Mairoll, Inc.

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Operation, Maintenance, and Monitoring Plan for the Groundwater Remedy

Fairchild Republic
Main Plant Site
East Farmingdale, New York
Site No. 1-52-130

May 2009

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The March 1998 Record of Decision (ROD) prepared by the New York State Department of Environmental Conservation (NYSDEC) for the Fairchild Republic Main Plant Site (MPS) East Farmingdale, New York (Site) calls for a groundwater remedy consisting of a groundwater pump and treat remediation system; an Operation, Maintenance, and Monitoring (OM&M) Plan; and a public water supply wellhead contingency plan. The steps required to implement the groundwater remedy are detailed in the MAC Consultants, Inc. (MAC) October 1999 Remedial Design Work Plan (RDWP). MAC submitted the *Preliminary Remedial Design Report 35 Percent Completion* in February 2002. Malcolm Pirnie, Inc. (Malcolm Pirnie) submitted the *Preliminary Remedial Design Report 90 Percent Completion* and the *Remedial Design Report* in September 2003. Construction of the groundwater extraction, treatment, and recharge system was started in January 2004 and construction was completed in February 2005. From the start of the groundwater remedy in February 2005 to February 2008, over 283 million gallons of water have been extracted from the aquifer and over 4,800 pounds or roughly 400 gallons of Volatile Organic Compounds (VOCs) have been removed from the groundwater before it was re-injected into the water table aquifer. The objectives of this OM&M Plan are:

1. to operate, maintain, and monitor the groundwater remediation system.
2. to monitor the plume at regular intervals showing plume configuration, hydraulic gradients, and the capture zone. The capture zone and plume configuration will be used over time as a basis to recommend the increase or decrease of the well(s) pumping rates.
3. to provide a decision making process for adding or removing monitoring wells from the monitoring well program.
4. to determine if the plume has impacted the Outpost Monitoring Wells up-gradient of the public supply well fields, and if so, implement supplemental measures to ensure protection of down-gradient public supply wells.

5. to determine when the remediation goals set forth in the ROD have been achieved, and operation of the pump and treat system can be discontinued.

The primary elements of the selected remedy were described in greater detail in the RDWP and the Remedial Design Report (MAC, 1999). These elements are summarized below:

1. In accordance with the agreement between NYSDEC and Mairoll (dated June 11, 2003), the groundwater remediation system will capture the total VOC plume at concentrations of 1,000 ppb or greater to the extent practicable given the aquifer characteristics and limited site conditions.

2. A pre-design investigation was performed to determine the number, location, and depth of the extraction wells. The data collected during the investigation was used to estimate the capture zone as well as the migratory path of the VOCs that will not be captured by pumping activities.

3. A remedial design was completed to verify the design components and to provide the details necessary to construct, operate, maintain, and monitor the groundwater remedy.

4. Long-term monitoring of the extraction system is being conducted as presented in this OM&M Plan.

5. Quarterly monitoring of Outpost Monitoring Wells for VOCs is being conducted to provide an early warning for the potential impacts to the Suffolk County Water Authority (SCWA) Albany Avenue Wells.

6 A wellhead treatment contingency plan will be implemented to provide wellhead treatment systems, if determined to be necessary.

7. Monthly sampling of the East Farmingdale Route 109 and Albany Avenue well fields for VOCs is conducted by the water utilities.

8. Private drinking water well users within and around the area between Route 110 and Great Neck Road, and Wellwood Avenue and Sunrise Highway were connected to the public water supply.

1.1. SITE HISTORY

The Fairchild Republic MPS is located in East Farmingdale, Suffolk County, New York. The MPS study area is shown on Figure 1-1. VOCs were detected in subsurface soils adjacent to Building 17 during a Remedial Investigation (RI) in 1991. Soil, soil vapor, and groundwater were further investigated in order to define the horizontal and vertical extent of VOCs. The results of the investigation showed that unsaturated soil contained tetrachloroethene (PCE) at a former PCE storage tank and unsaturated soil contained trichloroethene (TCE) at a former degreasing pit in Building 17. Mairoll, Inc. installed a Soil Vapor Extraction System (SVE) as an Interim Remedial Measure (IRM) to remediate the unsaturated soil containing PCE and TCE. The SVE system operated for more than one year when the influent concentration of PCE and TCE approached non-detectable concentrations. Soil samples were collected in the source area at the direction of the NYSDEC. The results showed that the concentration of VOCs in the source area was less than the NYSDEC TAGM 4046 guidance values. The SVE system was decommissioned in March 1997 (ROD, 1998). Given the identified source areas, the contaminants of concern for groundwater at this site are PCE, TCE, and their degradation compounds.

The NYSDEC prepared a ROD for the Site in 1998, which required Mairoll, Inc. to install a groundwater remedy that would remove the VOCs in groundwater at the Site. Figure 1-2 shows the extent of total VOCs in the intermediate aquifer at the Site in July 2007. The groundwater remedy described in the ROD includes the design, construction, and operation of a groundwater extraction, treatment, and recharge system capable of capturing groundwater that contains total VOCs at 1,000 parts per billion (ppb) or greater or to the extent practicable. After further defining the nature and extent of the groundwater containing VOCs, conducting an aquifer test to refine the characterization of the physical properties of the aquifer, and conducting further groundwater modeling, it became clear that a larger portion of the chlorinated VOCs could be captured practicably. Groundwater flow modeling showed that a groundwater extraction system could capture groundwater containing total VOCs at 200 ppb or greater. After lengthy discussions with the NYSDEC, the Remedial Design (RD) of the groundwater extraction, treatment, and recharge system was changed to capture groundwater containing total VOCs at 200 ppb or greater as practicable using a two well groundwater extraction system.

1.2. GEOLOGY/HYDROGEOLGY

The subsurface lithology beneath the Site consists of more than 1,000 feet of unconsolidated coastal plain sediments. These sediments can be divided into three aquifers; the Upper Glacial aquifer, the Magothy aquifer, and the Lloyd aquifer. The Upper Glacial aquifer extends from ground surface to approximately 50 feet below mean sea level (msl) and was deposited as an outwash plain from the Ronkonkoma terminal moraine to the north. This aquifer contains fine to coarse-grained sand with minor amounts of silt and clay. The bottom of the Upper Glacial aquifer is defined by the presence of the Gardiners Clay. The Gardiners Clay consists of greenish-gray silt and clay with some interbedded sand that was deposited in a lagoon or marine environment during an interglacial period. Beneath the Gardiners Clay is the Magothy aquifer that extends from the bottom of the Gardiners Clay to the top of the Raritan Clay that is more than 800 feet beneath land surface. However, a relatively extensive clay layer exists in the Magothy aquifer beneath the site, which separates the Magothy aquifer into two hydrogeologic units. A conceptual diagram showing the geologic formations and the corresponding aquifers is on Figure 1-3. A geologic cross-section and generalized tetrachloroethene concentrations in groundwater data collected between 1992 and 1994 are shown on Figure 1-4. These figures show that groundwater containing VOCs from the MPS is in the Upper Glacial aquifer and the upper portions of the Magothy aquifer.

For the purposes of this report, the Upper Glacial aquifer is the shallow aquifer, the initial 175 feet of the Magothy aquifer that contains VOCs from the MPS is the intermediate aquifer, and the deeper portions of the Magothy aquifer monitored at the Site is the deep aquifer (Figure 1-3). Because the monitoring well network was installed over a 20-year period before the full nature and extent of VOCs were defined, not all of the monitoring well designations consistently identify the correct aquifer. For example, monitoring well MW-49D is screened in the intermediate aquifer. Table 1-1 lists each monitoring well, its total depth, and the screened aquifer.

1.3. GROUNDWATER REMEDY

The groundwater pump and treat system is designed to capture total chlorinated VOCs at 200 ppb or greater in groundwater or to the extent practicable given the aquifer

characteristics and site conditions. The captured groundwater is treated through two low-profile air strippers to remove VOCs to below the NYSDEC Effluent Guidelines, and the treated effluent is discharged to a subsurface recharge system consisting of 21 leaching chambers. Groundwater samples are collected from the influent and effluent portions of the treatment system to monitor the effectiveness of the VOC removal and compliance with NYSDEC discharge standards. These sampling locations and procedures are described in Section 2.0 of this document. Groundwater samples are collected from the monitoring wells to evaluate the effectiveness of the groundwater remediation system and evaluate the overall remediation of the groundwater plume. The groundwater monitoring portion of this program is composed of three separate plans, which consist of the following:

1.3.1. Outpost Well Groundwater Monitoring Plan

The purpose of the Outpost Well Groundwater Monitoring Plan is to track potential plume migration toward public water supply well fields. Three municipal well fields were identified as potential receptors to the MPS plume in the March 1998 ROD, namely; The East Farmingdale Water District (EFWD) Route 109 Station and SCWA Albany Avenue and Tenety Avenue well fields. At the request of the Suffolk County Department of Health Services (SCDHS), the Great Neck Road well field was added to the Outpost Monitoring Plan until such time that forward and backward particle tracking could demonstrate that the Great Neck Road well field would not be affected by the MPS. The EFWD Route 109 well field was removed from the Outpost Well Monitoring Plan because groundwater containing VOCs has been detected in the Outpost Monitoring Wells (S-66133 and S-66157) and wellhead treatment (liquid phase Granular Activated Carbon (GAC)) has been installed on Well 4-2. Wellhead treatment (air stripping) is currently being designed for the entire well field (Wells 4-1 and 4-2) and will replace the GAC on Well 4-2. The SCWA Tenety Avenue well field was removed from the Outpost Well Groundwater Monitoring Plan and Wellhead Treatment Contingency Plan because groundwater flow modeling, including forward and backward particle tracking, shows that the Tenety Avenue wells could not be impacted by VOCs from the MPS. Groundwater flow modeling, presented herein (Section 3.0), shows that the Great Neck Road well field could not be impacted by the MPS. Therefore, the SCWA Great Neck Road well field was removed from the Outpost Well Groundwater Monitoring Plan and Wellhead Treatment Contingency

Plan. The SCWA Albany Avenue well field remains in the Outpost Well Groundwater Monitoring Plan and Wellhead Treatment Contingency Plan.

Two monitoring wells (MW-45, and S-66134) will be used as sentinel wells in the Outpost Well Groundwater Monitoring Plan to monitor the groundwater quality upgradient of the Albany Avenue well field. Details of the Outpost Well Groundwater Monitoring Plan are provided in Section 3.2. No additional Outpost wells will be installed for the Albany Avenue wellfield because groundwater containing VOCs (1,1-DCA) above the trigger value of 1 ug/L has been detected in three consecutive rounds of groundwater samples. Therefore, because the existing outpost monitoring wells are in the correct location and depth, no additional outpost monitoring wells are needed. In addition, the trigger value has been reached and Mairoll, Inc. has contacted the SCWA about potential treatment. The SCWA verbal response was that they will install wellhead treatment if/when VOC impact the well. Since the treatment systems used by the Authority are a standard design that they have used at a large number of stations, they would have no problem in installing the system in a very short period of time.

1.3.2. Remediation Phase Groundwater Monitoring Plan

The Remediation Phase Groundwater Monitoring Plan is used to monitor the effectiveness of the pump and treat system in achieving the remedial goals. Groundwater samples will be collected from 33 monitoring wells and analyzed for VOCs. The sampling frequency will be semi-annual for the first year (Fall 2005/Spring 2006) and annual thereafter. Details of the Remediation Phase Groundwater Monitoring Plan are provided in Section 3.3.

1.3.3. Post-Remediation Groundwater Monitoring Plan

The Post-Remediation Groundwater Monitoring Plan will be used to verify that the residual VOCs from the MPS plume have been adequately treated. As part of the Post-Remediation Groundwater Monitoring Plan, groundwater samples will be collected to monitor for potential rebound of contaminant concentrations. Post-remediation monitoring will begin at such time as the NYSDEC approves a shutdown of the pump and treat system, and will continue for two years. Groundwater samples will be collected quarterly, and will include a

group of wells selected on the basis of location and depth, historical groundwater data, and relationship to the down-gradient public supply wells. Details of the Post-Remediation Groundwater Monitoring Plan are provided in Section 3.4.

2.1. GROUNDWATER TREATMENT SYSTEM OPERATION AND MAINTENANCE

2.1.1. System Description

Groundwater is pumped from two groundwater extraction wells, approximately 500 feet apart, to the treatment building using submersible pumps. The piping from the extraction wells to the air stripper is located below ground surface and extends from each concrete well vault/chamber to the treatment building. Each well vault/chamber houses the well, discharge piping and isolation valve, along with the electrical and mechanical connections.

Groundwater is pumped from each extraction well to the treatment building through 4-inch diameter piping, and is combined once inside the building into a common 6-inch diameter force main that continues into the air stripper's inlet head/manifold. Upstream of the 6-inch combined force main, each well's piping alignment includes a check valve, flow control valve (butterfly type) and electromagnetic flow meter.

The treatment building houses two air strippers installed in series. Water is pumped through the first air stripper and collected in a holding tank at the base of the stripper. The treated water is then pumped from the holding tank of the first air stripper through the second air stripper. The treated water is then pumped from the holding tank of the second air stripper through discharge piping to a recharge system of leaching chambers/pools. The holding tanks and recharge system are equipped with float switches, which monitor the water levels and control the operation of the air stripper's discharge pump.

The NEEP (North East Environmental Products, Inc.) air strippers are low profile models, with five stripper trays to facilitate mass transfer of VOCs from the liquid phase to the vapor phase. The units are countercurrent flow models with the water pumped into the top tray of the unit. Water flows through the full length of each baffled tray, and falls into the tray below as fresh air is induced, or forced up through 5 mm diameter holes in each stripper tray. The strippers' inlets are open to the atmosphere, while the outlets are connected to the suction side of the blowers. The treated water collects in a holding tank (approximately 1,500 gallons) in the base of each stripper.

Countercurrent air flow is provided by blowers. The blowers receive a fresh air supply from outside of the equipment building through polyvinyl piping/ductwork. The first air stripper's exhaust/off-gas piping/ductwork is connected to a series of Granular Activated Carbon (GAC) treatment units. The second air stripper's exhaust/off-gas piping/ductwork is discharged to the atmosphere in compliance with NYSDEC Air1 guidance. Each blower is designed as a centrifugal, positive pressure, direct driven type operating at 3,450 rpm providing 2,400 CFM.

Design provisions have been incorporated into the remedial treatment system to permit for the future installation of liquid phase GAC (GAC_{liquid}) treatment. The GAC_{liquid} treatment is contingent on potential future groundwater quality changes and subsequent system performance. The contingent GAC_{liquid} treatment units will include two units, configured in series on a lead-lag arrangement, with one treatment unit providing secondary/polishing treatment of the air stripper effluent and the other unit as a standby.

The system control panel is located in a separate electrical/control equipment room inside the treatment building. The control panel consists of process control components, motor starters, alarm (interlock) components and motor (blower and pump) safety components and an auto dialer. The alarm circuits monitor the system for low & high air pressure and high water levels in the sump tank of the air stripper. If an alarm circuit is tripped, the groundwater pumps will be shut off and an auto dialer (installed in the control panel) will alert the appropriate personnel that the system is shut down.

The treated effluent is transferred from the collection sump of the stripper to the recharge system by a closed-coupled centrifugal type pump. The pump is powered by a 20 HP totally enclosed fan motor and is designed to pump up to 400 gpm under normal operating conditions. The discharge pipe of the pump includes a 6-inch diameter butterfly valve, a pressure gauge, a check valve, the effluent sampling port, and electromagnetic type flow meter.

The treated effluent from the stripper is pumped to the recharge system through a 6-inch buried force main. There are cleanouts at grade for the force main at approximately 500 feet spacing. The recharge system consists of four sets of leaching pools. Three sets of leaching pools are located approximately 1,800 feet east of the equipment building; one set

contains five 10-foot diameter pools (Leaching Pools A), the second set contains four 10-foot diameter pools and two 8-foot diameter pools Leaching Pools B), and the third set contains five 10-foot diameter pools (Leaching Pools C). Each set of pools has a leaching area of approximately 1,535 square feet. Five additional leaching pools containing are located at the treatment plant (Leaching Pools D). This set of pools has a leaching area of 625 square feet. The flow to each set of pools is controlled by a 6-inch diameter valve connected to the force main to each set of leaching pools. The valves are in below grade value boxes and are opened and closed by hand from grade. Drawings showing the Site Plan and the Equipment & Mechanical Building Plan are included as Figures 2-1, 2-2, and 2-3.

