaminants:

- **Skin Contact**: Use copious amounts of soap and water to wash and rinse the affected area for at least 15 minutes and provide medical attention. If necessary, transport to the hospital.
- **Eye Contact**: Portable eyewashes will be provided and placed in field vehicles. If the eye is not cut, flush the affected area, lifting the upper and lower lids, for at least 15 minutes. If eye is cut or a protruding object is visible, stabilize object and wrap bandage around both eyes and provide medical attention. Transport to the hospital as described in the section below.
- **Inhalation**: Move the affected person to fresh air and provide medical attention. If necessary, transport to the hospital as described below.
- **Ingestion**: Transport to the hospital as described in Sections below. If necessary, call Poison Control Center at **1-800-222-1222**.

In the event of a serious medical emergency, victims shall be treated at the Northern Westchester Hospital in Mt. Kisco. Written directions and a map of the route to the hospital (Appendix G) will be kept in each Malcolm Pirnie vehicle on-site during all activities.

Adverse Weather Conditions

In the event of unfavorable weather conditions, the SSHO will determine if work shall be stopped to avoid adversely affecting the health and safety of Malcolm Pirnie personnel.

5.28 Safe Work Practices

The following safe work practices will be followed during the execution of all field activities:

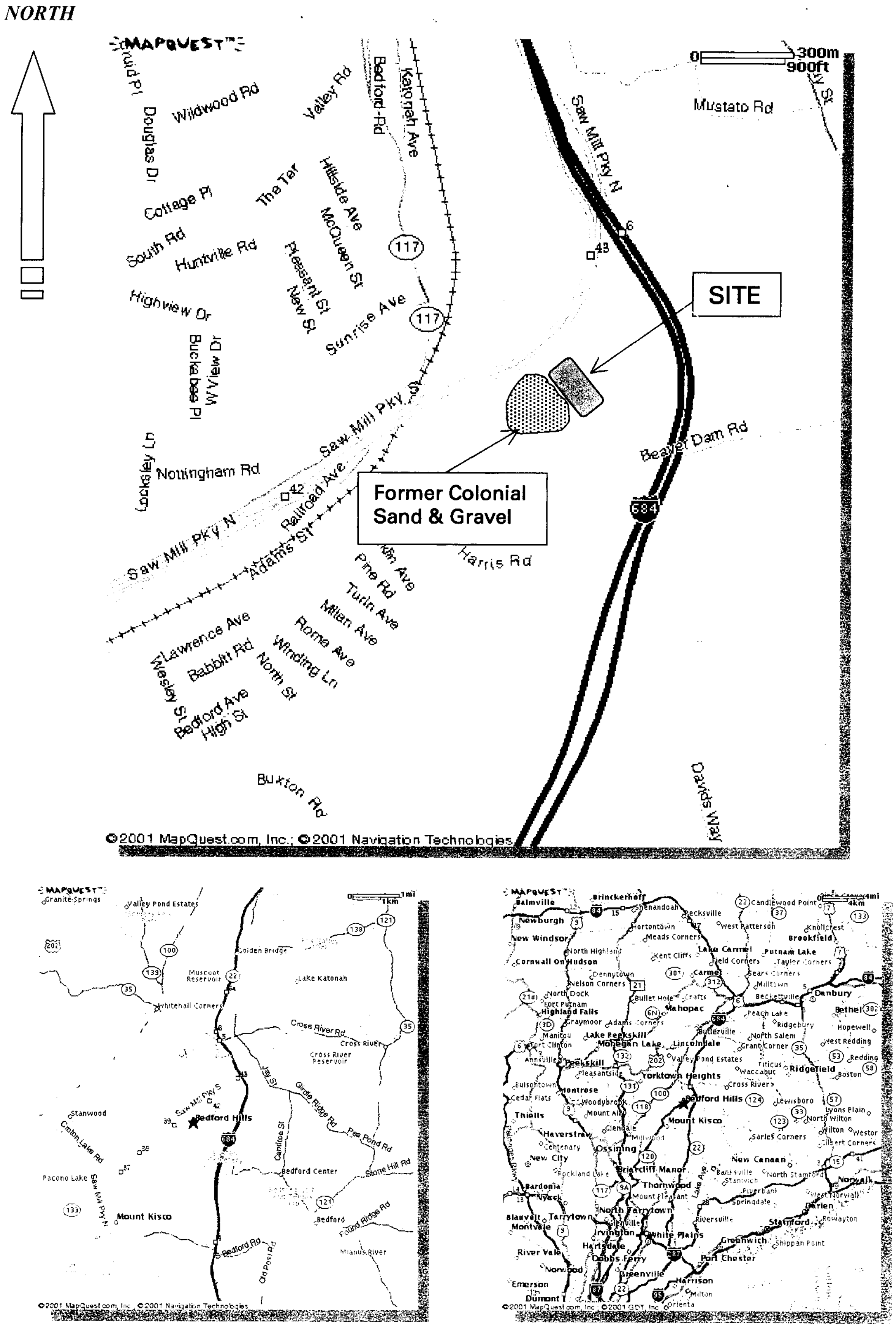
- The number of personnel and equipment on the site will be kept at a minimum, consistent with effective site operations
- On-site personnel will use the "buddy" system

- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth transfer of contaminated material is strictly prohibited on the site outside of the support zone or within the contamination reduction zone and exclusion zone
- The hands and face must be thoroughly washed upon leaving the work area and prior to engaging in any activity indicated above
- Medicine and alcohol can potentially exacerbate the effects of exposure to toxic chemicals. Use of prescribed drugs should be reviewed with the Malcolm Pirnie or subcontractor occupational physician. Alcoholic beverage and illegal drug intake are strictly forbidden during site work activities
- Personnel should practice unfamiliar operations prior to performing the actual procedures.