2.1.2. Startup Operations

The pump and treat startup procedures are presented in Appendix A. Appendix A also includes a description of alarm conditions and the Installation, Operation and Maintenance Manual for the Shallow Tray Air Stripper.

2.2. MAINTENANCE ACTIVITIES

2.2.1. Extraction System Maintenance

The extraction wells will be inspected quarterly to make sure that the equipment is working properly. A water level measurement will be collected monthly from each well and subtracted from their respective static water level to calculate the drawdown. The flow rate from each well will also be measured monthly. The flow rate from each well will be divided by the drawdown in each well to calculate the specific capacity or the number of gallons per minute the wells pump per foot of water level drawdown (gpm/ft). This value will be plotted on a histogram to track the efficiency of each well. When the histogram shows that the specific capacity has decreased over 30 percent from the original specific capacity of the extraction well, rehabilitation using a mechanical surge block and pumping will be considered. Other rehabilitation techniques may be used. Any waste material generated during the well rehabilitation will be containerized, characterized, and disposed according to federal, state and local regulations.

2.2.2. Treatment System Maintenance

Routine treatment system maintenance will be conducted to minimize repairs and maximize system efficiency. System specific maintenance activities include; baffle tray cleaning, motor and mechanical equipment lubrication, and system checks. All equipment inspections and maintenance services will be recorded in a service log, kept on-site, and included in the Annual report. The following forms are used for operation and maintenance tracking (Appendix B):

1. INSPECTION & MAINTENANCE CHECKLIST
2. SYSTEM OPERATION LOG
3. EQUIPMENT REFERENCE DATA SHEET

The operator will record all alarms, shutdowns, and start-ups on a log sheet (Appendix A). The treatment system was designed so that minimal oversight by the system operator is required. The system operator will visit the site to perform routine maintenance tasks and respond to alarm conditions. Skilled inspection and maintenance tasks will be conducted by a qualified operator(s).

2.2.3. Air Stripper Maintenance

The air strippers can become fouled by precipitating mineral deposits, which will decrease the system's performance. The air stripper is provided with clear inspection ports and cleanout ports on each stripper tray to monitor and clean the air stripper system. The mineral deposits will be removed through pressure washing using a clean water supply. The air stripper will be cleaned using a pressure washer, washer wand with nozzle, and sludge removal pump or wet/dry vacuum. The step by step cleaning procedure is given in the manufacturer's Operating and Maintenance Manual, in Appendix A. Any waste materials generated will be containerized and disposed of according to federal, state, and local regulations.

2.2.4. Vapor Phase GAC

Under normal operating conditions the vapor phase GAC treatment units are maintenance free. The total pounds of VOCs adsorbed by the GAC will be monitored and compared to the amount of VOC that each canister can absorb (approximately 900 lbs). This evaluation will be used with influent and effluent PID meter readings to determine when the GAC in each canister should be changed.

2.2.5. Piping and Valves

Butterfly valves require no routine maintenance; however, the valves will be exercised annually to ensure efficient operation.

2.2.6. Recharge System Maintenance

Minimal maintenance is expected for the recharge system. Other than visual inspections of the piping and flow valves, and inspection of the leaching pools for obstructions, maintenance may include power-washing the inside of the leaching pools to remove algae growth or other material that may decrease the efficiency of the recharge system. If the water level in the first leaching pool reaches the top of the pool, the extraction and treatment systems will automatically shut down and an operator will visit the site, diagnose and correct the problem, and restart the system. If the contractor determines the leaching pools are clogged, a contractor will be hired to power-wash the sides and bottom of the leaching pools. Any waste materials generated will be containerized and disposed of according to federal, state, and local regulations.

2.2.7. Site Security

The treatment system building, along with the well vaults will be locked at all times. The site is currently accessible from New Highway by an eight foot long opening in the surrounding berm that contains a locked gate. The keys to the site entrance gate(s), well vaults, leaching pools, and to the treatment system will be kept by Mairoll, Inc. representatives and no other party will be permitted to enter the treatment system building without Mairoll, Inc. representative's accompaniment or approval.

2.2.8. Site Placards

Site placards along entrance gate and on the building will warn site visitors about unauthorized access. Placards will cite local regulations regarding unauthorized access or trespassing on the site.

2.2.9. Gas Venting System

The treatment system building has natural ventilation through manual louvers. The stripper stack connections will be screened for leaks around the vent line coupling and gasket. A photo ionization air monitor (PID) will be used to screen air quality during routine maintenance. Each gasket provides an airtight/watertight seal around the sump tank and baffled aeration trays will be screened for VOCs. VOC detections (leaks) will be recorded and corrective measures will be taken accordingly.

2.2.10. Treatment Building Maintenance

The treatment building structure will be inspected for damage and/or vandalism upon visiting the site. All security devices (locks) will be inspected for tampering prior to entering the treatment building. Periodic maintenance (building painting, landscaping. etc.) will be performed, as needed to the satisfaction of the Town of Babylon.

2.3. INSPECTION SCHEDULE AND REQUIREMENTS

All treatment system components and structures will be periodically inspected to ensure proper and efficient operation. System specific inspection tasks include VOC screening, leak detection, basic system adjustments and recording water levels, flow rates & differential pressure readings. An inspection and maintenance schedule was developed for this system and a checklist is presented in Appendix B. Basic inspection and maintenance tasks will be conducted by Mairoll, Inc. contractors or consultants.

2.4. ALARM CONDITIONS AND RESPONSE TIMES

The groundwater extraction, treatment, and discharge system is equipped with automated alarm conditions. If the treatment system is automatically shutdown due to any of the following conditions, the auto dialer will call up to three telephone numbers letting the person know the system has shut down. The auto dialer is set to call Wire-to-Water who will be responsible for responding by the given time frames outlined below.

Alarm Label	Item	Response Time
LIT 100	Well No. 1 Low Water Level	24 hours
LIT 101	Well No. 2 Low Water Level	24 hours
FIT 100	Well No. 1 Low Flow	24 hours
FIT 101	Well No. 2 Low Flow	24 hours
PSH 100	Well No. 1 High Discharge Pressure	24 hours
PSH 101	Well No. 2 High Discharge Pressure	24 hours

Alarm Label	Item	Response Time
PSH 100	Well No. 1 High Discharge Pressure	24 hours
PSH 101	Well No. 2 High Discharge Pressure	24 hours
LSH 103a	Building Flood Protection Switch A/S #1	24 hours
LSH 103b	Building Flood Protection Switch A/S #2	24 hours

LSL 111	Water Level Low Switch A/S #1	24 hours
LSL 117	Water Level Low Switch A/S #2	24 hours
LSHH 111	Water Level High Switch A/S #1	24 hours
LSHH 117	Water Level High Switch A/S #2	24 hours
VSH 111	Vacuum High Switch A/S #1	24 hours
VSH 117	Vacuum High Switch A/S #2	24 hours
VSL 111	Vacuum Low Switch A/S #1	24 hours
VSL 117	Vacuum Low Switch A/S #2	24 hours
PSH 112	Pump High Discharge Pressure Switch A/S #1	24 hours
PSH 118	Pump High Discharge Pressure Switch A/S #2	24 hours
FIT 112	Effluent Low Flow	24 hours
LSH 113	Leaching Pool Set No. 1 - Water Level Switch High	24 hours
LSH 114	Leaching Pool Set No. 2 - Water Level Switch High	24 hours
LSH 115	Leaching Pool Set No. 3 - Water Level Switch High	24 hours

2.5. PROJECT ORGANIZATION AND RESPONSIBILITY

The project organization for the Operation and Maintenance (O&M) of the groundwater remedy described in this plan is as follows:

NYSDEC Project Manager	Steven Scharf	(518) 402-9620
Mairoll, Inc. Project Coordinator	Susan Hall	(703) 478-5995
Malcolm Pirnie Project Officer	Peter Witko	(201) 398-4350

Malcolm Pirnie Project Manager	Dan St. Germain	(201) 398-4381
Malcolm Pirnie Design Engineer	David Patton	(716) 667-6624
Malcolm Pirnie Field Team Leader	Clayton Hofer	(201) 398-4324
Wire to Water Project Manager	Stuart Skopicki	(516) 790-2500

The overall coordination of the project between the NYSDEC and Mairoll, Inc. is through Dan St. Germain of Malcolm Pirnie. Mr. St. Germain is the primary contact for the NYSDEC on matters relating to work at the Site. He is responsible for coordinating all work activities at the site and facilitating communication between the NYSDEC and Mairoll, Inc. The NYSDEC Project Manager, Steven Scharf, monitors the progress of the work and coordinates communication between the NYSDEC and Mairoll, Inc.

Malcolm Pirnie is the primary contractor for the implementation of the OM&M Plan through its Fair Lawn, New Jersey office. Malcolm Pirnie coordinates all OM&M activities through its Project Manager, Dan St. Germain. David Patton, Design Engineer, will be consulted on all treatment system design related matters. Clayton Hofer, Field Team Leader, will direct all field related activities. The Malcolm Pirnie Project Officer, Peter Witko, provides overall direction and adherence to the scope of work performed at the Site.

Wire to Water, which constructed the treatment plant, will operate and maintain the groundwater extraction, treatment, and discharge system. Mr. Stuart Skopicki, Project Manager, is responsible for carrying out and directing all O&M activities and communicating with Dan St. Germain at Malcolm Pirnie.

Mairoll, Inc. reserves the right to make changes to its management and contracting portions of the work performed during the course of the OM&M of the groundwater remediation. The NYSDEC will be advised of any such changes.

This section describes the groundwater sampling and analysis portion of the remedy conditionally approved for the Site. The groundwater sampling and analysis is presented in four separate programs: 1) Air Stripper Monitoring Plan, 2) Outpost Well Groundwater Monitoring Plan, 3) Remediation Phase Groundwater Monitoring Plan, and 4) Post-Remediation Groundwater Monitoring Plan. The four plans are presented in the following subsection.

3.1. AIR STRIPPER MONITORING PLAN

Influent and effluent water samples will be collected from sample taps located in the treatment building. A schematic diagram of the sample tap locations is shown on Figure 3-1. The PW-1 and PW-2 influent water quality data will be used to evaluate plume concentrations at the recovery wells. The combined influent water quality data will be used to monitor the concentrations of VOCs entering the treatment system. The effluent water quality data from the first air stripper will be used to evaluate the efficiency of the first air stripper. The final effluent water quality data will be used to evaluate the efficiency of the entire remediation system and document the water quality discharged to the aquifer for NYSDEC compliance with discharge to groundwater standards. The air stripper influent and effluent sampling procedures are summarized in Section 3.5.2 and also presented in Appendix C. The influent and effluent water samples will be analyzed for:

- VOCs (8260) (including Freon 113)
- Total Dissolved Solids (TDS)
- pH
- Total Iron
- Total Manganese
- Total Zinc
- Total Chromium (annually)

The influent and effluent water samples will be collected according to the schedule outlined below:

- Start-Up – One Week: Influent and effluent water samples will be collected and analyzed daily (one day turn around time for groundwater analysis).
- One week – One Month: Influent and effluent water samples collected weekly (two day turn around time for groundwater analysis).
- One Month – End of Remediation: Influent and effluent water samples collected monthly.

In addition, the concentration of VOCs in the influent and effluent air to/from each vapor phase carbon and permanganate impregnated Zeolite canister will be characterized with a PID. In addition, the concentration of vinyl chloride leaving the vapor phase canister containing permanganate impregnated Zeolite will be characterized annually with Drager ™ tubes and reported in the Annual report.

3.2. OUTPOST WELL GROUNDWATER MONITORING PLAN

The ROD (1998) for the Fairchild Republic MPS requires that an Outpost Well Groundwater Monitoring Plan to protect the public water supplies (Albany Avenue well field) from potential impact from groundwater containing chlorinated VOCs from the MPS. The Outpost Well Groundwater Monitoring Plan contains two parts, as follows:

- Groundwater Modeling,
- Outpost Monitoring Wells

These plan details are discussed below:

3.2.1. Groundwater Modeling

A groundwater flow model was used to estimate the potential migration of the groundwater plume. Specifically, the model was used to determine the capture zones of the Albany Avenue and Great Neck Road well fields using both forward and backward particle tracking to determine if either well field could be a receptor of the MPS plume.

The model was developed using hydrogeologic and water quality data collected from existing monitoring wells during the RI and PDI. These data were supplemented with recent pumping data from nearby water supply wells (personal communication with William Spitz, 2008). This model was calibrated using a steady-state and transient data and was further refined or calibrated using hydraulic data collected after the pump and treat remedial measure reached steady-state conditions. Figure 3-2 shows the simulated capture zone of the recalibrated groundwater flow model.

3.2.2. Location of Outpost Monitoring Wells

Groundwater flow model particle tracking was conducted to determine to the potential flow path of the MPS plume. Forward particle tracking from the source area was conducted to determine the potential flow path of the chlorinated VOCs (Figure 3-3). Backward particle tracking from the SCWA Albany Avenue and Great Neck Road well fields was also conducted to determine the capture zones of each public supply well (Figures 3-4 and 3-5). The results provide the justification of the location of each Outpost Monitoring Well as provided below.

3.2.3. Albany Avenue Well Field Outpost Monitoring Wells

Based on the forward and backward particle tracking, the two existing monitoring wells, MW-45, and S-66134, have been determined to be appropriate Outpost Monitoring Wells for the Albany Avenue well field. These wells will be used to monitor the groundwater quality in this area (Figure 3-4). Monitoring well S-66134 is a Suffolk County monitoring wells that is 144 feet deep (intermediate aquifer). MW-45 is 179 feet deep and also installed in the intermediate zone. The two monitoring wells, screened in the intermediate aquifer, should provide sufficient vertical characterization data to determine if the MPS plume passes this location. No additional Outpost Monitoring Wells are needed at this location since VOCs have been detected in Outpost Monitoring Well MW-45 at concentrations above the trigger value (1 ug/L) in three consecutive rounds of groundwater samples. Forward particle tracking (Figure 3-3) from the leading edge of the chlorinated VOCs and backward particle tracking (Figure 3-4) from the supply well field were conducted to confirm the interpretation that the VOCs from the MPS could impact the Albany Avenue well field.

3.2.4. Great Neck Road Well Field

The SCWA Great Neck Road well field was not included as a potential receptor in the March 1998 ROD for the MPS because the Great Neck Road well field was considered cross-gradient to the MPS plume. However, since the MPS plume was not fully delineated at the time of the completion of the feasibility study, the SCDHS asked the NYSDEC to include groundwater flow modeling in the form of forward and backward particle tracking in the Remedial Action. It is interesting to note the language on Page 13 of Appendix A of the ROD and the goals of the modeling:

> *"While it does not appear that the Great Neck [Road] Wellfield is at risk from the Main Plant Site groundwater plume, the plume tracking/groundwater modeling will be specifically tasked to determine, among other things:*
>
> *1. whether the Great Neck [Road] Wellfield is at risk based on plume tracking and modeling results incorporating the increased pumping rates, and*
>
> *2. whether outpost monitoring at the Great Neck [Road] Wellfield is warranted."*

Groundwater flow modeling was conducted including forward and backward particle tracking at the Great Neck Road well field at the request of the NYSDEC and the SCDHS. The results are shown on Figures 3-3, 3-4, and 3-5. The NYSDEC was contacted to acquire the last five years of pumping records for the SCWA Albany Ave and Great Neck Road well fields (personal communication with William Spitz, NYSDEC). The last five years of pumping records were averaged to determine the 2 mgd pumping rate used in the model. The Albany Avenue and Great Neck Road well fields were modeled at the pumping rate of 2 mgd to take into consideration any increase in pumping that may have occurred since the SCWA added Iron Removal treatment to Great Neck Road and subsequently increased pumping. The results of the modeling conclusively show that the MPS is within the capture zone of the Albany Avenue wells. The modeling also shows that the MPS is not within the capture zone of the Great Neck Road well field. Forward particle tracks of the MPS plume and the backward particle tracks from the Great Neck Road well field confirm the conclusion in the ROD that the Great Neck Road is cross-gradient to the MPS. In fact, forward and backward particle track show that

MPS plume (including any potential plume from the Old Recharge Basin) will not come within 1,500 feet (cross-gradient) of the capture zone created by the Great Neck Road well field. Therefore, this modeling effort has shown that the Great Neck Road well field is not at risk from the MPS and that outpost monitoring wells are not warranted. Based on this analysis, the Great Neck Road well field has been removed from the Outpost Well Groundwater Monitoring Plan and the Wellhead Treatment Contingency Plan.

3.3. REMEDIATION PHASE GROUNDWATER MONITORING PLAN

Groundwater samples will be collected from 33 monitoring wells semi-annually for the first year (fall 2005/spring 2006) and then annually thereafter to assess the effectiveness of the groundwater remediation. The location of the Remediation Phase Groundwater Outpost Monitoring Wells is shown on Figure 3-6. In addition, Table 3-1 summarizes the use of each well (i.e., Outpost Monitoring or Plume Remediation), well depth, screened aquifer, sampling frequency. Water levels from the entire monitoring well network will be collected quarterly, even if wells are sampled annually.

The data collected from these wells will be used to evaluate the effectiveness of the groundwater remediation. The concentration of VOCs in selected wells will be plotted against time to form a histogram of the concentration. The concentration of chlorinated VOCs in each well will also be plotted on plan view maps. These histograms and plume maps will be used to monitor the effectiveness of the groundwater remediation. The water level measurements and water quality data collected from these wells will also be used to determine if the monitoring well network should be increased or decreased and if the groundwater sampling frequency should be changed. Periodically (every three years) the monitoring well network will be evaluated to determine if wells should be added or deleted and determine if the groundwater sampling frequency should be changed. During this evaluation, the water level measurements and water quality data will be evaluated to determine if the overall extraction rate of the groundwater system or the individual pumping rate of each well should be increased or decreased as the groundwater plume gets smaller and smaller. In addition, the overall treatment train will be evaluated to determine if any changes are necessary to optimize the treatment system.

3.3.1. Plume Assessment Wells

During the remediation phase groundwater monitoring 18 wells will be used as plume assessment wells. The selection of the plume assessment wells is discussed below.

MW-33D is an upgradient well that is 310 feet deep screened in the deep aquifer and is located north of Conklin Street, adjacent to the Long Island Railroad. Groundwater collected from this well has a history of sporadic VOC detections, particularly fuel-related hydrocarbons (toluene and xylene) and chlorinated solvents, including PCE and TCE. MW-33D will be used as a background well to monitor the groundwater quality in the deep aquifer beneath Airport Plaza.

MW-19S and MW-19D are located south of Airport Plaza near the north end of Republic Airport runways and approximately 800 feet downgradient of the former PCE tank. Monitoring well MW-19S is 35.6 feet deep and MW-19D is 69.73 feet deep. Both wells are screened in the shallow aquifer. Groundwater collected from MW-19S contained 330 ug/L of total chlorinated VOCs in July 2003 and 38.5 ug/L in June 2005. Groundwater collected from MW-19D contained 39 ug/L total chlorinated VOCs in the July of 2002 and 4.4 ug/L in 2005. Groundwater collected from these wells show a decreasing trend of chlorinated VOCs that is reflective of the remediation of the source area(s).

Monitoring well MW-41 is 140 feet deep and screened in the intermediate aquifer. This well is about 1,800 feet down-gradient of MW-19S and MW-19D. Groundwater collected from MW-41 contained 647 ppb of total chlorinated VOCs in March 2002 and 358 ug/L in June 2005. Groundwater collected from these wells shows a decreasing trend of chlorinated VOCs that is reflective of the source area(s) remediation.

Monitoring well MW-23D is 313 feet deep, screened in the deep aquifer, and located approximately 1,200 feet down-gradient of MW-41. Groundwater collected from MW-23D contained 79 ug/L of chlorinated VOCs in July 2003 and 63 ug/L of chlorinated VOCs in June 2005.

Monitoring wells S-66157 and S-66133 are Suffolk County monitoring wells that are 53.6 feet and 142 feet deep that are screened in the shallow and intermediate aquifers, respectively. Groundwater collected from S-66157 did not contain any chlorinated VOCs in

July 2003 and contained 0.78J ug/L of chlorinated VOCs in June 2005. Groundwater collected from S-66133 contained 233 ug/L chlorinated VOCs in July 2002 and 231 ug/L in June 2005. The data from S-66133 shows that this well monitors the groundwater quality in the middle of the plume that does not show a decrease in concentration as the result of a remediated source area(s).

MW-21S and MW-32D are located approximately 1,000 feet northwest of the EFWD Route 109 well field. MW-21S is 30 feet deep and screened in the shallow aquifer while MW-32D is 325 feet deep and screened in the deep aquifer. Groundwater collected from MW-21S and MW-32D did not contain any chlorinated VOCs in the July 2003 or June 2005 sampling events. The results from MW-21S screened in the shallow aquifer shows there are no new source areas near the well. The results from MW-32D screened in the deep aquifer shows there is no groundwater contamination migrating from the intermediate aquifer through the clay to the deep aquifer in this area.

MW-37I is 193 feet deep, screened in the intermediate aquifer, and is about 1,000 feet east of the recovery well (PW-1). Groundwater collected from MW-37I contained 821 ug/L in July 2003 and 2,451 ug/L in June 2005. These data show the concentration of chlorinated VOCs is increasing at depth near the extraction wells. This increase reflects the movement of impacted groundwater toward the extraction wells.

Monitoring well MW-37D is 267 feet deep, screened in the intermediate aquifer, and is about 1,000 feet east of the recovery well (PW-1). Groundwater samples collected from MW-37D did not contain any chlorinated VOCs in July 2003 or June 2005. These data show an absence of chlorinated VOCs in the lower part of the intermediate aquifer at this location.

Monitoring wells MW-49S, MW-49I, and MW-49D are 30, 110, and 170 feet deep, respectively. MW-49S is screened in the shallow aquifer while MW-49I and MW-49D are screened in the intermediate aquifers. Groundwater collected from MW-49S did not contain chlorinated VOCs in July 2003 and June 2005. These data show there is no new source area near this well. Groundwater collected from MW-49I contained 762 ug/L of chlorinated VOCs in July 2003 and 345 ug/L in June 2005. These data show a decrease in concentration as a result of the remediation of the source area. Groundwater collected from MW-49D contained 1,565 ug/L of chlorinated VOCs in July 2003 and 1,915 in June 2005. These data show the

concentration of chlorinated VOCs is increasing at depth near the extraction wells. This increase reflects the movement of impacted groundwater toward the extraction wells.

Monitoring wells MW-51 and MW-52 are 190 and 170 feet deep, screened in the intermediate aquifer, and are at the south end of the Republic Airport runway. Groundwater collected from these wells did not contain chlorinated VOCs in the July 2003 and June 2005. The data from these wells are used to define the eastern most extent of chlorinated VOCs in the intermediate aquifer.

3.3.2. Western Plume Detection Wells

Seven wells will be used as western plume detection wells during the remediation phase groundwater monitoring. The selection of the western plume detection wells is discussed below.

Monitoring Well MW-4S is 39 feet deep, screened in the shallow aquifer, and is located south of the Old Recharge Basin on the western side of the chlorinated VOC plume. Groundwater collected from this well did not contain any MPS chlorinated VOCs in July 2003 and contained 0.4J ug/L of total chlorinated VOCs in June 2005. These data show there are no source areas near this well.

Monitoring Well MW-10S and MW-10D are 33 and 91 feet deep, respectively, screened in the shallow aquifer, and located south of the Old Recharge Basin. Groundwater collected from MW-10S contained five ug/L of total chlorinated VOCs in July 2003 and 39.4 ug/L total chlorinated VOCs in June 2005. Groundwater collected from MW-10D contained 10 ug/L total chlorinated VOCs in July 2003 and 15.2 ug/L in June 2005. These data show on increasing trend of total chlorinated VOC concentrations resulting from an upgradient source area.

Monitoring wells MW-46S and MW-46I are 79 and 149 feet deep, respectively, are screened in the intermediate aquifer, and are located approximately 3,000 feet down-gradient of the MW-10S/MW-10D. Groundwater collected from MW-46S contained 0.7J ug/L total chlorinated VOCs in July 2003 and 2.1J ug/L in June 2005. Groundwater collected from MW-46I contained 146 ug/L of total chlorinated VOCs in July 2003 and 142 ug/L in June 2005. The data from these wells are used to define the western limits of the chlorinated VOCs in this area.

Monitoring wells MW-42I, and MW-42D are 179 and 200 feet deep, respectively, are screened in the intermediate aquifer, and are located at the Breslau Property section of Republic Airport (approximately 1,500 feet southeast of the MW-46S and MW-46I). Groundwater collected from MW-42I contained 9 ug/L of total chlorinated VOCs in July 2003 and 22.9 ug/L in June 2005. Groundwater collected from MW-42D contained 43 ug/L total chlorinated VOCs in July 2003 and 71 ug/L in June 2005. The data from these wells have been used to define the western limits of the chlorinated VOCs in this area, and their increasing trend reflects the movement of chlorinated VOCs is toward southeast.

3.3.3. Down-Gradient Plume Detection Wells

During the remediation phase groundwater monitoring, three wells will be used as down-gradient plume detection wells. The selection of the down-gradient plume detection wells is discussed below.

S-1805 is a shallow Suffolk County well on the corner of Route 109 and Albany Avenue and is in the predicted path of the MPS plume. This well monitors shallow groundwater along the downgradient edge of the MPS plume. In the August 1999, August 2001, and March 2002 sampling events, MPS related VOCs were not detected, however, ethyl benzene and toluene were detected at low concentrations. VOCs were not detected in groundwater samples collected during the July 2003 sampling event. Based on the depth of this well (approximately 32 feet) this well may be too shallow to detect VOCs related to the MPS plume. Based on future monitoring results, it may be recommended that this well be deleted from the monitoring well network.

Constructed in January 2001, MW-44 is located on Sydney Court off Albany Avenue and is 129 feet deep in the intermediate aquifer. Well MW-44 was installed to determine the eastern boundary of the MPS plume, downgradient from the proposed recovery system. VOCs were not detected during aquifer profile sampling conducted in January 2001, or during the August 2001 sampling event. Low concentrations of TCE and PCE were detected in the December 2001 sampling event, but these detections were below the NYSDEC groundwater standards. No VOCs were detected during the March 2002 or July 2003 sampling events.

Monitoring well MW-50 was installed during the April/May 2002 Supplementary

Drilling Program. This well is approximately 2,000 feet downgradient of PW-1 and is 165 feet deep (intermediate aquifer). Aquifer profile data show that the highest concentration of total VOCs to be 392 ppm the 110-foot interval, with total VOC concentrations decreasing to 228 ppb at the 160-foot interval. Monitoring well MW-50 was first sampled during the July 2003 groundwater sampling event. The results show the groundwater contained 461 ppb of total chlorinated VOCs.

3.4. POST-REMEDIATION GROUNDWATER MONITORING PLAN

Once Mairoll, Inc. and the NYSDEC have mutually agreed that the groundwater remedy can be turned off, groundwater samples will be collected from six wells that were located in the center of the chlorinated VOCs to determine if the concentration of VOCs increases after the remediation system is turned off, a condition called "rebound". Groundwater samples will be collected quarterly from six wells, shown on Figure 3-6, for two years to document the concentration of chlorinated VOCs in these wells. The concentration of chlorinated VOCs in these wells will be compared to the exit strategy, outlined in Section 5.2, to determine if the pump and treat system needs to be restarted to achieve the established remedial goals. Prior to the start of the post-remediation monitoring phase, the monitoring wells selected will be evaluated to make sure they are still useful for post-remediation monitoring. This evaluation will be conducted according to the criteria established below.

3.4.1. Selection Criteria

- Well Location: The post-remediation monitoring will include wells that were within the plume and which exceeded the remediation action level of 200 ppb of total VOCs before the groundwater remediation was started. These wells will have shown consistent results that exceeded the action level before the active pump and treat remedy is terminated. Additionally, upgradient and cross-gradient monitoring wells may also be included to detect migration of VOCs from other potential sources that are migrating into the remediated plume area. The Outpost Monitoring Wells will also be included in post-remediation monitoring activities.
- Well Depth: The post-remediation monitoring wells will be screened at the same depth

interval as the chlorinated VOCs. This generally means that the wells will be between 100 feet and 200 feet deep, but wells of other depths may be included based on the available data when post remediation monitoring is evaluated.

- **Availability of Multiple Wells:** In some instances, there may be more than one well at a particular location that will serve the same purpose and will meet the same criteria for the post remediation monitoring. In such cases, redundant wells may be removed from the monitoring program.

- **Access Restrictions:** The MPS monitoring wells are all on public property pursuant to access agreements. Future development may require the abandonment of certain wells. If these wells are not critical to post-remediation monitoring, they may be removed from the monitoring well network.

3.5. FIELD SAMPLING PROCEDURES

3.5.1. Monitoring Well Sampling Procedures

Monitoring wells will be sampled in accordance with the United States Environmental Protection Agency (USEPA) Region II low-flow groundwater sampling procedures provided in Appendix D and summarized below. A groundwater sampling checklist is also included Appendix D.

Upon arrival at each well, the well identification number will be entered into a field logbook, noting any damage to the well. New plastic sheeting will be placed over and around the monitoring well so that a 5 x 5 foot clean surface is created for the sampling equipment. All materials, tools and equipment will be decontaminated prior to the placement on the plastic sheeting. The depth to water below the reference point (top of casing) will be measured to the nearest hundredth of a foot (0.01 ft) using an electronic water level meter. The measuring device will be cleaned with phosphate-free detergent and rinsed with distilled water prior to collecting water level measurements. A properly decontaminated low-flow sampling pump will be lowered into the well until the pump intake is in the middle of the well screen. The pump will be placed at the same depth during each sampling event. The well will

be purged at a rate between 200 and 500 milliliters per minute (ml/min). Water levels and water quality parameters (i.e., pH, specific conductance, and temperature) will be monitored at five minute intervals during well purging, and recorded on Malcolm Pirnie groundwater purging/sampling logs. All purged water will be contained in 55 gallon drums. Once the water quality parameters have stabilized, groundwater samples will be collected in laboratory provided sample bottles. Samples will be collected from the pump discharge at a flow rate between 100 and 250 ml/min. Upon completion of the sample collection, the well cap will be replaced and the protective casing will be locked. The plastic sheeting and all used expendable materials will be properly discarded. Prior to overnight shipment to the laboratory, samples will be packed on ice and placed inside a cooler along with the chain-of-custody (COC) forms. The cooler(s) will be sealed and secured in preparation for overnight delivery.

The monitoring wells and field equipment must be maintained in good operating condition throughout the life of the remedy. As required, regular field inspections of the monitoring wells will be performed and reports on the integrity of the monitoring wells will be included in the annual report. A Monitoring Well Inspection Checklist is provided in Appendix E.

3.5.2. Treatment System Tap Sampling Procedures

A new piece of plastic sheeting will be placed below each sample tap and the sample bottles will be placed on the sheeting. The sample tap will be opened and water will be purged for one minute into a five gallon bucket. The sample bottles will be filled directly from the sample tap. The date, time of sample collection, physical appearance of purged water and field parameters will be recorded in a field logbook. The plastic sheeting and other disposable material will be discarded. The samples will be placed on ice and shipped to the laboratory with chain of custody documentation. The Air Stripper Influent and Effluent Sampling Procedures are also included in Appendix C.

3.5.3. Water Level Measurement Procedures

The locking cap will be removed from each well, and the concentration of organic

vapors will be measured by placing a PID above the well casing. An electronic water level meter probe will be lowered into the well. When the probe reaches the water, the buzzer on the meter will sound. The depth to water will be measured from the surveyor's mark on the top of the casing to the nearest 0.01 foot and recorded in the field log book with the date, time, and well number. The water level meter will be decontaminated between each use by washing the probe with phosphate-free detergent and rinsed with distilled water.

The quality assurance objective for the Outpost Monitoring Plan, Remediation Monitoring Plan, and the Post-Remediation Monitoring Plan is to develop and implement procedures for sampling, laboratory analyses, field measurements, and reporting that will provide quality data consistent with its intended use.