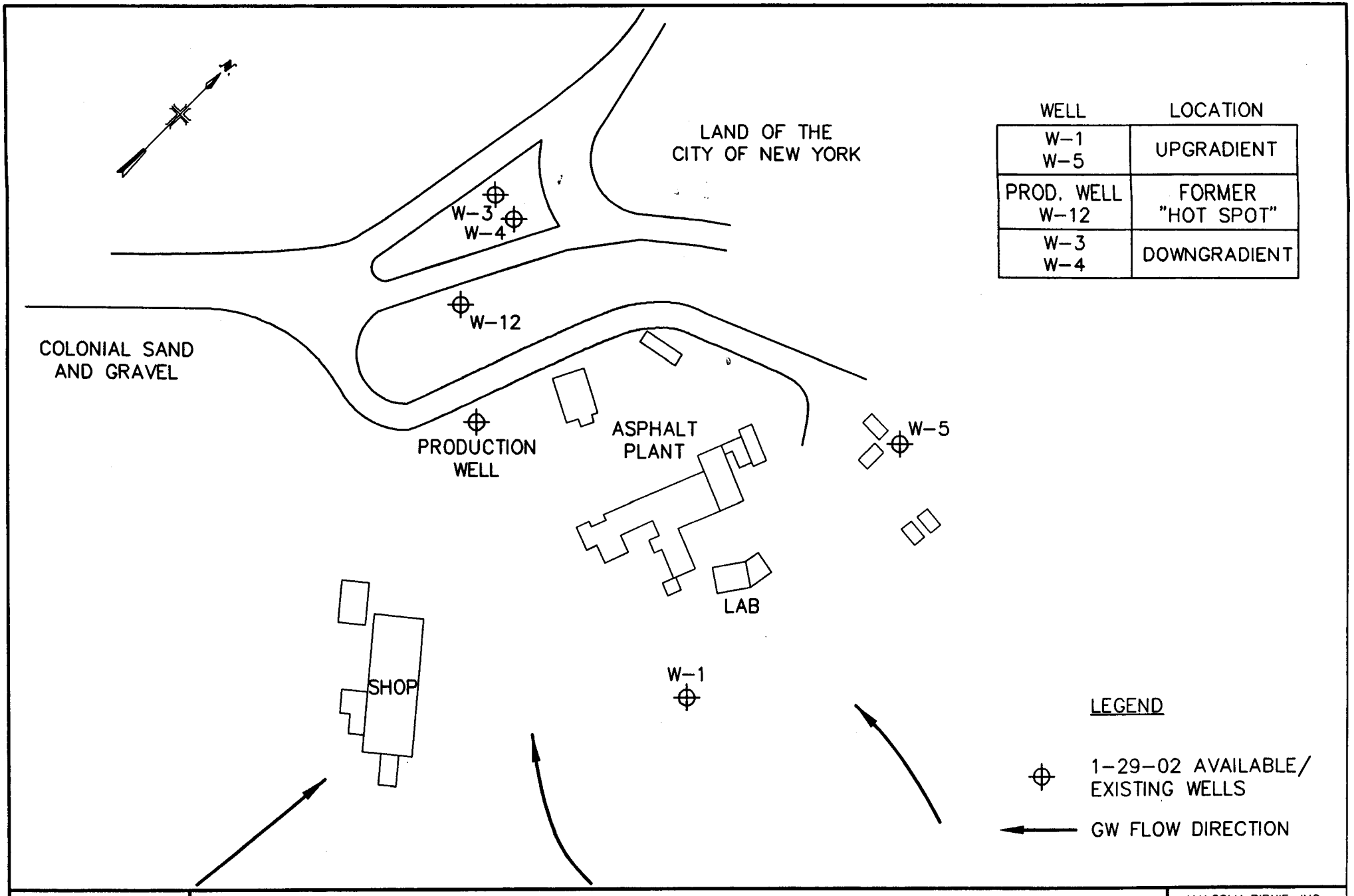
In the event of any accident/incident, the SSHO will immediately notify the Malcolm Pirnie Corporate Health and Safety Manager. All accidents will be investigated, reported, and analyzed. Injured persons are responsible for reporting all injuries as soon as possible to the SSHO and Supervisor. An incident report shall be filed with the Malcolm Pirnie Benefits Administrator.

FIGURES

FIGURE - 1
WESTCHESTER COLPROVIA CORPORATION
SITE LOCATION



User: MATTHEWSL Spec: PIRNIE STANDARD File: I: \ACAD\PROJ\10740140\DWG\SITE.DWG Scale: 1:1 Date: 02/14/2002 Time: 11:09 Layout: Blank



WELL	LOCATION
W-1 W-5	UPGRADIENT
PROD. WELL W-12	FORMER "HOT SPOT"
W-3 W-4	DOWNGRADIENT

MALCOLM PIRNIE

WESTCHESTER COLPROVIA CORPORATION
BEDFORD, NEW YORK

EXISTING WELL LOCATION MAP

NOT TO SCALE

MALCOLM PIRNIE, INC.

FIGURE 2

TABLES

TABLE 3-1
ANALYTICAL PROCEDURE, DETECTION LIMITS, HOLDING TIMES, PRESERVATIVES, AND SAMPLE CONTAINERS
Groundwater Sampling
Westchester Colprovia Site, Bedford, NY

PARAMETER	EXTRACTION PROCEDURE	ANALYTICAL PROCEDURE	METHOD DETECTION LIMIT	HOLDING TIME	PRESERVATIVE	CONTAINER
Volatiles (2)	SW-846 5035	SW-846 8260 B	(1)	14 days	Ice to 4 deg. C, HCL to pH<2	3 X 40 mL glass, Septa vial
Total Iron	SW-846 3010A	SW-6010A	(1)	6 months	HNO_3 to pH < 2	250 mL HDPE
Total Organic Carbon	INC	SW-846 9060	(1)	28 days	H_2SO_4 to pH <2 4 deg. C	250 mL amber glass, Septa
Methane (2)	INC	SW-846 3810	(1)	7 days	Ice to 4 deg. C	3 X 40 mL glass, Septa vial
Ethane (2)	INC	SW-846 3810	(1)	7 days	Ice to 4 deg. C	3 X 40 mL glass, Septa vial
Ethene (2)	INC	SW-846 3810	(1)	7 days	Ice to 4 deg. C	3 X 40 mL glass, Septa vial
Nitrite (3)	None	EPA 353.2	(1)	48 Hours	Ice to 4 deg. C	500 mL HDPE
Nitrate (3)	None	EPA 353.2	(1)	48 Hours	Ice to 4 deg. C	500 mL HDPE
Sulfite (2)	None	EPA 377.1	(1)	24 Hours	Ice to 4 deg. C	125 mL HDPE
Sulfate (3)	None	EPA 375.4	(1)	28 Days	Ice to 4 deg. C	500 mL HDPE
*oxygen *pH *eH *turbidity *temperatute **ferrrous iron **alkalinity *conductivity						

[1] All detection limits are less than the project-specific MCLs.
[2] Sample collected with no headspace.
[3] Parameters can be collected in the same sample bottle.
* Analyses will be perfomed in the field.
** Analyses will be perfomed in the field using a test kit.