4.1. ANALYTICAL METHOD REQUIREMENTS

All samples collected will be analyzed by Test America, or equivalent analytical laboratory, for VOCs by USEPA Method 8260B using a 1.0 microgram per liter detection limit. Iron, manganese, and zinc will be analyzed using USEPA Method 3010A.

4.2. FIELD MEASUREMENTS

Field measurement data will be collected during field activities that are incidental to collection of samples for analytical testing. These activities include:

- documenting the sampling time and weather conditions,
- recording personnel involved with sampling activities,
- locating and determining the elevations of sampling stations,
- determining well depth and static water level, and
- verifying well development and pre-sampling purge volumes.

The objective is to use standard procedures to obtain reproducible and comparable measurements at a degree of accuracy consistent with the intended use of the data.

4.3. QUALITY ASSURANCE

Field duplicates, matrix spike, matrix spike duplicates, field blanks, and trip blanks will be collected and submitted to the analytical laboratory to provide a means to assess the quality of the data resulting from the field sampling program. Field duplicate samples will be analyzed for VOCs to determine sampling and analytical reproducibility. Matrix spike and

matrix spike duplicates will be analyzed for VOCs to provide information about the effect of the sample matrix on the preparation and measurement methodology. Field blanks will be analyzed for VOCs to assess potential cross-contamination caused by field sampling and/or decontamination procedures. Trip blank samples will be analyzed for VOCs to assess potential cross-contamination caused by VOC migration during shipment and storage. This quality assurance effort will consist of one field duplicate, one matrix spike, and one matrix spike duplicate for every 20 samples (5 percent). Field blanks will be collected at the frequency of one per day. One trip blank will be included in each cooler shipment of groundwater samples to the laboratory for VOC analyses. De-ionized water used for field and trip blanks will be provided by the laboratory and will be demonstrated analyte-free by laboratory analysis.

4.3.1. Field Duplicates

A duplicate sample will be obtained for every 20 samples collected. The duplicate sample will be collected by filling two sets of sample bottles from the same sampling device for each set of parameters. The field duplicate will be given a false identification so that the laboratory will not know which sample is duplicated. The false identification will be recorded on the field sampling log. The analytical results of the original groundwater sample will be compared to the duplicate to evaluate the precision of the laboratory.

4.3.2. Matrix Spike / Matrix Spike Duplicates

Matrix Spike / Matrix Spike Duplicate (MS/MSD) sample pairs measure the precision and accuracy of the laboratory analyses and are used to assess sample matrix effects on the recovery of analytes. One MS / MSD sample pair will be collected for every 20 samples collected (5 percent). Double sample volume will be collected for the VOC analysis.

4.3.3. Field Blanks

The purpose of field blanks is to assess the potential for cross-contamination as a result of inadequate field decontamination or sampling procedures. One field blank will be collected each day of sampling activities. The field blank will be collected by pouring laboratory demonstrated analyte-free water over the pump, into two 40 ml VOA vials. The

water for the field blanks will be supplied by the laboratory and transported to the field with the other sample jars. Field blanks will be analyzed for the same VOC compounds as those samples collected that same day.

4.3.4. Trip Blanks

Each sample shipment containing aqueous samples for VOC analysis will contain one trip blank for VOC analysis. The trip blank will consist of two laboratory sealed 40 ml VOA vials with laboratory grade distilled water, prepared by the laboratory, transported to the field, and shipped with the other samples to the laboratory.

4.4. SAMPLE SHIPPING AND CHAIN-OF-CUSTODY PROCEDURES

The chain-of-custody procedures described below will be followed during all groundwater monitoring well sampling events. A chain-of-custody form will be initiated at the laboratory and will accompany the sample bottles from the laboratory to the field. Upon receipt of the bottles and coolers, the sampler will sign and date the chain-of-custody. After each sample is collected, entries will be made on the chain-of-custody form, including: laboratory name, address, and contact; courier air bill number; sampler names and signatures; sample identification; date and time of sample collection; type of sample (e.g., groundwater); preservative; and required analysis. The chain-of-custody should also clearly indicate which samples are to receive MS/MSD analysis. The sample bottles will be placed into the coolers and surrounded by bags of ice, or ample packets of Blue Ice, to ensure that the samples are kept at a temperature of four degrees Celsius and that this temperature is maintained during transport. In addition, a temperature blank will be placed in each cooler. Packing material will be placed in the coolers and around the containers to prevent them from moving and breaking.

The samples will be shipped by an overnight carrier for delivery to the laboratory within 36 hours of sample collection. The name of the carrier and their air bill number will be entered on the chain-of-custody form. A shipping label with the name and address of the laboratory will be placed on each cooler and marked with the cooler number. This cooler

number will be written on the chain-of-custody along with the list of samples that are contained in each cooler.

The chain-of-custody form will be placed in a plastic bag and attached to the inside cover of the cooler. Two custody seals will be signed, dated, and placed on each shipping cooler in a manner that would indicate if the container were opened in transit. The sampler will sign and date the chain-of-custody form prior to relinquishing the sample to the carrier. Strapping tape will be used to seal the coolers prior to shipment. Samples will be received by the laboratory personnel, who will assume custody of the samples. Upon receipt, laboratory personnel will record the temperature of each individual cooler (through the use of the temperature blank) on the chain-of-custody. An example chain-of-custody, custody seal, and sample label are included in Appendix F. The laboratory will store all samples at four degrees Celsius until the analysis of the samples is completed.

4.5. HEALTH AND SAFETY

Malcolm Pirnie personnel will conduct field activities in accordance with the Site Specific Health and Safety Plan (SSHSP) included in Appendix G. Malcolm Pirnie has prepared this SSHSP for its employees. Contractors and subcontractors and other parties involved with field activities are responsible for the health and safety of their employees by developing their own Health and Safety Plan, providing personal protective equipment, and designating a site safety officer to ensure compliance with their own plan.

The groundwater remedy for the MPS plume is being implemented in order to: 1) protect water supply wells that are located down-gradient of the MPS plume through the hydraulic control and treatment of the contaminant plume; 2) stop plume growth and migration of contaminants; and 3) reduce the toxicity, mobility and volume of groundwater contamination associated with the MPS plume. The objective of the groundwater remedy at the MPS is to reduce the mass of the VOCs (PCE, TCE and their degradation products) by capturing the mass of the dissolved phase contaminants through aggressive pumping of the upper Magothy aquifer down-gradient of the MPS, and removing the contaminants from groundwater with a low-profile air stripper. The plume will be remediated by removing the VOCs above 200 ug/L to the extent practicable. The remaining residual contaminants that are down-gradient of the capture zone can be remediated through natural attenuation processes.

5.1. EVALUATION OF HYDRAULIC CONTROL

The effectiveness of the groundwater capture and treatment system will be evaluated at regular intervals as part of the sampling and analysis programs. Water level data will be collected from all monitoring wells summarized in previous sections and entered into the project database. The water level data will be used to draw potentiometric surface maps of the shallow, intermediate, and deep aquifers. Water levels collected from monitoring wells MW-43I, MW-49I, MW-49D, MW-37I, MW-37D, MW-51, and two newly installed piezometers that will be within the radius of influence of the pumping wells will be used to determine if the groundwater extraction system maintains the proper capture radius. The locations of existing monitoring wells and proposed piezometers will be used for the evaluation of hydraulic control are shown on Figure 5-1.

The water level between two monitoring wells that are located cross-gradient to the pumping wells will be used to monitor and maintain capture. According to the groundwater flow model, hydraulic gradient between MW- 51 and MW- 37I should be 0.0016 and the hydraulic gradient between MW- 43I and MW- 49D should be 0.0033 (Figure 5-2). Once the

drawdown in the recovery wells reaches a steady state, the hydraulic gradient between these wells should remain constant regardless of seasonal water level fluctuations. In the event that the hydraulic gradient between these wells change significantly, a more detailed evaluation will be conducted to determine the possible cause(s) (i.e., fouling of well screens, short circuiting of flow paths) and to determine a corrective remedy. The potentiometric surface maps of the intermediate aquifer will also be used to determine the capture zone of the recovery wells (Figure 5-2).

5.2. REMEDIATION SYSTEM PERFORMANCE DETERMINATION/EXIT STRATEGY

The ultimate goal of the groundwater remedy is to restore the aquifer to the New York State Water Quality Regulations, including 10 NYCRR Part 5 Drinking Water Standards and 6 NYCRR Part 700 Groundwater Standards. However, given the unrealistic optimism of this goal for a pump and treat remediation system in an urban environment, Mairoll, Inc. will petition the NYSDEC to turn off the groundwater pump and treat system when the average total VOC concentration from groundwater sample data collected from monitoring wells within the capture zone is less than 100 ppb.

Once the above criterion has been met, the MPS plume will be considered to have been remediated. Mairoll, Inc will petition the NYSDEC to turn off the pump and treat system and residual VOC contamination will be further remediated by natural attenuation and monitored for a minimum of two years.

5.3. TECHNICAL IMPRACTICABILITY

In the event total VOC concentrations in groundwater rebound to above 100 ppb, and display a continual increasing trend from the time at which the groundwater remediation system was shut down, a re-analysis of the remedial objectives will be conducted. At this time the NYSDEC may require Mairoll, Inc. to conduct a Supplemental Corrective Measures Study (CMS) to evaluate whether there are any other technologies that could reliably, logically, or feasibly attain the remedial objectives within a reasonable timeframe. If the Supplemental CMS identifies a technology that is appropriate for the site, the technology will be

implemented by Mairoll, Inc. after regulatory approval. If the Supplemental CMS does not identify a technology that is appropriate for the site, Mairoll, Inc. will initiate long-term monitoring; or, if desired, may apply for a determination of Technical Impracticability from the requirement stated in the ROD.

The process for a determination of Technical Impracticability will be in accordance with USEPA Directive 9234.2-25 Guidance for Evaluating the Technical Impracticability of Ground-Water Restoration, dated September 1993 or any state or federal successor documents. In accordance with this guidance, Mairoll, Inc. must demonstrate that no other remedial technology (conventional or innovative) could reliably, logically, or feasibly attain the remedial objectives at the site within a reasonable timeframe. The criteria for evaluating alternate remedial strategies that are technically practicable will consist of the following:

- Overall protection of human health and the environment;
- Attainment of media cleanup standards;
- Source treatment;
- Long-term effectiveness;
- Reduction of waste toxicity, mobility, or volume;
- Short-term effectiveness;
- Implementability; and
- Cost

5.4. POST-REMEDIATION GROUNDWATER MODELING

Post-remediation monitoring data may indicate the presence of VOCs down-gradient of the MPS plume that may exceed New York State Groundwater Standards and that may pose a risk of contamination to public supply wells identified in the ROD. This risk may be mitigated if the VOC concentrations are low, if the public supply wells would not tend to intercept these VOCs based on location and/or depth, or if wellhead treatment already in place would be protective of water quality for the foreseeable future. If there are questions about the relative risk posed by leaving elevated VOC concentrations in the aquifer, as

provided for in the ROD, groundwater modeling may be undertaken as a means to assess the risk under varying conditions and scenarios.

The selection of a particular groundwater model is premature at this time, because future modeling software may be more effective and varied than those available currently. Additionally, more data may become available on the aquifer's natural attenuation potential, and these data could be used to predict VOC concentrations at the public supply well fields with greater confidence than would be possible now. Most likely, updated versions of MODFLOW, MODPATH, or similar models could be used to answer questions regarding the likelihood of VOCs ever reaching a receptor, such as one or more of the down-gradient public supply wells. If a public well is shown to be a probable VOC receptor, and wellhead treatment is not in place, a solute transport model such as MT3D could be used under varying assumptions of natural attenuation, to predict potential concentrations at the well.

If an evaluation of the water quality data from the Outpost Monitoring Wells shows that the Outpost Monitoring Wells contain chlorinated VOCs above the trigger values from the MPS and there is a strong potential for a public water supply well to be impacted above the 10 NYCRR Part 5 Drinking Water Standards, Mairoll, Inc. will potentially add treatment to the affected water supply well to comply with 10 NYCRR Part 5 Drinking Water Standards. A more detailed description of the wellhead treatment contingency plan is outlined below.

6.1. TRIGGER VALUES

A trigger value of 1 ug/L is outlined in the ROD for the MPS. The following criteria will be followed to determine when a trigger value has been reached:

- If a trigger value is reached in one or more outpost wells then the well(s) where the trigger value has been reached will be re-sampled two additional times to confirm the trigger value has been consistently reached (i.e., it is not a false positive). The first re-sampling will occur within approximately 30 days of the determination that the trigger value was reached. The second re-sampling will occur approximately 30 days after the first re-sampling.
- Based on the analytical results of the initial and confirmation samples described above, if all three samples indicate that the trigger value has been reached for MPS related compounds then negotiations with the potentially affected water district or the NYSDEC will commence. A flow chart that details the decision matrix for wellhead treatment is presented as Figure 6-1.

Reaching or exceeding a trigger value is defined as follows:

- Only validated analytical results for MPS related compounds will be considered in the determination as to whether a trigger value has been reached or exceeded.

- Estimated values (i.e., "J" qualified data) will not be counted toward the trigger value. MPS related VOCs that individually equal or exceed a trigger value, will be confirmed to have met or exceeded the trigger value if after two re-samplings, MPS related VOCs individually equal or exceed the trigger value.
- The same compound must meet or exceed the trigger value in all three samples for the result to be confirmed.

The NYSDEC will be notified within 30 days of data validation, if a trigger value was reached or exceeded in a groundwater sample collected from an Outpost Monitoring Well. If it is determined that the trigger value has been reached or exceeded a second time, the NYSDEC will be notified within two weeks of data validation. If it is determined that the trigger value has been reached or exceeded a third time, as defined above, the NYSDEC will be notified within two weeks of the completion of data validation. A flow chart that details the decision matrix for wellhead treatment is presented as Figure 6-1.

6.2. WELLHEAD TREATMENT

If it is determined that the concentration of chlorinated VOCs reaches or exceeds the trigger values in three consecutive samples in any of the outpost monitoring wells, the results will be submitted to the NYSDEC and the Suffolk Country Department of Health (SCDH). If the NYSDEC and the SCDOH agree that wellhead treatment is necessary to comply with 10 NYCRR Part 5 Drinking Water Standards, contact will be made with the SCWA. The SCWA will determine the next course of action and whether they will seek to install wellhead treatment before the wells are impacted or they seek a cash settlement.

7.1. OPERATION AND MAINTENANCE OF REMEDIATION SYSTEM

The operation and maintenance of the groundwater extraction, treatment, and discharge system will be conducted by Wire-to-Water, Inc. They have been contracted by Mairoll, Inc. to conduct monthly visits to the treatment building to monitor the operation of the treatment system and collected basic data that will be used to evaluate the operational conditions, maintain the treatment system, and monitor the effectiveness of the treatment. The monthly operation data sheets collected to date are in Appendix H. Some of the data on the monthly operation data sheets (i.e., water meter reading, pumping rate(s), water level(s), and date and time of readings) will be combined with water quality data (influent and effluent total VOCs and iron) in Table 7-1 to calculate the total mass removed for the reporting period and of the life-cycle of the treatment system. As of February 2007, over 283 million gallons of groundwater had been extracted, treated, and discharged to the water table. During this time, over 4,800 pounds or just more than 400 gallons of VOCs were removed from the environment. The cumulative mass of total VOCs removed from the environment will be tracked as shown on Table 7-1 with the influent concentration of total VOCs. These two parameters, (i.e., cumulative mass removed and influent concentration of total VOCs) will be used to evaluate the overall effectiveness of the treatment system and determine when the groundwater remedy can be turned off as described in Section 5.0.

The water level and the concentration of iron in each well will also be monitored to evaluate the efficiency of the pumping wells and determined when they require maintenance. The total iron and the water level in each well will be plotted on graphs, as shown on Table 7-1, to track changes and see if the water level and concentration of iron in each well increases. In similar hydrogeologic conditions, the water level in each well tends to decrease as the concentration of iron increases and clogs the aquifer, well, and pump.

The cost and efficiency of the groundwater treatment system will also be evaluated annually. Below are some general statistics for the MPS.