TABLE 4-1
SUMMARY OF EXISTING MONITORING WELL CONDITIONS
(as of October 10, 2001)

WELL ID	VISIBLE CONDITIONS/ OBSERVATIONS	SCREEN LENGTHS & DEPTHS
W-1	Protective casing intact but not locked. Protective casing stick-up is approx. 3 ft.	4-inch diameter Schedule 40 PVC riser with Screen Length of 10 feet Screen Interval = 14 feet to 24 feet with Screen Slot = 0.010 inch Total Depth = 19.5 feet
W-3	Protective casing intact, no lock observed. Well casing located in concrete vault with cover and appears in good condition. Stick-up is approx. 0.25 ft. and lid is off and askew. Electrical wiring is located within the vault.	4-inch diameter Schedule 40 PVC riser with Screen Length of 10 feet Screen Interval = 49 feet to 59 feet with Screen Slot = 0.010 inch Total Depth = 60 feet
W-4	Protective casing intact, no lock observed. Well casing located in concrete vault with cover and appears in good condition. Stick-up is approx. 3 ft.	4-inch diameter Schedule 40 PVC riser with Screen Length of 10 feet Screen Interval = 26 feet to 36 feet with Screen Slot = 0.010 inch Total Depth = 36 feet
W-5	Protective casing is flush mount and secure.	4-inch diameter Schedule 40 PVC riser with Screen Length of 15 feet Screen Interval = 29 feet to 44 feet with Screen Slot = 0.010 inch Total Depth = 45 feet
MW-12	Well installed as a replacement for MW-3 which was destroyed during road construction work. This well is located within a below grade covered, concrete vault and has also been referred to as W-12. Protective casing intact, no lock observed. Well and vault appeared in good condition.	4-inch diameter Schedule 40 PVC riser with Screen Length of 23 feet Screen Interval = 17 feet to 40 feet with Screen Slot = 0.020 inch Total Depth = 40 feet
Production Well	Well installed to provide water to fill facility production needs.	No information available. Data will be collected during first round of groundwater sampling.

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SUMMARY OF EXISTING MONITORING WELL CONDITIONS
(as of October 10, 2001)

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Production Well	Well installed to provide water to fill facility production needs.	No information available. Data will be collected during first round of groundwater sampling.

TABLE 5-1
Hazard Analysis for Work Tasks

WORK TASK	POTENTIAL HAZARD	RECOMMENDED CONTROLS
STAGING EQUIPMENT	Slip, trip, and fall hazards	Determine best access route before transporting equipment. Good housekeeping, keep work area picked up and clean as feasible. Continually inspect the work area for slip, trip , and fall hazards.
	Heavy lifting	Use proper lifting techniques. Lifts greater than 60 lbs require assistance or mechanical equipment.
	Falling objects	Stay alert and clear of material suspended overhead, wear hard hat and steel-toed boots.
	Flying debris, dirt, dust, etc.	Wear safety glasses/goggles, ensure that eye wash is in proper working condition.
	Pinch points	Keep hands, fingers, and feet clear of moving/suspended materials and equipment. Beware of contact points. Stay alert at all time!!!
	Bees/ticks, spiders, and snakes	Inspect work area carefully and avoid placing hands and feet into concealed areas.
	Fire	Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.
	Contact with moving equipment/vehicles	Work area will be barricaded/demarcated. Equipment will be laid out in an area free of traffic flow.
	Hazard communication	Label all containers as to contents and dispose of properly.
	Noise	Sound levels above 85 dBA mandates hearing protection.
MOVING AND SHIPPING COLLECTED SAMPLES	Heavy lifting	Use proper lifting techniques. Lifts greater than 60 lbs require assistance or mechanical equipment; size-up the lift.
	Pinch points	Keep hands, fingers, and feet clear of moving/suspended materials and equipment. Beware of contact points. Stay alert at all times!!!
	Cut hazards	Wear adequate hand protection. Use care when handling glassware.
	Hazard communication	Label all containers as to contents and associated hazards.

TABLE 5-1
Hazard Analysis for Work Tasks

WORK TASK	POTENTIAL HAZARD	RECOMMENDED CONTROLS
WATER LEVEL MEASUREMENTS	Bees/ticks, spiders, and snakes	Inspect work areas carefully and avoid placing hands and feet into concealed areas.
	Cross-contamination and contact with potentially contaminated materials	Employees will wear proper protective clothing and equipment to safeguard against potential contamination. Only essential personnel will be in the work area. Initial real-time air monitoring will take place before and during activities. All personnel will follow good hygiene practices. Proper decontamination procedures will be followed. All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state and local regulations.
	Hazard communication	Label all containers as to contents.
	Sprains/strains	Use the proper tool for the job being performed.
	Spills/residual materials	Absorbent material will be kept available where leaks or spills may occur.
	Lighting	Adequate lighting will be provided to ensure a safe working environment.
	Unattended worker	"Buddy System" - visual contact will be maintained during sampling activities.
	Slip, trip, and falls	Avoid walking on wet surfaces.
	Splash hazards	Employees engaged in this task will control splash hazards.

TABLE 5-1
Hazard Analysis for Work Tasks

WORK TASK	POTENTIAL HAZARD	RECOMMENDED CONTROLS
GROUNDWATER MONITORING: WELL SAMPLING	Slip, trip and fall hazards	Good housekeeping, keep work area picked up and clean as feasible. Continually inspect the work area for slip, trip, and fall hazards. Look before you step, ensure safe and secure footing.
	Heavy lifting	Use proper lifting techniques. Lifts greater than 60 lbs require assistance of mechanical equipment.
	Falling objects	Stay alert and clear of materials suspended overhead, wear hard hat and steel-toed boots.
	Flying debris, dirt, dust, etc.	Wear safety glasses/goggles, ensure that eye wash is in proper working condition.
	Pinch points	Keep hands, fingers, and feet clear of moving/suspended materials and equipment. Beware of contact points. Stay alert at all times!
	Bees/ticks, spiders, and snakes	Inspect work area carefully and avoid placing hands and feet into concealed areas.
	Fire	Fire extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.
	Contact with moving equipment/vehicles	Work area will be barricaded/demarcated. Equipment will be laid out in an area free of traffic flow.
	Contact with potentially contaminated materials	Continually inspect the work area for slip, trip and fall hazards. Real time air monitoring will take place. If necessary, proper personal protective clothing and equipment will be utilized.
	Cross-contamination and contact with potentially contaminated materials	Sampling technicians will wear proper protective clothing and equipment to safeguard against potential contamination. Only essential personnel will be in the work area. Initial real time air monitoring will take place before and during sampling activities. All personnel will follow good hygiene practices. Proper decontamination procedures will be followed. All liquids and materials used for decontamination will be contained and disposed of in accordance with federal, state, and local regulations.