Pumping Rate:	300 gpm
Annual O&M Costs:	$167,500
Type of Treatment:	Liquid Phase Air Stripper(s) & Vapor Phase GAC
Discharge of Treated Water:	Re-injection
Most Significant Annual Cost:	GAC
Year System Started:	2005
Cost of a New Well:	$75,000
Groundwater Flow Model:	Yes
Solute Transport Model:	No

The estimated costs associated with operating the groundwater remedy is presented on Table 7-2. The total estimated cost and each estimated cost were divided by the groundwater extraction rate to determine which factors affect the cost of treatment the most. The results show that the cost per gpm of water treated per year ($/gpm/yr) is approximately $419, which is low when compared to other groundwater pump and treat remediation systems. This analysis shows that the largest cost is from replacing the GAC. This analysis also shows that reducing the pumping rate will not dramatically affect the overall cost of O&M. The cost of O&M the groundwater remedy will be evaluated annually to determine if cost savings could be realized with changes to the extraction, treatment, and discharge system.

7.2. EVALUATION OF THE EFFECTIVENESS OF GROUNDWATER REMEDIATION

The effectiveness of the groundwater remedy will also be monitored and evaluated using capture zone analysis, cumulative mass removed, effluent concentration of chlorinated VOCs over time, calculating the average concentration of total chlorinated VOCs in the plume, dissolved mass in-place, and short term analysis. Each of these analyses is described below.

7.2.1. Capture Zone Analysis

The capture zone created by pumping two extraction wells will be evaluated annually to make sure the capture zone is of sufficient size to capture groundwater containing MPS VOCs to the extent practicable. This will be completed by calculating the hydraulic gradient between two sets of cross-gradient monitoring wells and by mapping the potentiometric surface of the intermediate aquifer, as described in Section 5.0. Currently, the extraction wells pump at a combined rate of 200 gpm. The data on Figure 7-1 show that when the extraction wells are operated at 200 gpm (PW-1 = 150 gpm and PW-2 at 50 gpm) the capture zone is significant enough to capture the 200 ppb or greater of the MPS plume.

7.2.2. Cumulative Mass Removed

The cumulative mass removed will be used to monitor the progress of the groundwater remedy. The concentration of total chlorinated VOCs for each monthly sampling event will be multiplied by the volume of water extracted during the reporting period to calculate the total mass removed during the reporting period. This number will be added to the previous month's totals to calculate the cumulative mass removed. The cumulative mass removed will be plotted against time to track the progress of the groundwater remedy. As stated in Section 5.0, Mairoll, Inc will petition the NYSDEC to turn off the groundwater pump and treat system when the cumulative mass removed reaches an asymptotic level, as defined by five years of sampling data where the cumulative mass removed does not increase by more than 10 percent (over five years). The cumulative mass removed from the remediation system startup is shown on the chart on Table 7-1.

7.2.3. Influent Concentration of Chlorinated VOCs

The influent concentration of total chlorinated VOCs will also be used to monitor the progress of the groundwater remedy. The concentration of total chlorinated VOCs in influent groundwater samples will be plotted against time to track the reduction in concentration of the influent VOCs. As stated in Section 5.0, Mairoll, Inc will petition the NYSDEC to turn off the groundwater pump and treat system when the influent concentration of chlorinated VOCs reaches an asymptotic level, as defined by five years of sampling data where the total

concentration of chlorinated VOCs does not decrease by more than 10 percent (over five years). The influent concentration of total chlorinated VOCs from the remediation system startup is shown on Table 7-1.

7.2.4. Average Concentration of Chlorinated VOCs in the Plume

The average concentration of chlorinated VOCs in the MPS groundwater plume will also be used to monitor the progress of the groundwater remedy. The average concentration of total chlorinated VOCs will be calculated by tabulating the concentration of total chlorinated VOC for ten wells (MW-37 MW-41, MW-42I, MW-42D, MW-43I, MW-46I, MW-49I, MW-49D, MW-50, and S-66133) screened in the plume in the intermediate aquifer. The average (arithmetic mean) concentration of total chlorinated VOCs will be calculated, along with the standard deviation, standard error, and student's "t" at the 95 confidence interval, as shown on Table 7-3, to ultimately calculate the site mean concentration that is highly likely (to the 95 percent confidence interval) to be less than the clean-up goal of 100 ppb. This calculation was conducted using the June 2004 and July 2007 groundwater data, on Table 7-4.

This series of calculations using the June 2004 groundwater data show that the average (arithmetic mean) concentration of chlorinated VOCs was 1,023 ug/L, the standard deviation was 1,063 ug/L, and the standard error was 336 ug/L. Based on these data, it is highly likely (to a 95 percent confidence interval) that the average concentration of total chlorinated VOCs in the plume in June 2004 was less than 1,639 ug/L.

This series of calculations using the July 2007 groundwater data show that the average (arithmetic mean) concentration of chlorinated VOCs in July 2007 was 640 ug/L, the standard deviation was 854 ug/L, and the standard error was 270 ug/L. Based on these data, it is highly likely (to a 95 percent confidence interval) that the average concentration of total chlorinated VOCs in the plume in July 2007 was less than 1,135 ug/L. This analysis shows the reduction of mass in the MPS plume from June 2004 to July 2007. This analysis will be repeated annually and presented in the Annual Report.

7.2.5. Dissolved Mass In-Place

The concept of dissolved mass in-place will be used to confirm the site conceptual model. This will be done by comparing the total mass removed by the dissolved mass in-place. The conceptual site model assumes that the source area has been remediated, there is no DNAPL in the aquifer, none of the VOCs have infiltrated into the low permeability units, the aquifer is highly transmissive, and the TOC of the aquifer is low. The total mass of chlorinated VOCs in the aquifer was estimated by multiplying the total volume of water potentially containing chlorinated VOCs (Table 7-5) to the average concentration of chlorinated VOC within the plume defined to be within the 100 ppb concentration limit. The average concentration of the plume was conducted using a statistical analysis of the annual groundwater data (Table 7-4). The results, on Table 7-6, show that if the average plume concentration is assumed to be 1,500 ppb (1,600 ppb plume average minus 100 ppb cleanup goal) then the total dissolved mass in-place is approximately 44,000 lbs. At the present rate of mass removal (i.e., 8 lbs per day shown on Table 7-1), the total mass removed per year will initially be approximately 2,900 lbs, which represents approximately seven percent of the plume annually. This analysis shows that it could take approximately 15 years to extract the dissolved mass in the aquifer. This analysis will be used to validate the assumptions in the conceptual model (i.e., source removal, no DNAPL, no VOCs in low permeability units, and low TOC).

7.2.6. Short Term Analysis

At the end of each year, a short term analysis of the groundwater remedy will be conducted by answering the four questions on Table 7-6. The answers will be used to evaluate the overall effectiveness of the groundwater remedy and determine if changes need to be made (i.e., turn the system off, change the sampling frequency, and reduce the pumping rate) to optimize the groundwater remedy.

7.3. DELIVERABLES

Two types of reports will be submitted to the NYSDEC. A brief letter report will be submitted to the NYSDEC during those quarters where only the Outpost Monitoring wells have

been sampled. This brief letter report will contain data and supporting information that describe the operation of the treatment plant, compliance with the NYSDEC discharge standards, the overall effectiveness of groundwater restoration, and the results of the Outpost Monitoring Well groundwater sampling. Details of the quarterly report are outlined below. A comprehensive report will be submitted during those quarters when a full round of groundwater samples have been collected from the Remediation Phase Monitoring Wells. The report will contain data and supporting information that describe the operation of the treatment plant, compliance with the NYSDEC discharge standards, the overall effectiveness of groundwater restoration, and the results of the Outpost Monitoring Well groundwater sampling. The report will also include an evaluation of the treatment system including recommended changes to the treatment system. The report will also present information to confirm capture of the groundwater plume. The report will contain Type II laboratory data package and a Data Summary Usability Report (DUSR).

The brief letter report will include:

- Operating data from the treatment plant, including number of operating days and other operational statistics.
- Tables that show the effluent water quality (compared to discharge standards) discharged to the recharge system, including total gallons pumped, NYSDEC selected chlorinated VOC, Freon 113, pH, total dissolved solids, and total iron, manganese, and zinc. The table will also include mass loading calculations for each compound.
- Tables and charts that show the overall effectiveness of the aquifer restoration including, cumulative mass removed and effluent concentration verses time, and dissolved mass in-place.
- Tables and figures showing detected concentration of chlorinated VOCs in the Outpost Monitoring Wells.

This information will be summarized in a brief letter report and submitted quarterly (or included in the comprehensive report) to Mr. Steven Scharf at the NYSDEC.

The comprehensive report will include:

- Potentiometric maps of the shallow, intermediate, and deep aquifers that show flow direction and the capture zone.
- Plan view maps of the distribution of chlorinated VOCs in the shallow, intermediate, and deep aquifers.
- Histograms of the concentration of chlorinated VOCs in each well.
- Operating data from the treatment plant, including number of operating days and other operational and mass removal statistics.
- Tables that show the quality of the water (compared to discharge standards) discharged to the recharge system, including total gallons pumped, selected chlorinated VOC, Freon 113, pH, total dissolved solids, and total iron, manganese, and zinc. The table will also include mass loading calculations for each compound.
- Tables and charts that show the cumulative mass removed and effluent verses time, average concentration of chlorinated VOCs in plume wells, and dissolved mass in-place.
- The report will describe problems encountered during the reporting period including a table that shows the total number of days the system was in operation.
- The report will make necessary recommendations or changes to the engineering controls or the design and operation of the extraction system.

The NYDEC letter establishing the discharge requirements is included in Appendix I and a table that summarizes the effluent criteria is included as Table 7-7. The data collected during the operation of the treatment system is compared to the NYSDEC effluent criteria on a monthly basis and will be reported quarterly.

TABLES

TABLE 1-1
MONITORING WELL DESIGNATION
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC.
EAST FARMINGDALE, NEW YORK

Well ID	Total Depth (feet)	Hydrogeologic Zone Designation	Aquifer Designation
MW-19S	35.60	Shallow	Upper Glacial
MW-19D	69.73	Shallow	Upper Glacial
MW-4S	38.69	Shallow	Upper Glacial
MW-4D	59.36	Shallow	Upper Glacial
MW-10S	33.31	Shallow	Upper Glacial
MW-10I	59.15	Shallow	Upper Glacial
MW-10D	91.93	Shallow	Upper Glacial
MW-46S	79.00	Shallow	Upper Glacial
S-66157	53.60	Shallow	Upper Glacial
MW-21S	30.33	Shallow	Upper Glacial
MW-43S	80.00	Shallow	Upper Glacial
MW-49S	30.00	Shallow	Upper Glacial
S-1805	31.70	Shallow	Upper Glacial
S-67535	71.24	Shallow	Upper Glacial
S-16479	45.00	Shallow	Upper Glacial
S-10314	45.00	Shallow	Upper Glacial
MW-37D	267.00	Intermediate	Upper Magothy
MW-37I	193.00	Intermediate	Upper Magothy
MW-41	140.00	Intermediate	Upper Magothy
MW-42D	240.00	Intermediate	Upper Magothy
MW-42I	179.00	Intermediate	Upper Magothy
MW-43I	200.00	Intermediate	Upper Magothy
MW-44	129.00	Intermediate	Upper Magothy
MW-45	179.00	Intermediate	Upper Magothy
MW-46I	149.00	Intermediate	Upper Magothy
MW-48	200.00	Intermediate	Upper Magothy
MW-49D	170.00	Intermediate	Upper Magothy
MW-49I	110.00	Intermediate	Upper Magothy
MW-50	165.00	Intermediate	Upper Magothy
MW-51	190.00	Intermediate	Upper Magothy
MW-52	170.00	Intermediate	Upper Magothy
S-66133	142.00	Intermediate	Upper Magothy
S-66134	144.00	Intermediate	Upper Magothy
MW-23D	310.00	Deep	Middle Magothy
MW-32D	325.00	Deep	Middle Magothy
MW-33D	310.00	Deep	Middle Magothy
MW-43D	350.00	Deep	Middle Magothy

Note:
1) Wells with an "S" prefix are Suffolk County wells

PUBLIC SUPPLY WELL SCREEN DEPTHS		
Wellfield Name	**Well No.**	**Screen Depths (feet)**
Albany Avenue Wellfield	S-34595	Retired
	S-11004	420-454;480-505
	S-47886	425-454;480-505
	S-63205	360-416

TABLE 3-1
WELL DESIGNATION AND MONITORING SCHEDULE
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC.
EAST FARMINGDALE, NEW YORK

Well Number (from North to South)	Monitoring Designation with Respect to Plume	Total Depth (ft. TOC)	Screen Zone Designation	Sampling Frequency	Justification
MW-45	Outpost Well	179	Intermediate	Quarterly	Outpost well
S-66134	Outpost Well	144	Intermediate	Quarterly	Outpost well
MW-19S/MW-19D	Assessment Well	35.6/69.6	Shallow/Shallow	Semi-Annually First Year then Annually	Upgradient well near source area.
MW-21S	Assessment Well	30.3	Shallow	Semi-Annually First Year then Annually	Center of plume.
MW-23D	Assessment Well	310	Deep	Semi-Annually First Year then Annually	Center of plume.
MW-32D	Assessment Well	325	Deep	Semi-Annually First Year then Annually	Center of plume.
MW-33D (upgradient well)	Assessment Well	310	Deep	Semi-Annually First Year then Annually	Upgradient well near source area.
MW-41	Assessment Well	140	Intermediate	Semi-Annually First Year then Annually	Center of plume.
MW-43D	Assessment Well	350	Deep	Semi-Annually First Year then Annually	Center of plume.
MW-43I	Assessment Well	200	Intermediate	Quarterly	Center of plume.
MW-43S	Assessment Well	80	Shallow	Semi-Annually First Year then Annually	Center of plume.
MW-49I/MW-49D	Assessment Well	110/170	Intermediate/Intermediate	Quarterly	Center of plume.
MW-49S	Assessment Well	30	Shallow	Semi-Annually First Year then Annually	Center of plume.
MW-51	Assessment Well	190	Intermediate	Semi-Annually First Year then Annually	Cross-gradient.
MW-52	Assessment Well	170	Intermediate	Semi-Annually First Year then Annually	Cross- gradient.
NW-37I	Assessment Well	193	Intermediate	Quarterly	Center of plume.
MW-37D	Assessment Well	268	Deep	Semi-Annually First Year then Annually	Center of plume.
S-66133	Assessment Well	142	Intermediate	Semi-Annually First Year then Annually	Center of plume.
S-66157	Assessment Well	53.6	Shallow	Semi-Annually First Year then Annually	Center of plume.
MW-10S/MW-10D	Western Plume Well	33.3/91.9	Shallow/Shallow	Semi-Annually First Year then Annually	Cross-gradient to MPS plume.
MW-42I/MW-42D	Western Plume Well	179/240	Intermediate/Intermediate	Semi-Annually First Year then Annually	Cross-gradient to MPS plume.
MW-46I	Western Plume Well	149	Intermediate	Semi-Annually First Year then Annually	Cross-gradient to MPS plume.
MW-46S	Western Plume Well	79	Shallow	Semi-Annually First Year then Annually	Cross-gradient to MPS plume.
MW-4S/MW-4D	Western Plume Well	38.7/59.4	Shallow/Shallow	Semi-Annually First Year then Annually	Cross-gradient to MPS plume.
MW-44	Downgradient Well	129	Intermediate	Semi-Annually First Year then Annually	Downgradient well.
MW-50	Downgradient Well	165	Intermediate	Semi-Annually First Year then Annually	Downgradient well.
S-1805	Downgradient Well	31.7	Shallow	Semi-Annually First Year then Annually	Downgradient well.
S-10314	Downgradient Well	45	Shallow	Semi-Annually First Year then Annually	Downgradient well.

TOC = Top of Casing
GW = Groundwater
** Depths stated in ROD

TABLE 5-1
WATER LEVEL INFORMATION - JULY 2007
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC.
EAST FARMINGDALE, NEW YORK

Well ID	Total Depth (feet)	Measuring Point Elevation (feet MSL)	Bottom Elevation (MSL)	Hydrogeologic Zone Designation	Depth to Water (feet)	Groundwater Elevation (feet MSL)	Notes
MW-10D	91.93	74.26	17.67 BMSL	Shallow	24.32	49.94	
MW-10I	59.09	74.54	15.45 AMSL	Shallow	24.66	49.88	
MW-10S	33.31	74.10	40.79 AMSL	Shallow	24.76	49.34	
MW-19D	69.73	78.84	9.11 AMSL	Shallow	27.20	51.64	
MW-19S	35.60	78.95	43.35 AMSL	Shallow	27.26	51.69	
MW-21S	30.33	62.21	31.88 AMSL	Shallow	18.62	43.59	
MW-23D	310.00	69.64	240.36 BMSLE	Deep	24.48	45.16	
MW-32D	325.00	65.51	259.49 BMSL	Deep	21.66	43.85	
MW-33D	310.00	85.88	224.12 BMSL	Deep	31.47	54.41	
MW-37D	267.00	56.19	210.81 BMSL	Intermediate	18.19	38.00	
MW-37I	193.00	55.88	137.12 BMSL	Intermediate	18.12	37.76	
MW-41	140.00	74.42	65.58 BMSL	Intermediate	25.17	49.25	
MW-42D	240.00	64.03	175.97 BMSL	Intermediate	20.37	43.66	
MW-42I	179.00	63.42	115.58 BMSL	Intermediate	20.94	42.48	
MW-43D	350.00	60.46	289.54 BMSL	Deep	21.21	39.25	
MW-43I	200.00	60.45	139.55 BMSL	Intermediate	20.81	39.64	
MW-43S	80.00	60.60	19.4 BMSL	Shallow	17.20	43.40	
MW-44	129.00	52.12	76.88 BMSL	Intermediate	17.80	34.32	
MW-45	179.00	51.38	127.62 BMSL	Intermediate	20.12	31.26	
MW-46I	149.00	66.06	82.94 BMSL	Intermediate	20.09	45.97	
MW-46S	79.00	65.86	13.14 BMSL	Shallow	18.88	46.98	
MW-48	200.00	47.57	152.43 BMSL	Intermediate	17.65	29.92	
MW-49D	170.00	61.77	108.23 BMSL	Intermediate	23.45	38.32	
MW-49I	110.00	61.35	48.65 BMSL	Intermediate	23.72	37.63	
MW-49S	30.00	61.32	31.32 AMSL	Shallow	18.56	42.76	
MW-4D	59.36	81.92	22.56 AMSL	Shallow	25.49	56.43	
MW-4S	38.69	81.97	43.28 AMSL	Shallow	25.48	56.49	
MW-50	165.00	54.10	110.90 BMSL	Intermediate	19.62	34.48	
MW-51	190.00	54.83	135.17 BMSL	Intermediate	16.89	37.94	
MW-52	170.00	55.22	114.78 BMSL	Intermediate	17.05	38.17	
S-10314	45.00	52.12	7.12 AMSL	Shallow	20.33	31.79	
S-16479	45.00	46.15	1.15 AMSL	Shallow	11.96	34.19	
S-1805	31.70	57.40	25.7 AMSL	Shallow	19.02	38.38	
S-66133	142.00	66.10	75.9 BMSL	Intermediate	22.90	43.20	
S-66134	144.00	50.45	93.55 BMSL	Intermediate	19.31	31.14	
S-66157	53.60	64.66	11.06 AMSL	Shallow	19.65	45.01	
S-67535	71.24	50.35	20.89 BMSL	Shallow	16.45	33.90	

N/S = Not Surveyed
BMSL = below mean sea level
AMSL = above mean sea level
Zone 1 elevation range: 50 ft. AMSL to 45 ft. BMSL
Zone 2 elevation range: 45 ft. BMSL to 210 ft. BMSL (north side of site) and 45 ft. BMSL to 250 ft. BMSL (south side of site)
Zone 3 elevation range: greater than 210 ft. BMSL (north side of site) and greater than 250 ft. BMSL (south side of site)

TABLE 7-1
GROUNDWATER REMEDIATION SYSTEM PERFORMANCE
FAIRCHILD PLANT SITE
MAIROLL, INC.
EAST FARMINGDALE, NEW YORK

	Input Parameters											Reporting Period					Life-Cycle	
Date	Elapsed Time	System Shut Down	Pumping Time	Water Meter	Pumping Rate PW-1	Pumping Rate PW-2	Water Level PW-1	Water Level PW-2	Total Influent VOC Concentration	Total Iron PW-1	Total Iron PW-2	Specific Capacity PW-1	Specific Capacity PW-2	Average Pumping Rate	Volume of Water Extracted	Mass Removed [1]	Total Mass Removed	
	(minutes)	(minutes)	(minutes)	(gallons)	(gpm)	(gpm)	(feet)	(feet)	(ug/L)	(mg/L)	(mg/L)	(gpm/ft)	(gpm/ft)	(gpm)	(gallons)	(pounds)	(pounds) [2]	(gallons)
2/21/05 12:00 PM	-	-	-	50,000	-	-	-	-	2,733	0.1	-	-	-	-	50,000	1	1	0.1
3/22/05 6:50 PM	-	-	-	50,000	-	-	68.0	77.0		-	-	-	-	Startup	0	-	1	0.1
3/23/05 1:05 PM	1,095	-	1,095	500,000	-	-	61.0	70.0	1,704	0.1	-	-	-	411	450,000	6	8	0.6
3/24/05 1:05 PM	1,440	30	1,410	811,175	-	-	61.0	70.0	1,861	0.1	-	-	-	221	311,175	5	12	1.0
3/25/05 11:55 AM	1,370	-	1,370	1,118,685	-		61.0	70.0	1,761	0.1	-	-	-	224	307,510	5	17	1.4
3/28/05 2:30 PM	4,475	-	4,475	1,947,713	-	-	61.0	70.0	4,388	0.1	3.7	-	-	185	829,028	30	47	3.9
3/29/05 2:45 PM	1,455	-	1,455	2,573,965	-	-	61.0	70.0	2,908	0.1	1.3	-	-	430	626,252	15	62	5.2
3/30/05 2:30 PM	1,425	-	1,425	3,014,562	-	-	61.0	70.0	1,815	-	1.1	-	-	309	440,597	7	69	5.7
3/31/05 1:00 PM	1,350	-	1,350	3,513,440	239	133	61.0	70.0	1,937	-	1.1	34	19	370	498,878	8	77	6.4
4/1/05 2:30 PM	1,530	-	1,530	4,017,900	237	134	61.0	71.0	1,876	-	0.9	34	22	330	504,460	8	85	7.0
4/4/05 12:00 PM	4,170	-	4,170	5,421,470	239	134	61.0	71.0	1,976	0.1	0.8	34	22	337	1,403,570	23	108	8.9
4/11/05 5:02 PM	10,382	-	10,382	8,937,425	241	134	61.0	72.0	2,016	0.1	0.7	34	27	339	3,515,955	59	167	13.8
4/13/05 4:43 PM	2,861	-	2,861	9,924,993	236	132	62.0	71.0	1,937	-	-	39	22	345	987,568	16	183	15.1
4/18/05 5:15 PM	7,232	-	7,232	12,313,446	224	137	62.0	71.0	2,030	0.1	0.7	37	23	330	2,388,453	40	224	18.5
5/4/05 2:20 PM	22,865	-	22,865	20,567,655	226	138	63.0	72.0	1,864	0.1	0.7	45	28	361	8,254,209	128	352	29.1
6/1/05 4:51 PM	40,471	1,107	39,364	35,075,455	261	148	60.0	70.0	1,822	0.1	0.7	33	21	369	14,507,800	221	573	47.3
7/7/05 9:45 AM	51,414	5,506	45,908	53,098,507	260	154	59.0	69.0	1,832	0.2	0.7	29	19	393	18,023,052	276	849	70.1
8/1/05 2:50 PM	36,305	330	35,975	68,166,757	260	152	58.0	68.0	2,108	0.1	0.6	26	17	419	15,068,250	265	1,114	92.0
9/9/05 11:08 AM	55,938	1,080	54,858	89,174,306	259	152	63.0	67.0	1,748	0.1	0.6	52	15	383	21,007,549	307	1,420	117.3
10/7/05 3:01 PM	40,553	4,991	35,562	99,842,906	199	98	63.0	70.0	1,820	0.1	0.6	40	14	300	10,668,600	162	1,582	130.7
1/5/06 1:25 PM	129,504	55,735	73,769	122,738,349	191	120	61.0	70.0	1,904	0.1	0.7	27	17	310	22,895,443	364	1,946	160.7
2/10/06 3:35 PM	51,970	0	51,970	139,016,185	189	119	61.0	68.0	1,958	0.1	0.7	27	13	313	16,277,836	266	2,212	182.7
3/2/06 2:20 PM	28,725	2,940	25,785	146,528,586	190	120	Mal	Mal	1,983	0.1	0.7	--	--	291	7,512,401	124	2,337	193.0
4/5/06 4:28 PM	49,088	4,243	44,845	157,793,670	203	51	Mal	Mal	1,877	0.1	0.8	--	--	251	11,265,084	176	2,513	207.5
5/3/06 1:50 PM	40,162	8,966	31,196	165,619,765	204	48	59.0	69.0	1,961	0.1	0.7	23	6	251	7,826,095	128	2,641	218.1
6/9/06 1:10 PM	53,240	12,430	40,810	175,552,550	205	47	59.0	69.0	2,026	0.1	0.8	23	6	243	9,932,785	168	2,809	232.0
7/6/06 1:55 PM	38,925	27,996	10,929	178,348,119	203	49	60.0	69.0	2,917	0.1	0.6	25	6	256	2,795,569	68	2,877	237.6
8/4/06 2:00 PM	41,765	14,686	27,079	184,265,939	204	52	57.0	69.0	2,140	0.1	0.8	19	6	219	5,917,820	106	2,983	246.3
9/6/06 1:20 PM	47,480	24,615	22,865	190,132,440	205	49	58.0	69.0	2,130	0.1	0.9	21	6	257	5,866,501	104	3,087	255.0
10/6/06 9:05 AM	42,945	5,896	37,049	197,101,368	151	53	60.0	69.0	2,103	0.1	0.8	19	7	188	6,968,928	122	3,210	265.1
12/8/06 3:38 PM	91,113	40,633	50,480	205,711,143	150	50	58.0	69.0	2,393	0.1	0.8	15	6	171	8,609,775	172	3,382	279.3
2/27/07 2:50 PM	116,592	74,441	42,151	213,758,086	155	53	Mal	Mal	3,448	0.3	2.6	--	--	191	8,046,943	232	3,613	298.4
3/20/07 3:20 PM	30,270	6,718	23,552	217,830,141	160	55	Mal	Mal	2,295	0.1	0.8	--	--	173	4,072,055	78	3,691	304.8
4/4/07 4:45 PM	21,685	5,273	16,412	221,091,447	151	49	Mal	Mal	2,125	0.2	0.9	--	--	199	3,261,306	58	3,749	309.6
5/11/07 4:30 PM	53,265	33,771	19,494	222,926,107	155	47	Mal	Mal	2,776	0.2	1.9	--	--	94	1,834,660	43	3,792	313.1
6/13/07 1:30 PM	47,340	26,503	20,837	226,247,267	153	58	Mal	Mal	2,429	0.2	1.0	--	--	159	3,321,160	67	3,859	318.7
7/12/07 3:45 PM	41,895	7,889	34,006	231,772,495	152	47	Mal	Mal	2,064	0.2	0.8	--	--	162	5,525,228	95	3,954	326.5
8/10/07 4:00 PM	41,775	9,815	31,960	236,491,693	152	54	Mal	Mal	1,975	0.2	0.8	--	--	148	4,719,198	78	4,032	333.0
9/14/07 9:57 AM	50,037	12,834	37,203	241,984,437	156	52	Mal	Mal	2,096	0.1	0.2	--	--	148	5,492,744	96	4,128	340.9
10/4/07 3:57 PM	29,160	9,328	19,832	244,891,682	159	49	Mal	Mal	2,188	0.1	0.8	--	--	147	2,907,245	53	4,181	345.3
11/15/07 12:47 PM	60,290	7,777	52,513	259,460,267	203	102	58.0	69.0	2,336	0.1	0.8	--	--	277	14,568,585	284	4,465	368.7
12/11/07 4:35 PM	37,668	1,250	36,418	268,774,842	206	102	58.0	69.0	1,934	0.1	0.8	--	--	256	9,314,575	150	4,616	381.2
1/9/08 4:34 PM	41,759	13,660	28,099	275,822,619	149	51	60.0	66.0	2,034	0.2	0.9	--	--	251	7,047,777	120	4,736	391.0
2/15/08 2:03 PM	53,129	6,137	46,992	283,349,950	151	55	62.0	66.0	2,125	0.1	0.8	--	--	160	7,527,331	134	4,869	402.1

TABLE 7-2
OPERATION AND MAINTENANCE COST SUMMARY
FAIRCHILD MAIN PLANT SITE
Mairoll, Inc.
East Farmingdale, New York

O&M Costs		Annual Cost ($/yr)		Cost per GPM ($/gpm/yr)
Electric [(1)]	$	27,115	$	136
Carbon Replacement (3)	$	34,560	$	173
Well Maintenance	$	-	$	-
Labor	$	50,000	$	250
Analytical	$	10,000	$	50
Propane	$	2,500	$	13
Total	**$**	**124,175**	**$**	**621**

(1) based on actual 1,500 kW-hr/day useage
and an estimated $0.08/kW-hr.

TABLE 7-3
GROUNDWATER SAMPLING RESULTS CALCULATIONS
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC.
EAST FARMINGDALE, NEW YORK

---

1 Tablitize the groundwater data for Total CVOCs.
2 Calculate the geometric mean of the dataset.
3 Calculate the standard deviation of the dataset.
4 Calculate the standard error as defined below

$$S_x = \frac{s}{\sqrt{N}}$$

where:

S_x	standard error of the mean
s	standard deviation
N	number of samples

5 Calculate the one-sided confidence interval as defined below

$$\overline{x} + t_{1-\alpha;\, N-1}\, S_x$$

where

$\overline{x}$	mean value of the samples
$t_{1-\alpha;\, N-1}$	t statistic for N-1 degrees of freedom at an α level of significance

---

Analysis assumes the population is normally distributed, not affected by seasonal variations, and not serially correlated.

TABLE 7-4
GROUNDWATER SAMPLING RESULTS CALCULATIONS
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC.
EAST FARMINGDALE, NEW YORK

Well No.	Baseline Total CVOC Concentration (ug/L) June-04	Total VOC Concentration (ug/L) June-05	Total VOC Concentration (ug/L) June-06	Total VOC Concentration (ug/L) July-07
MW-42I	20	23	10	9
MW-42D	62	71	32	45
MW-43I	740	589	782	406
MW-46I	222	143	128	103
MW-50	963	N/A	1,323	1,246
S-66133	277	231	229	239
MW-41	1,123	367	198	110
MW-49I	1,365	346	155	107
MW-49D	2,024	1,926	2,594	2,456
MW-37I	3,437	2,817	1,986	1,676
Average	1,023	724	744	640
STD Deviation	1,063	975	921	854
STD Error	336	325	291	270
t (95%)	1.83	1.83	1.83	1.83
Confidence Interval 95%	**1,639**	**1,320**	**1,278**	**1,135**

Note: Samples that contained CVOCs below
the MDL were given a value of 1

TABLE 7-5
DISSOLVED MASS IN-PLACE
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL INC.
EAST FARMINGDALE, NEW YORK

	TVOC Mass of Plume (lbs)	Total Mass Removed [(1)] (lbs)	Total Mass Removed (gallons)
Mass In-Place	44,000	4,869	11%

Note: (1) based on an 8 lbs/day removal rate
Assumes No Source Area, No Non-Aqueous Phase Liquids, a Highly Transmissive Aquifer, and a Very Low Total Organic Carbon Content of the Aquifer.

TABLE 7-6
SHORT TERM ANALYSIS
FAIRCHILD MAIN PLANT SITE
MAIROLL, INC.
EAST FARMINGDALE, NEW YORK

Are concentrations in individual wells at the site currently below the cleanup goals?
To what degree of confidence is this true?