TABLE 5-1
Hazard Analysis for Work Tasks

WORK TASK	POTENTIAL HAZARD	RECOMMENDED CONTROLS
GROUNDWATER MONITORING: WELL SAMPLING (Cont'd)	Noise	Various types of hearing protection are available. Employees will wear ear muff hearing protection near drilling and heavy equipment operations, when using high impact tools, or when working in the vicinity of air compressors, generators or other noisy machinery.
	Cut hazards	Use care when handling glassware. Wear adequate hand protection.
	Hazard communication	Label all containers as to contents.
	Strains/sprains	Use the proper tool for the job being performed. Get assistance if needed. Avoid twisting/turning while pulling on tools, moving equipment, etc.
	Spills/residual materials	Absorbent material and containers will be kept available where leaks or spills may occur.
	Lighting	Adequate lighting will be provided to ensure a safe working environment.
	Unattended worker	"Buddy System" - visual contact will be maintained with the sampling technician during sampling activities.

APPENDIX A

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

RECORD OF DECISION

New York State Department of Environmental Conservation
Division of Environmental Remediation

NOTICE OF AVAILABILITY

RECORD OF DECISION
WESTCHESTER COLPROVIA CORPORATION
INACTIVE HAZARDOUS WASTE DISPOSAL SITE (#360018)
TOWN OF BEDFORD, WESTCHESTER COUNTY

Introduction

The New York State Department of Environmental Conservation (NYSDEC) announces that the Record of Decision (ROD) for the Westchester Colprovia Corporation Inactive Hazardous Waste Disposal Site # 360018, Town of Bedford, Westchester County, is available. The ROD presents the selected remedy for the Westchester Colprovia Corporation site and the rationale for the chosen remedy.

NYSDEC held a public meeting on March 9, 1999, presenting the Proposed Remedial Action Plan for the Westchester Colprovia Corporation site and receiving public comments on the proposal. The comments received at this meeting and in writing during the public comment period (February 18, 1999 through March 20, 1999) were considered, along with the administrative record for the site in preparing the final ROD. The ROD also contains a Responsiveness Summary addressing the public comments received.

Description of the Selected Remedy

Based upon the results of the investigations, the interim remedial measures and the criteria identified for evaluation of alternatives, the NYSDEC has selected no further action with continued groundwater monitoring as the preferred remedial alternative for this site. The components of the remedy as described in the ROD include:

- Biannual groundwater monitoring will continue for no less than two years to ensure continued effectiveness of the interim remedial measures performed at the site.
- Reclassification of the site from a class 2 to a class 4 on the New York State Registry of Inactive Hazardous Waste Disposal Sites. A classification of 2 means that the site poses a significant threat to human health and/or the environment, while a classification of 4 indicates that the site is properly remediated and requires continuous monitoring.

For More Information

The Westchester Colprovia Corporation ROD, and other relevant documents, can be reviewed at the following locations:

Bedford Hills Free Library
26 Main Street
Bedford Hills, NY 10507

NYSDEC Region 3
21 South Putt Corners Road
New Paltz, NY 12561

APPENDIX B

MONITORING WELL LOGS

NEW ENGLAND BORING CONTRACTOR OF CT. INC.
109 COMMERCE STREET
GLASTONBURY, CT 06033
(203) 633-4649 — (413) 733-1232

CLIENT: Malcolm Pirnie
PROJECT NAME: Westchester Colprovia
LOCATION: Katona, NY

BORING NUMBER: W-1A
SHEET No. 1 of 1

DRILLER: S. Ramsdell
INSPECTOR: G Burchette
DATE START: 5/4/87
DATE FINISH: 5/4/87

ARCHITECT ENGINEER:

	Casing	Sampler	Core Barrel
TYPE	HSA	SS	
SIZE I.D.	6-5/8"	1-3/8"	
HAMMER WT.		140	
HAMMER FALL		30"	

FILE NO.:
SURFACE ELEV.:
LINE & STATION:
OFFSET:

DEPTH	SAMPLE NO.	SAMPLE DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
								2.0	.3 Blacktop - Br. Fine Sand, Little Gravel, Tr. Silt, Brick (Fill)
5'	S1	5.0-7.0	13	19					
				14	15	24"			
									Br. Fine Sand, Little Silt, Little Gravel, Occasional Cobbles and Boulders
10'									
15'	S2	15.0-17.0	31	51					
				95	56	23"		16.0	
									Decomposed Schist Auger Refusal @ 19.5 Ran 6" Roller Bit from 19.5-24.0
20'								24.0	
									Bottom of Boring 24.0 Water @ 19.0 Monitor Well Set @ 24.0 Materials: 10'-4" PVC Well Screen, 16'-4" PVC Riser, 1-6" Locking Protector Pipe, 2 Bags Ottawa Sand, 50 Lbs. Bentonite Pellets, 5 Bags Portland Cement, 1 Bag Sand Mix Cement

NOTES:
1) The stratification lines represent the approximate boundary between soil types, transitions may be gradual.
2) Water level readings have been made in the drill holes at times and under conditions stated on the boring logs. Fluctuations in the level of groundwater may occur due to other factors than those present at the time measurements were made.