Is the average sitewide concentration currently below the clean-up goal?
To what degree of confidence is this true?

Is the current sampling program sufficient to make inferences about contamination trends?

Are there sections of the plume where the cleanup goals have been met with confidence?

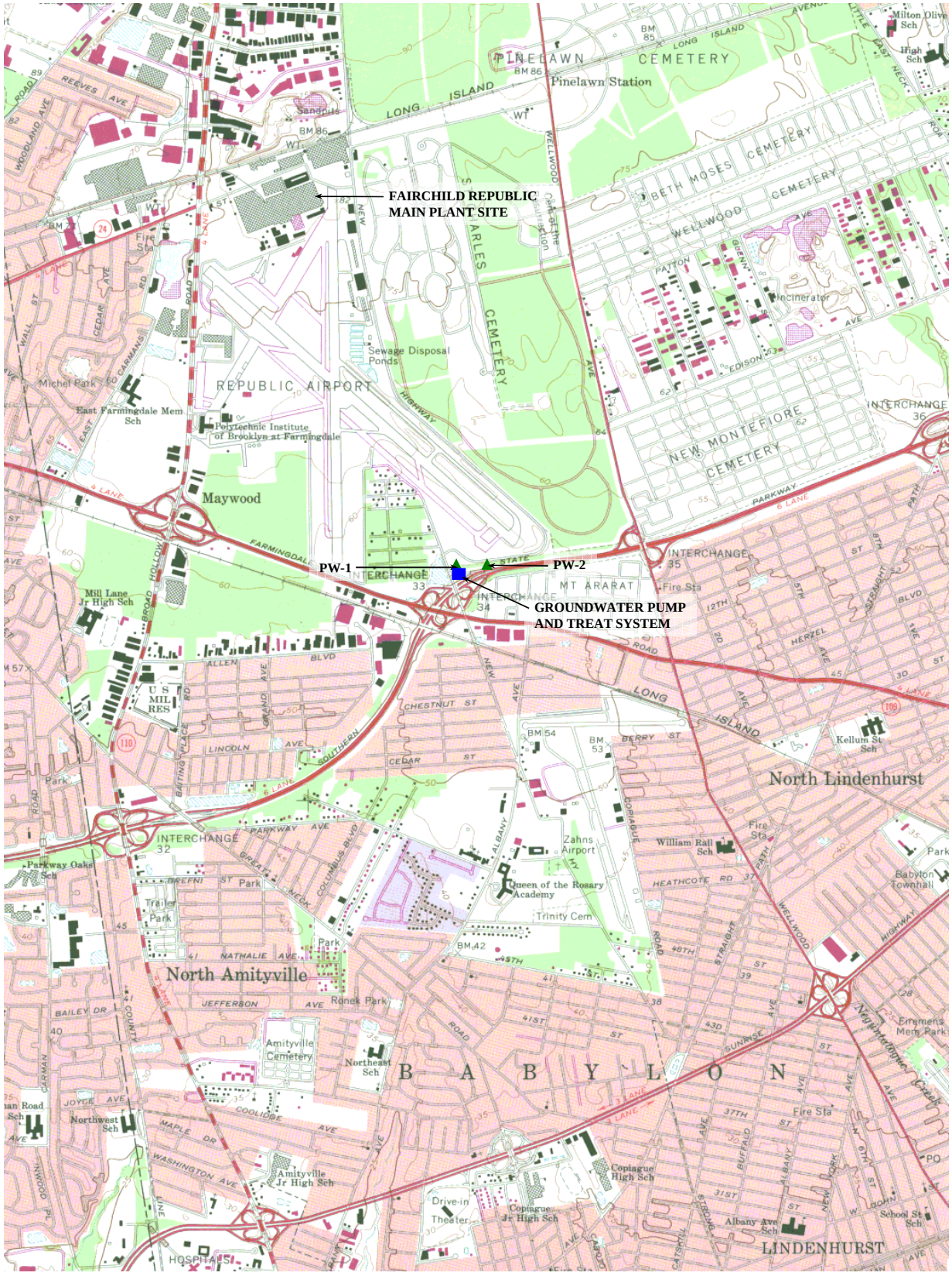
TABLE 7-7
GROUNDWATER DISCHARGE CRITERIA
FAIRCHILD MAIN PLANT SITE
MAIROLL, INC.
EAST FARMINGDALE, NEW YORK

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS Site No 1-52-130
During the period beginning August 2002
and lasting until July 2007

the discharges from the treatment facility to infiltration basins, shall be limited and monitored by the operator as specified below:

	Discharge Limitations			Minimum Monitoring Requirements	
Outfall Number and Parameter	Daily Ave.	Daily Max	Units	Measurement Frequency	Sample Type
Outfall 001 - Treated Groundwater Remediation Discharge:					
Flow	Monitor	648,000	gpd	Continuous	Meter
pH (range)	6.5 to 8.5		SU	Monthly	Grab
Total Dissolved Solids	Monitor	1,000	mg/L	Monthly	Grab
Vinyl Chloride	Monitor	2.0	ug/L	Monthly	Grab
1,1 Dichloroethene	Monitor	5.0	ug/L	Monthly	Grab
1,1 Dichloroethane	Monitor	5.0	ug/L	Monthly	Grab
cis 1,2 Dichloroethene	Monitor	5.0	ug/L	Monthly	Grab
Chloroform	Monitor	7.0	ug/L	Monthly	Grab
1,1,1 Trichloroethane	Monitor	5.0	ug/L	Monthly	Grab
Benzene	Monitor	1.0	ug/L	Monthly	Grab
Trichloroethylene	Monitor	5.0	ug/L	Monthly	Grab
Tetrachloroethylene	Monitor	5.0	ug/L	Monthly	Grab
Freon 113	Monitor	5.0	ug/L	Monthly	Grab
Iron, Total	Monitor	Monitor	ug/L	Monthly	Grab
Manganese, Total	Monitor	Monitor	ug/L	Monthly	Grab
Zinc, Total	Monitor	Monitor	ug/L	Monthly	Grab

FIGURES



MALCOLM PIRNIE

STUDY AREA
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC
EAST FARMINGDALE, NEW YORK

FIGURE 1-1

LEGEND

ISOCONCENTRATION CONTOUR (inferred where dashed) — 100

WELL FIELD

MONITORING WELL

RECOVERY WELL

231.0 TOTAL VOC (ug/L) (May include compounds at estimated ["J" qualifier] concentrations.)

0

N

0 2,000 4,000 Feet

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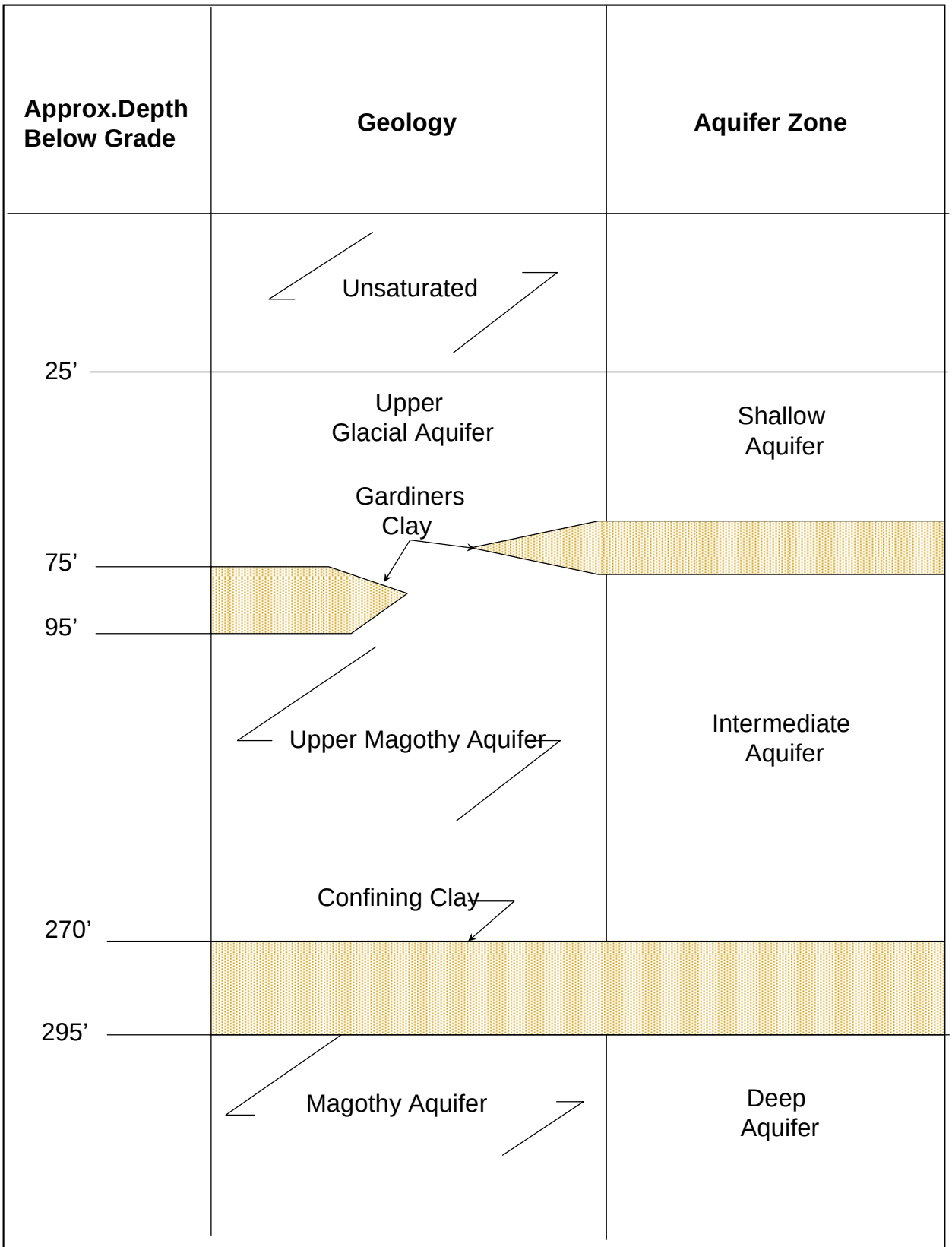
TOTAL VOC'S, INTERMEDIATE ZONE – July 2007
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC
EAST FARMINGDALE, NEW YORK

FIGURE 1-2



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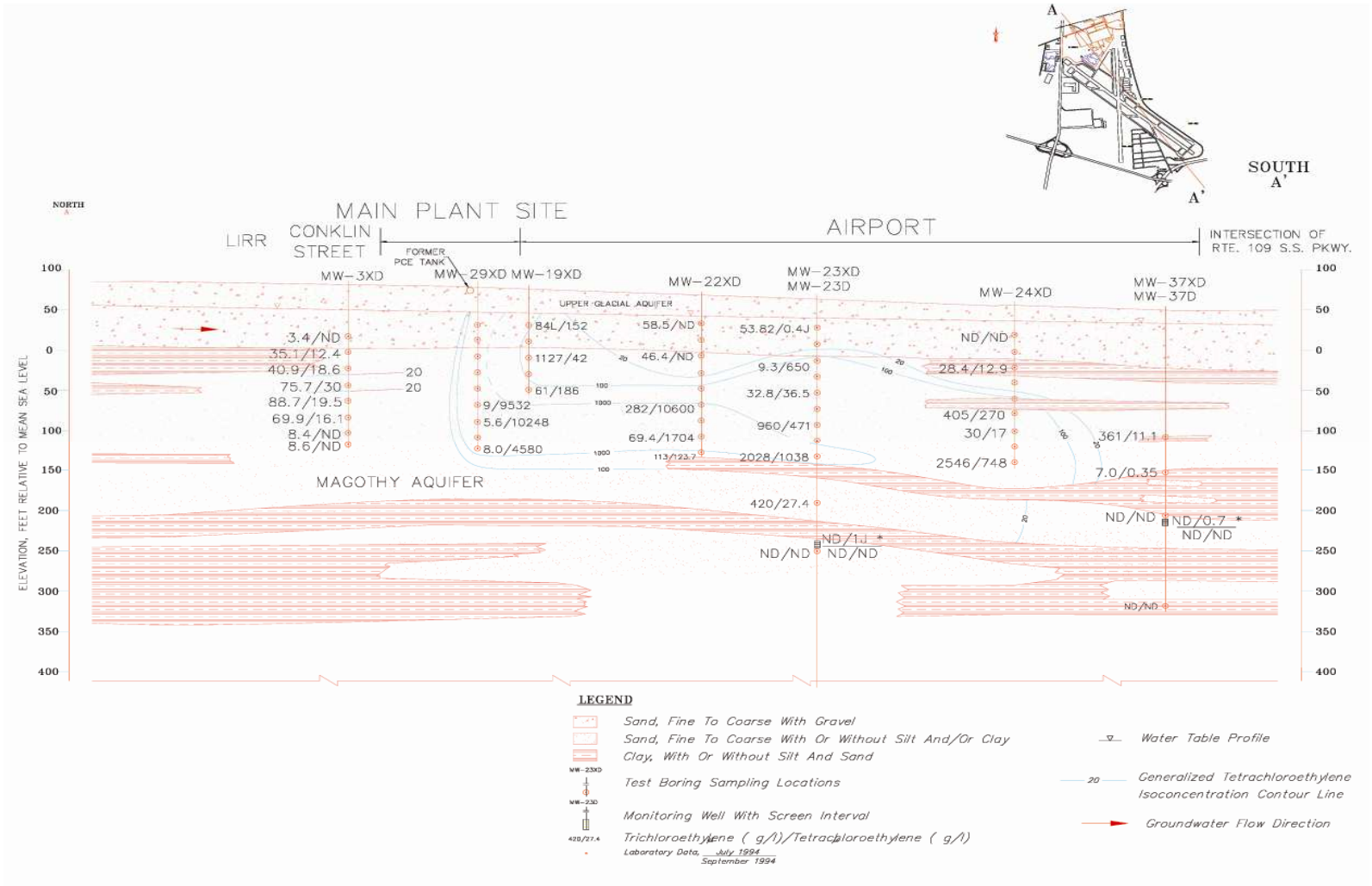
CONCEPTUAL GEOLOGIC / HYDROGEOLOGIC CONDITIONS
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC
EAST FARMINGDALE, NEW YORK

FIGURE 1-3



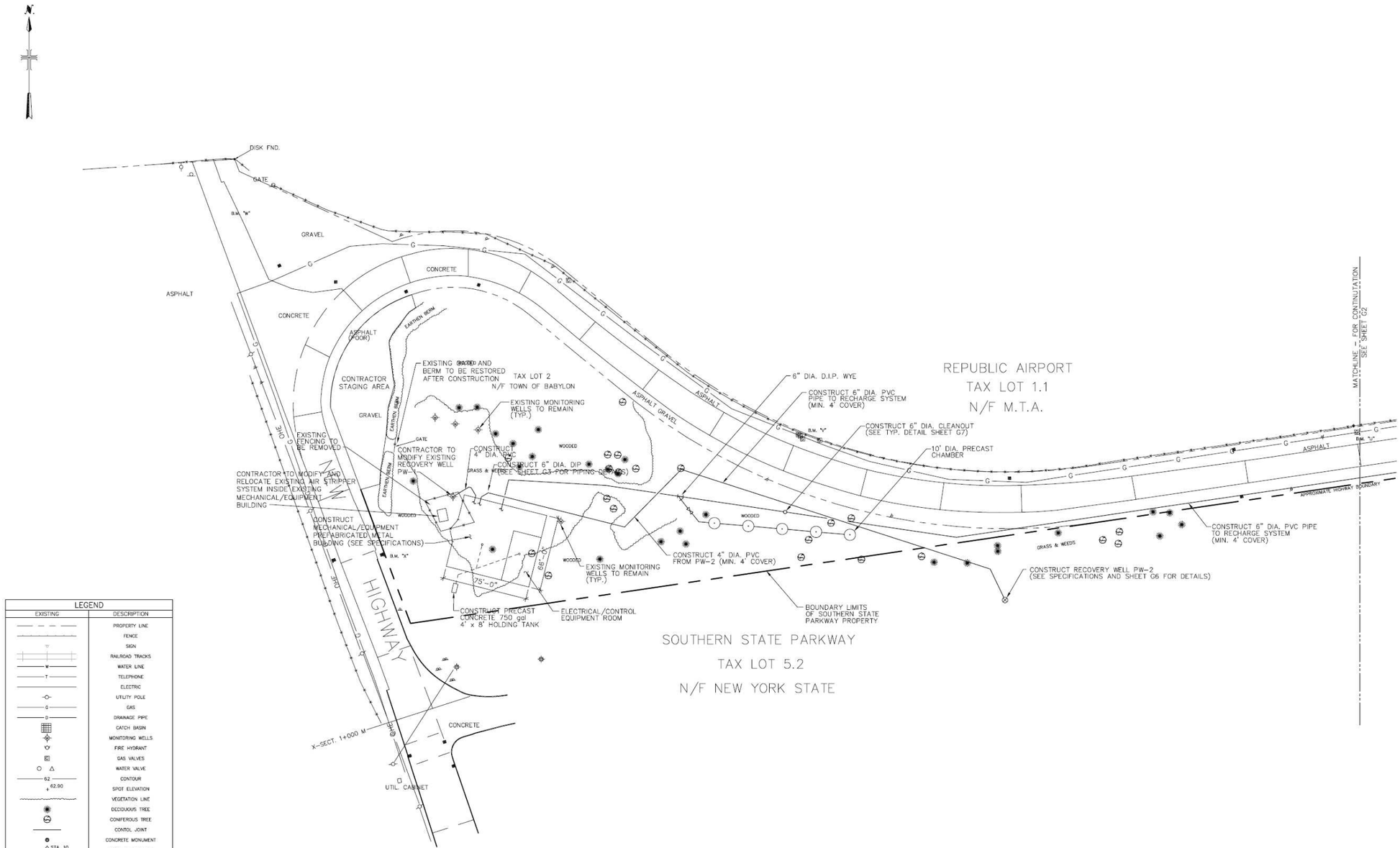
Notes:
1. Vertical Groundwater Profiling Data Were Collected in 1992 and 1993.
2. Monitoring Well Groundwater Samples Were Collected in 1994.