SAMPLE PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50 +	Very Dense	16-30	V-Stiff
		31 +	Hard

PROPORTIONS

trace	0 to 10%
little	10 to 20%
some	20 to 35%
and	35 to 50%

REMARKS:

COL. A

NEW ENGLAND BORING CONTRACTOR OF CT. INC.
109 COMMERCE STREET
GLASTONBURY, CT 06033
(203) 633-4649 — (413) 733-1232

CLIENT Malcolm Pirnie
PROJECT NAME Westchester Golprovia
LOCATION Katona, NY

BORING NUMBER W-3
SHEET No. 1 of 2

DRILLER S. Ramsdell
INSPECTOR G. Burchette
DATE START 5/6/87
DATE FINISH 5/6/87

ARCHITECT ENGINEER

	Casing	Sampler	Core Barrel
TYPE	HSA	SS	
SIZE I.D.	6-5/8"	1-3/8"	
HAMMER WT.		140	
HAMMER FALL		30"	

FILE NO.
SURFACE ELEV.
LINE & STATION
OFFSET

DEPTH	SAMPLE NO.	SAMPLE DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
									.2 Blacktop
	S1	2.0-4.0	8	6					
				6	6	20"			Br. Med. Sand, Tr. Clay, Tr. Silt, Tr. Gravel
	S2	4.0-6.0	7	9					
5'				13	12	13"			
								8.0	
									Grey Br. Fine Sand, Little Silt, Tr. Clay
10'	S3	10.0-12.0	2	1					
				1	2	17"			
15'	S4	15.0-17.0	5	3				15.0	
				2	2	10"			
	S5	17.0-19.0	3	3					
				4	4	12"			
	S6	19.0-21.0	1	3					
20'				3	5	24"			Br. Fine Sand, Tr. Med.-Crs. Sand, Little Gravel, Tr. Silt, Occasinal Cobbles
25'									
30'	S8	30.0-32.0	48	46					
				30	22	8"			
								35.0	
35'	S9	35.0-37.0	10	5					Gravel and Fine-Crs. Sand, Tr. Silt
				4	6	9"			
	S10	39.0-41.0	31	15					
40'				11	11	10"			

NOTES:
1) The stratification lines represent the approximate boundary between soil types, transitions may be gradual.
2) Water level readings have been made in the drill holes at times and under conditions stated on the boring logs. Fluctuations in the level of groundwater may occur due to other factors than those present at the time measurements were made.

SAMPLE PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50 +	Very Dense	16-30	V-Stiff
		31 +	Hard

PROPORTIONS

trace	0 to 10%
little	10 to 20%
some	20 to 35%
and	35 to 50%

REMARKS:

COL. A

NEW ENGLAND BORING CONTRACTOR OF CT. INC.
109 COMMERCE STREET
GLASTONBURY, CT 06033
(203) 633-4649 — (413) 733-1232

CLIENT Malcolm Pirnie
PROJECT NAME Westchester Colprovia
LOCATION Katona, NY

BORING NUMBER W-3
SHEET No. 2 of 2

DRILLER S. Ramsdell
INSPECTOR G. Burchette
DATE START 5/6/87
DATE FINISH 5/6/87

ARCHITECT ENGINEER

	Casing	Sampler	Core Barrel
TYPE	HSA	SS	
SIZE I.D.	6-5/8"	1-3/8"	
HAMMER WT.		140	
HAMMER FALL		30"	

FILE NO.
SURFACE ELEV.
LINE & STATION
OFFSET

DEPTH	SAMPLE NO.	SAMPLE DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
45'	S11	44.0-46.0	10	14					
				17	21	24"			
50'	S12	49.0-51.0	10	8					
				7	9	12"			
55'									
								60.0	Gravel and Fine-Crs. Sand, Tr. Silt

Bottom of Boring 60.0
Water @ 22.0

Monitor Well Set @ 59.0
Materials: 10'-4" PVC Well Screen 50'-4" PVC Riser, 4 Bags Ottawa Sand, 25 Lbs. Bentonite Pellets, 26 Bags Portland Cement, 1 Bag Bentonite Powder, 1-6" Locking Protector Pipe, 1 Bag Sand Mix Cemtent

NOTES:
1) The stratification lines represent the approximate boundary between soil types, transitions may be gradual.
2) Water level readings have been made in the drill holes at times and under conditions stated on the boring logs. Fluctuations in the level of groundwater may occur due to other factors than those present at the time measurements were made.

SAMPLE PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50 +	Very Dense	16-30	V-Stiff
		31 +	Hard

PROPORTIONS

trace	0 to 10%
little	10 to 20%
some	20 to 35%
and	35 to 50%

REMARKS:

COL. A

NEW ENGLAND BORING CONTRACTOR OF CT. INC.
109 COMMERCE STREET
GLASTONBURY, CT 06033
(203) 633-4649 — (413) 733-1232

CLIENT Malcolm Pirnie
PROJECT NAME Westchester Colprovia
LOCATION Katona, NY

BORING NUMBER W-4
SHEET No. 1 of 1

DRILLER S. Ramsdell
INSPECTOR G. Burchette
DATE START 5/7/87
DATE FINISH 5/7/87

ARCHITECT ENGINEER

	Casing	Sampler	Core Barrel
TYPE	HSA	SS	
SIZE I.D.	6-5/8"	1-3/8"	
HAMMER WT.		140	
HAMMER FALL		30"	

FILE NO.
SURFACE ELEV.
LINE & STATION
OFFSET

DEPTH	SAMPLE NO.	SAMPLE DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
5'									Same Soil as W-3
10'									Bottom of Boring 36.0 Water @ 10.0±
15'									Monitor Well Set @ 35.0 Materials: 10'-4" PVC Well Screen, 27'-4" PVC Riser, 5 Bags Ottawa Sand, 12 Bags Portland Cement, 1 6" Locking Protector Pipe, 1 Bag Sand Mix Cement, 25 Lbs. Bentonite Pellets
20'									
25'									
30'									
35'								35.0	
40'									

NOTES: 1) The stratification lines represent the approximate boundary between soil types, transitions may be gradual.
2) Water level readings have been made in the drill holes at times and under conditions stated on the boring logs. Fluctuations in the level of groundwater may occur due to other factors than those present at the time measurements were made.

SAMPLE PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50 +	Very Dense	16-30	V-Stiff
		31 +	Hard

PROPORTIONS

trace	0 to 10%
little	10 to 20%
some	20 to 35%
and	35 to 50%

REMARKS:

COL. A

NEW ENGLAND BORING CONTRACTOR OF CT. INC.
109 COMMERCE STREET
GLASTONBURY, CT 06033
(203) 633-4649 — (413) 733-1232

CLIENT: Malcolm Pirnie
PROJECT NAME: Westchester Colprovia
LOCATION: Katona, NY

BORING NUMBER: W-5
SHEET No. 1 of 2

DRILLER: S. Ramsdell
INSPECTOR: G. Burchette
DATE START: 5/4/87
DATE FINISH: 5/5/87

ARCHITECT ENGINEER:

	Casing	Sampler	Core Barrel
TYPE	HSA	SS	
SIZE I.D.	6-5/8"	1-3/8"	
HAMMER WT.		140	
HAMMER FALL		30"	

FILE NO.:
SURFACE ELEV.:
LINE & STATION:
OFFSET:

DEPTH	SAMPLE NO.	DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
	S1	2.0-4.0	14	12					.2 Blacktop - Br. Fine-Crs. Sand, Some Gravel, Little Silt
				6	6	16"		3.9	
	S2	4.0-6.0	1	2					
5'				2	2	8"			Br. Fine Sand, Tr. Silt
	S3	6.0-8.0	2	2					
				3	7	12"		7.5	
	S4	8.0-10.0	2	3				8.5	Br. Fine Sand, Tr. Med.-Crs. Sand, Little Gravel, Tr. Silt
				3	2	18"			
10'	S5	10.0-12.0	4	6					
				7	9	2"			
	S6	12.0-14.0	6	12					
				11	11	16"			Light Br. Fine Sand, Tr. Gravel, Tr. Silt
	S7	14.0-16.0	4	3					
15'				4	8	20"			
	S8	16.0-18.0	9	9					
				10	10	20"			
	S9	18.0-20.0	6	7					
				9	11	24"			
20'	S10	20.0-22.0	4	6					
				6	10	22"			
	S11	22.0-24.0	10	15				22.0	
				16	13	18"			
	S12	24.0-26.0	16	11					
25'				11	11	20"			Br. Fine Sand, Little Silt, Some Gravel, Tr. Med.-Crs. Sand, Occasional Cobbles
	S13	26.0-28.0	21	20					
				16	18	4"			
	S14	28.0-30.0	16	13					
				12	14	0"			
30'								30.0	
									Grey Br. Silt and Fine Sand, Little Med.-Crs. Sand, Little Gravel, Tr. Clay (Fuel Oil Odor @ 40.0)
35'	S15	35.0-37.0	14	12					
				13	40	24"			
40'									

NOTES:
1) The stratification lines represent the approximate boundary between soil types, transitions may be gradual.
2) Water level readings have been made in the drill holes at times and under conditions stated on the boring logs. Fluctuations in the level of groundwater may occur due to other factors than those present at the time measurements were made.

SAMPLE PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50 +	Very Dense	16-30	V-Stiff
		31 +	Hard

PROPORTIONS

trace	0 to 10%
little	10 to 20%
some	20 to 35%
and	35 to 50%

REMARKS:

COL. A

NEW ENGLAND BORING CONTRACTOR OF CT. INC.
109 COMMERCE STREET
GLASTONBURY, CT 06033
(203) 633-4649 — (413) 733-1232

CLIENT Malcolm Pirnie
PROJECT NAME Westchester Colprovia
LOCATION Katona, NY

BORING NUMBER W-5
SHEET No. 2 of 2

DRILLER S. Ramsdell
INSPECTOR G. Burchette
DATE START 5/4/87
DATE FINISH 5/5/87

ARCHITECT ENGINEER

	Casing	Sampler	Core Barrel
TYPE	HSA	SS	
SIZE I.D.	6-5/8"	1-3/8"	
HAMMER WT.		140	
HAMMER FALL		30"	

FILE NO.
SURFACE ELEV.
LINE & STATION
OFFSET

DEPTH	SAMPLE NO.	SAMPLE DEPTH RANGE	BLOWS PER 6" ON SAMPLER 0-6	6-12	12-18	REC.	COL. A	STRATA CHANGE	FIELD CLASSIFICATION AND REMARKS
45'								45.0	

Bottom of Boring 45.0
Water @ 30.0

Monitor Well Set @ 44.0
Materials: 15'-4" PVC Well Screen, 30'-4" PVC Riser, 3 Bags Ottawa Sand, 3 Bags Sand Mix Cement, 8 Bags Portland Cement, 50 Lbs. Bentonite Pellets, 1 Bag Bentonite Powder, 1-6" Roadway Box
(Supplied by Others)

NOTES:
1) The stratification lines represent the approximate boundary between soil types, transitions may be gradual.
2) Water level readings have been made in the drill holes at times and under conditions stated on the boring logs. Fluctuations in the level of groundwater may occur due to other factors than those present at the time measurements were made.

SAMPLE PENETRATION RESISTANCE
140 lb. Wt. falling 30" on 2" O.D. Sampler

Cohesionless Density		Cohesive Consistency	
0-4	Very Loose	0-2	Very Soft
5-9	Loose	3-4	Soft
10-29	Med. Dense	5-8	M/Stiff
30-49	Dense	9-15	Stiff
50 +	Very Dense	16-30	V-Stiff
		31 +	Hard

PROPORTIONS

trace	0 to 10%
little	10 to 20%
some	20 to 35%
and	35 to 50%

REMARKS:

COL. A

MALCOLM PIRNIE

MALCOLM PIRNIE, INC. 100 EISENHOWER DR. P.O. BOX 36 PARAMUS, NJ 07653

BORING W-12

PROJECT: Westchester Colprovia | PROJECT NO: 1074-01-1104

DATE: December 3, 4 1990 | LOCATION: Bedford, New York

ELEVATION: | DATUM:

SAMPLE no.	depth	recovery"	blows per 6"		DEPTH	STRATA	SOIL DESCRIPTION (M. COMP., TEX., C., 2nd COMP., TEX. C.; 3rd COMP., ETC., MOIST., OTHER *)	HNu reading * REMARKS
								6" I.D. stickup Protective Casing and Locking Cap
1	5'-7'	14	4	6	5		① Top 11": Medium brown, very fine-fine SAND, some Silt and/or Clay, trace mica. Moist. Bottom 3": Medium brown, SILT and/or CLAY, trace fine-coarse Sand, trace mica, Moist.	① 0.0
			6	6				
2	10'-12'	13	4	5	10		② Gray-brown, SILT and/or CLAY, trace very fine-fine Sand, trace fine, angular Gravel, trace organic matter. Moist.	② 0.0
			6	6				
3	15'-17'	18	2	3	15		③ Top 4": Same as above. Bottom 14": Gray-brown, very fine-fine SAND, and SILT and/or CLAY. Wet.	③ 0.1
			3	2				
4	20'-22'	12	56	40	20		④ Brown-gray, fine-coarse, angular-subrounded GRAVEL and fine-coarse SAND, little Silt and/or Clay. Wet.	④ 0.1
			18	14				
5	25'-27'	8	12	18	25		⑤ Brown, fine-coarse SAND, some fine-coarse, angular-subrounded Gravel, little Silt and/or Clay. wet, oily sheen on water.	⑤ 0.1
			15	35				
6	30'-32'	6	9	14	30		⑥ Same as above.	⑥ 0.2
			15	11				
7	35'-37'	7	5	15	35		⑦ Brown fine-coarse, angular-subangular GRAVEL, and fine-coarse SAND, little Silt and/or Clay, trace mica. Wet.	⑦ 0.1
			70	100/5"				⑧ —
8	40'-42'	0	100/4"		40		⑧ No Recovery. — Auger Refusal at 40' —	

WELL CONSTR.: Cement/Bentonite Grout; 4" I.D. PVC Riser; 4" I.D., 0.020 Slot, PVC Screen; Cement/Bentonite Grout; Bentonite Pellet Seal; No. 2 Gravel Pack

NOTES: Drilling Contractor: Empire Soils Investigations, Inc.
Driller: Paul Keeney
Drillers Helper: Kenny Edwards
Drilling Method: 6 1/4" I.D. Hollow Stem Augers
Hydrogeologist: Paul Krupin Drill Rig: CME 75

* HNu readings are above background, in Calibration Gas Equivalents

Development time - 2 hours

* NOTE: M. COMP. = MAJOR COMPONENT, TEX. = TEXTURE, C. = COLOR, COMP. = COMPONENT, MOIST. = MOISTURE

SHEET 1 OF 1

APPENDIX C

PURGE LOGS

MALCOLM PIRNIE

WELL PURGING LOG
Westchester Colprovia Site
Bedford Hills, NY

WELL NUMBER:_____ DATE:_____
SAMPLERS:_____
PURGE METHOD:_____
INITIAL DEPTH TO WATER:_____

1. Casing Diameter (in.) (D) _____
2. Depth to Water (ft.) (L_1) _____
3. Depth of Well (ft.) (L_2) _____
4. Casing Capacity (C_c) _____

Casing Diameter	C_c (Gallons/Linear Ft.)
2 inch	0.1632
4 inch	0.6528
6 inch	1.4688
8 inch	2.6112
10 inch	4.080
12 inch	5.8752

5. Volume of Water in Well Casing (V) _____ gallons

$V = (L_2 - L_1)(C_v)$

Parameter	Measured Value							
Gallons Purged								
Time								
Conductivity (millimho/cm)								
Dissolved O_2 (ppm)								
pH (S.U.)								
Redox Potential								
Salinity								
Temp (degrees C)								
Turbidity (NTUs)								

DEPTH TO WATER AFTER PURGING:

NOTES:

APPENDIX D

CHAIN OF CUSTODY FORM

CHAIN OF CUSTODY

CLIENT & PROJECT

Name:	
Address:	
Telephone #:	
Fax #:	
Project Name:	
Project Manager:	
Reference ID#: PO#:	

REPORTING

Fax to:
Fax #:
Report to:
Address:
Invoice to:
Address:

Turnaround Time

Conditional / TPHC

24 hr* 48 hr 72 hr 1 wk NA Other:

Verbal/Fax

24 hr* 48 hr* 72 hr* 1 wk* 2 wk Other:

Hard Copy

72 hr* 1 wk* 2 wk* 3 wk Other:

*Prior to sample arrival, Lab notification is required.

Report Format

Results Only

Reduced

Regulatory

SRP Disk**: dbf or wk1

Other:

ANALYTICAL PARAMETERS / PRESERVATIVES

** Circle format required

1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	1 2 3 4 5 6	Preservatives
										1. HCL 3. HNO_3 2. NaOH 4. H_2SO_4 5. MeOH 6. Other

COOLER TEMP. °C

SAMPLE INFORMATION

SAMPLE MATRIX

W - Waste SL - Sludge A - Aqueous
O - Oil X - Other S - Soil
GW - Groundwater SOL - Solid

Sample ID	Sample Description	Sampling Date	Time	am	pm	Matrix	# of Containers	Lab ID	Comments

Please print legibly and fill out completely. Samples cannot be processed and the turnaround time will not start until any ambiguities have been resolved.

Concentrations Expected

LOW MED HIGH

Known Hazard: yes no

Describe:

CUSTODY LOG

Signature	Date	Time	Signature
Relinquished by:			Received by:
Relinquished by:			Received by:
Relinquished by:			Received by:
Relinquished by:			Received by:
Relinquished by:			Received by:

Comments: _____

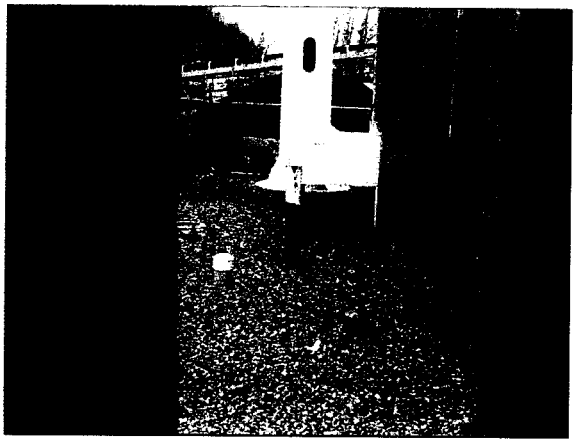
Lab Case #

PAGE: OF

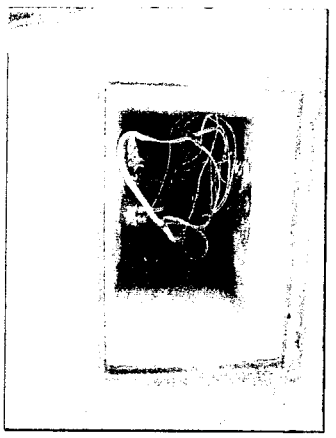
LAB COPIES - WHITE & YELLOW; CLIENT COPY - PINK

APPENDIX E

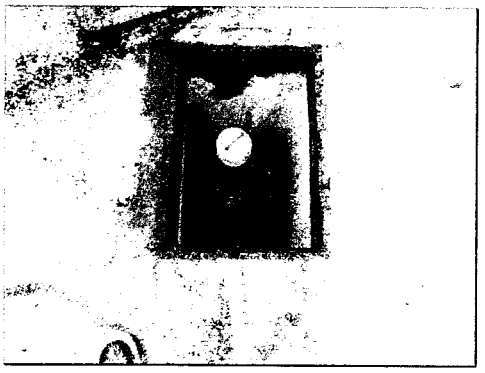
GROUNDWATER MONITORING WELL
PHOTOGRAPHS



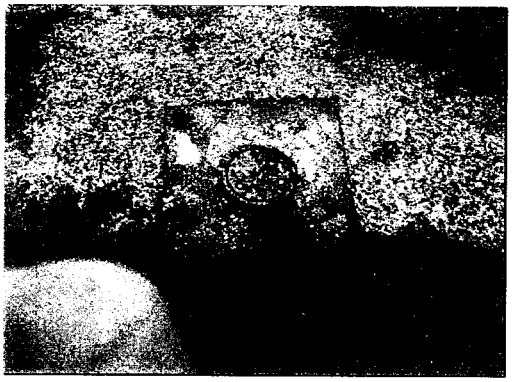
W-1



W-3



W-4



W-5

MW-12

APPENDIX F

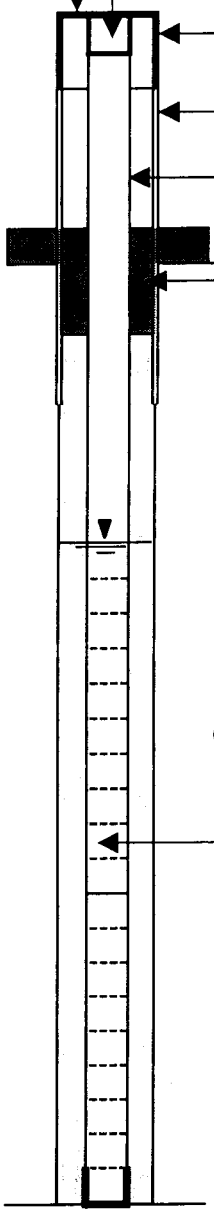
MONITORING WELL CHECK LIST

MONITORING WELL
INTEGRITY CHECKLIST
WELL ID _____

PROJECT _____
DATE _____
INSPECTOR _____

DESCRIBE THE CONDITION OF THE FOLLOWING MONITORING WELL ITEMS:

FLUSH MOUNT ☐ **STICK-UP** ☐



TOP OF CASING EL. (if known)

INTERIOR COMPRESSION CAP -
(seal/gasket, sealing mechanism, etc.)

EXTERIOR CAP &PAD LOCK - _____

PROTECTIVE CASING - _____
(stick-up height)

WELL DIAMETER & MATERIAL (e.g. PVC, SS etc.) - _____

SURFACE EL. (if known) - _____

CONCRETE PAD - _____
(cracks, separation from casing, erosion etc.)

GENERAL SURFACE CONDTIONS - _____

WELL ALIGNMENT (if observable) -

DEPTH TO WATER - _____

ANY OBSERVED OBSTRUCTION - _____

GENERAL CONSTRUCTION & INSTALLATION DETAILS *(if available)*

DATE : _____
DRILLING METHOD : _____
SCREEN SIZE :
SCREEN LENGTH :
SAND PACK HEIGHT: _____
BENTONITE SEAL: _____
HYDRAULIC CONDUCTIVITY :
WELL TYPE (overburden, bedrock) :

TOTAL DEPTH OF WELL - _____

SUMMARY COMMENTS / OBSERVATIONS (evidence of tampering, surrounding conditions, etc.)

_____

_____

_____

_____

_____

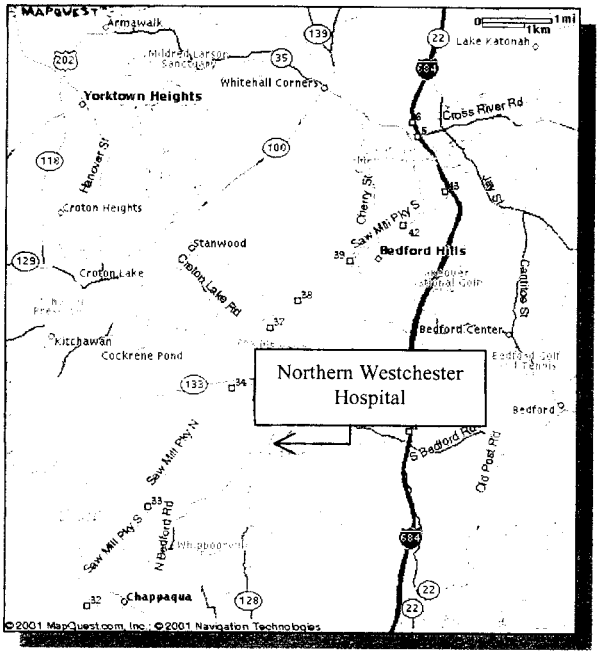
_____

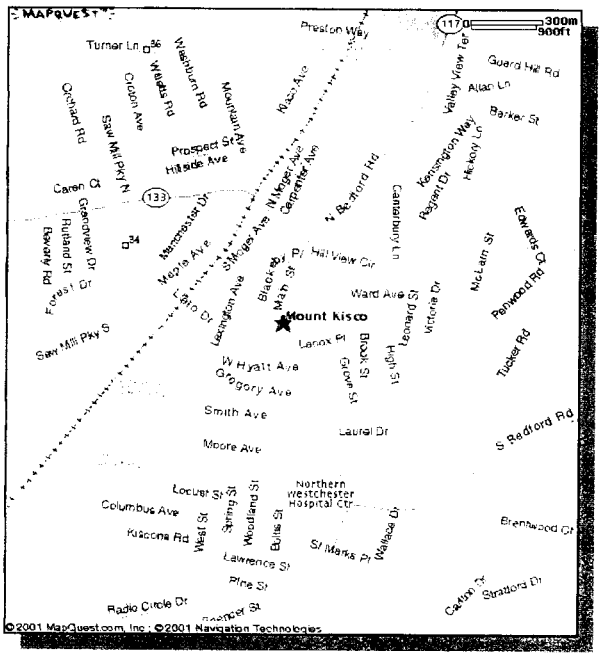
PHOTOGRAPH MUST BE ATTACHED

APPENDIX G

HOSPITAL MAP
and
PHONE NUMBERS

HOSPITAL DIRECTIONS:





NORTHERN WESTCHESTER HOSPITAL
400 EAST MAIN STREET
MOUNT KISCO, NEW YORK 10549
(914) 241-NWHC
(914) 241-6942

FROM THE NORTH

From the site take Route 117 (Harris Road) to Route 684 South, following signs for White Plains, proceed on Route 684 for about 15 miles. Take exit 4, Route 172. Bear Right off the exit and proceed 1-½ miles west to the end of Route 172 until you reach a traffic light at an intersection. Northern Westchester Hospital Center will be directly in front of you.