Source: Record of Decision with notes added by Malcolm Pirnie, Inc.

MALCOLM PIRNIE

GEOLOGIC CROSS-SECTION AND TETRACHLOROETHENE ISOCONCENTRATIONS IN 1992-1994
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC.
EAST FARMINGDALE, NEW YORK

FIGURE 1-4



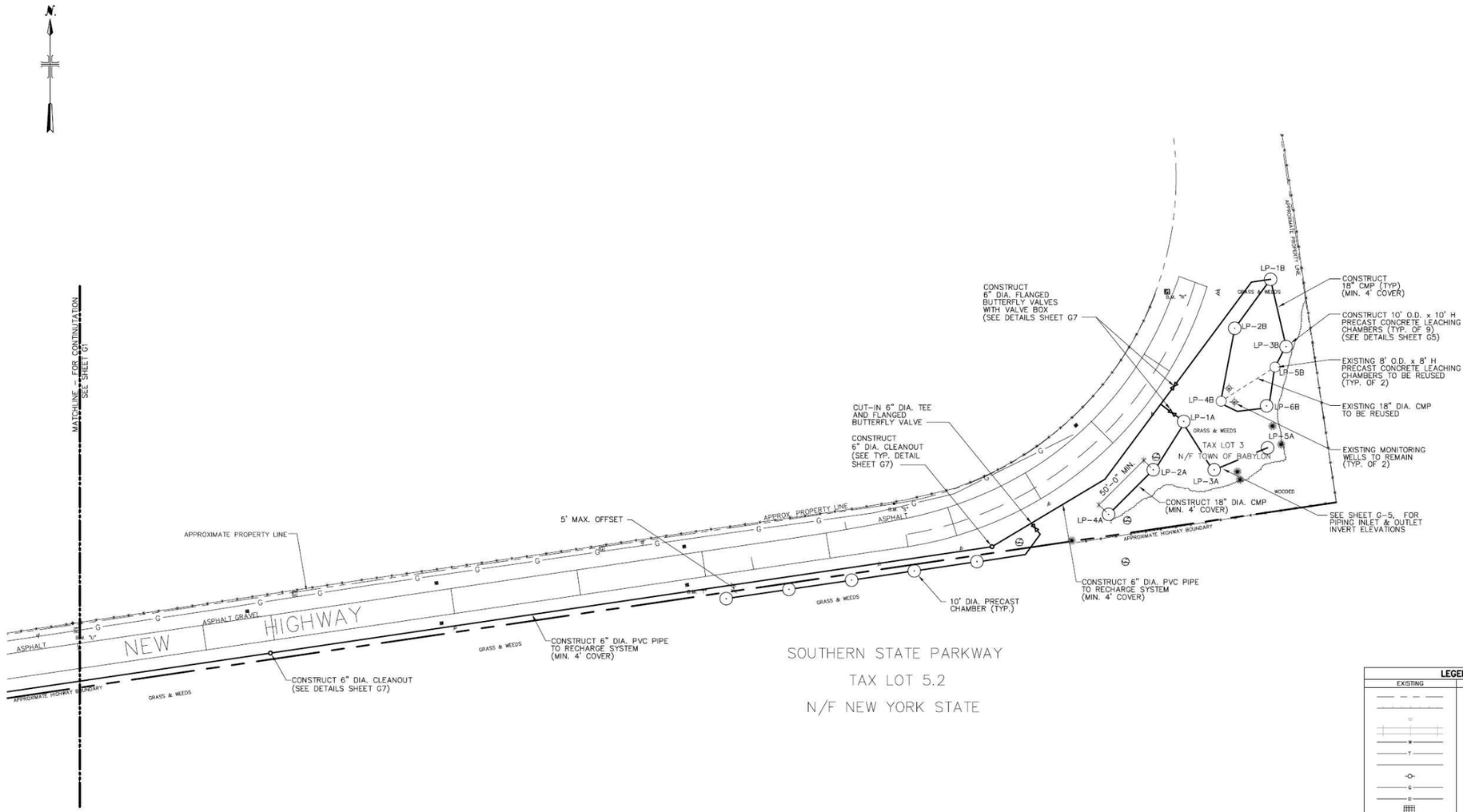
LEGEND	
EXISTING	DESCRIPTION
	PROPERTY LINE
	FENCE
	SIGN
	RAILROAD TRACKS
W	WATER LINE
T	TELEPHONE
	ELECTRIC
	UTILITY POLE
G	GAS
D	DRAINAGE PIPE
	CATCH BASIN
	MONITORING WELLS
	FIRE HYDRANT
	GAS VALVES
	WATER VALVE
62	CONTOUR
+ 62.90	SPOT ELEVATION
	VEGETATION LINE
	DECIDUOUS TREE
	CONIFEROUS TREE
	CONTOL JOINT
	CONCRETE MONUMENT
STA. 10	BASELINE STATION
	EDGE OF CONCRETE
	EDGE OF PAVEMENT

20 0 20 40
SCALE: 1" = 40'

MALCOLM PIRNIE

MAIN PLANT SITE AND GROUP D BASINS
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC.
EAST FARMINGDALE, NEW YORK

FIGURE 2-1



LEGEND

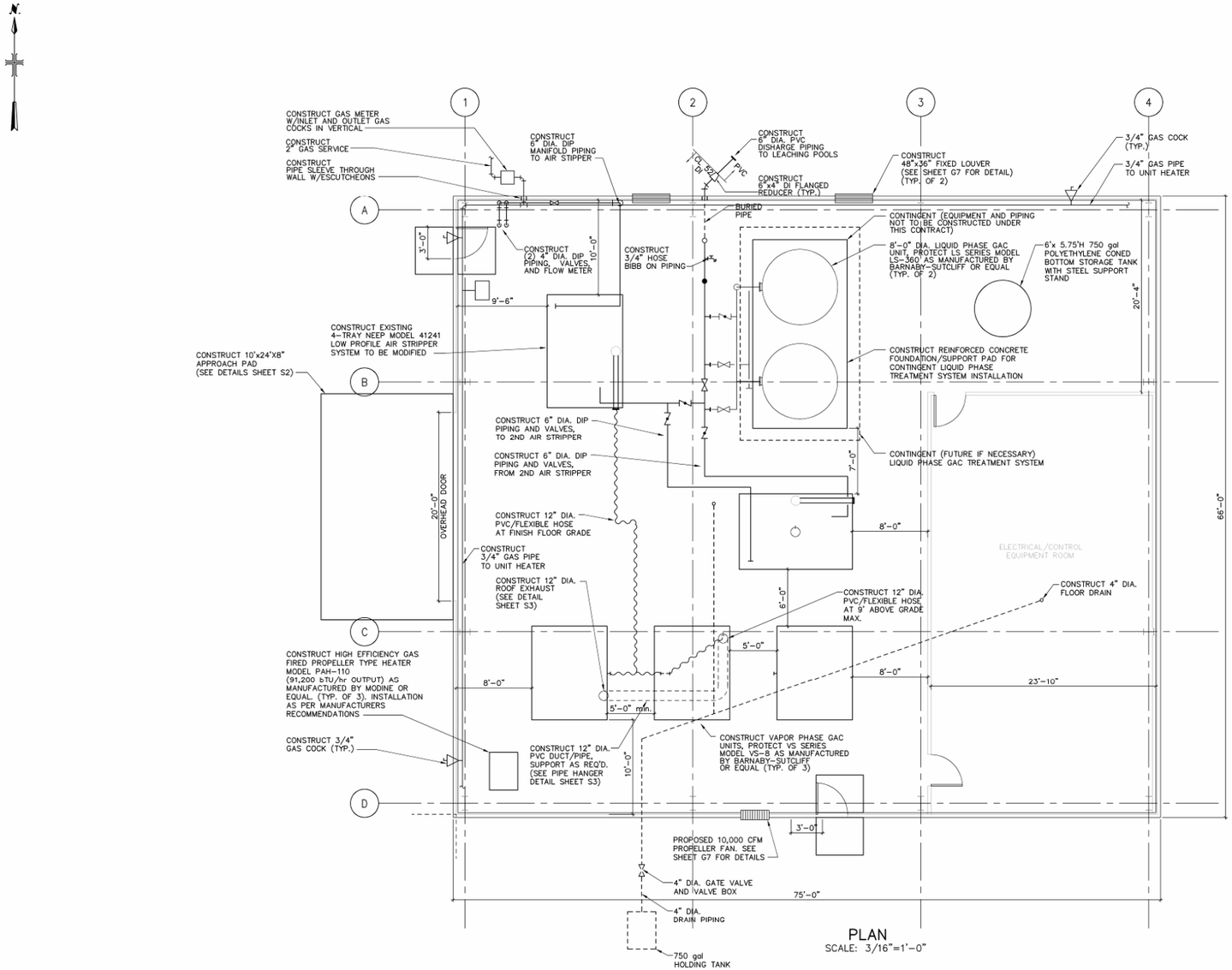
EXISTING	DESCRIPTION
	PROPERTY LINE
	FENCE
	SIGN
	RAILROAD TRACKS
W	WATER LINE
T	TELEPHONE
	ELECTRIC
	UTILITY POLE
G	GAS
D	DRAINAGE PIPE
	CATCH BASIN
	MONITORING WELLS
	FIRE HYDRANT
	GAS VALVES
	WATER VALVE
62	CONTOUR
+ 62.90	SPOT ELEVATION
	VEGETATION LINE
	DECIDUOUS TREE
	CONIFEROUS TREE
	CONTOL JOINT
	CONCRETE MONUMENT
STA. 10	BASELINE STATION
	EDGE OF CONCRETE
	EDGE OF PAVEMENT

20 0 20 40
SCALE: 1" = 40'

MALCOLM PIRNIE

GROUP A,B, AND C BASINS
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC.
EAST FARMINGDALE, NEW YORK

FIGURE 2-2



PLAN
SCALE: 3/16"=1'-0"

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REVISIONS			
NO.	BY	DATE	REMARKS

DES
DWN
CKD

FAIRCHILD REPUBLIC, MAIN PLANT SITE
EAST FARMINGDALE, NEW YORK

GROUNDWATER PUMP AND TREAT REMEDIATION SYSTEM

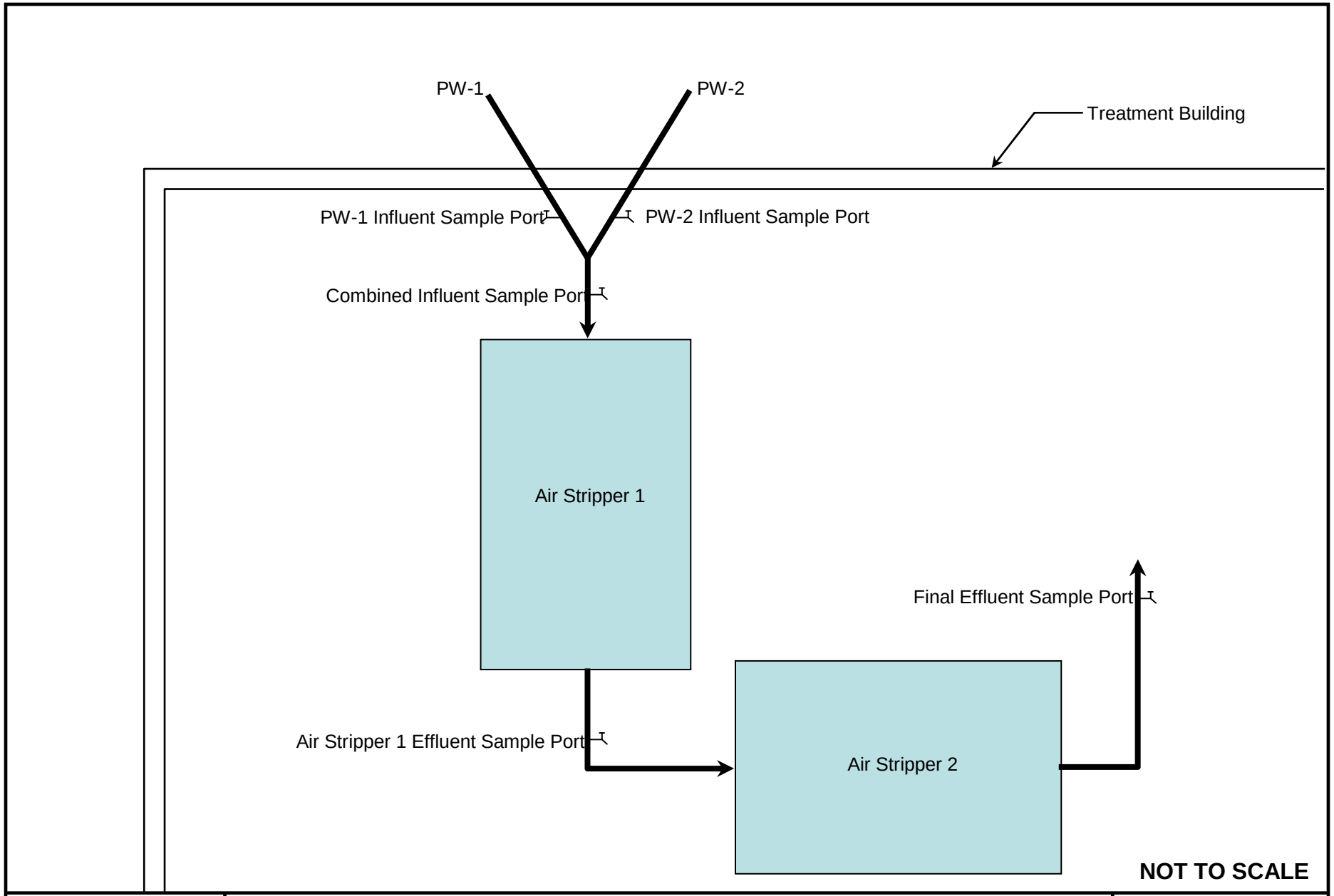
EQUIPMENT & MECHANICAL BUILDING PLAN
SCALE: 3/16"=1'-0"

DATE SEPTEMBER 2003
G SHEET 3 OF 7
CAD REF. NO. 4724G003

MALCOLM PIRNIE

EQUIPMENT & MECHANICAL BUILDING PLAN
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC.
EAST FARMINGDALE, NEW YORK

FIGURE 2-3



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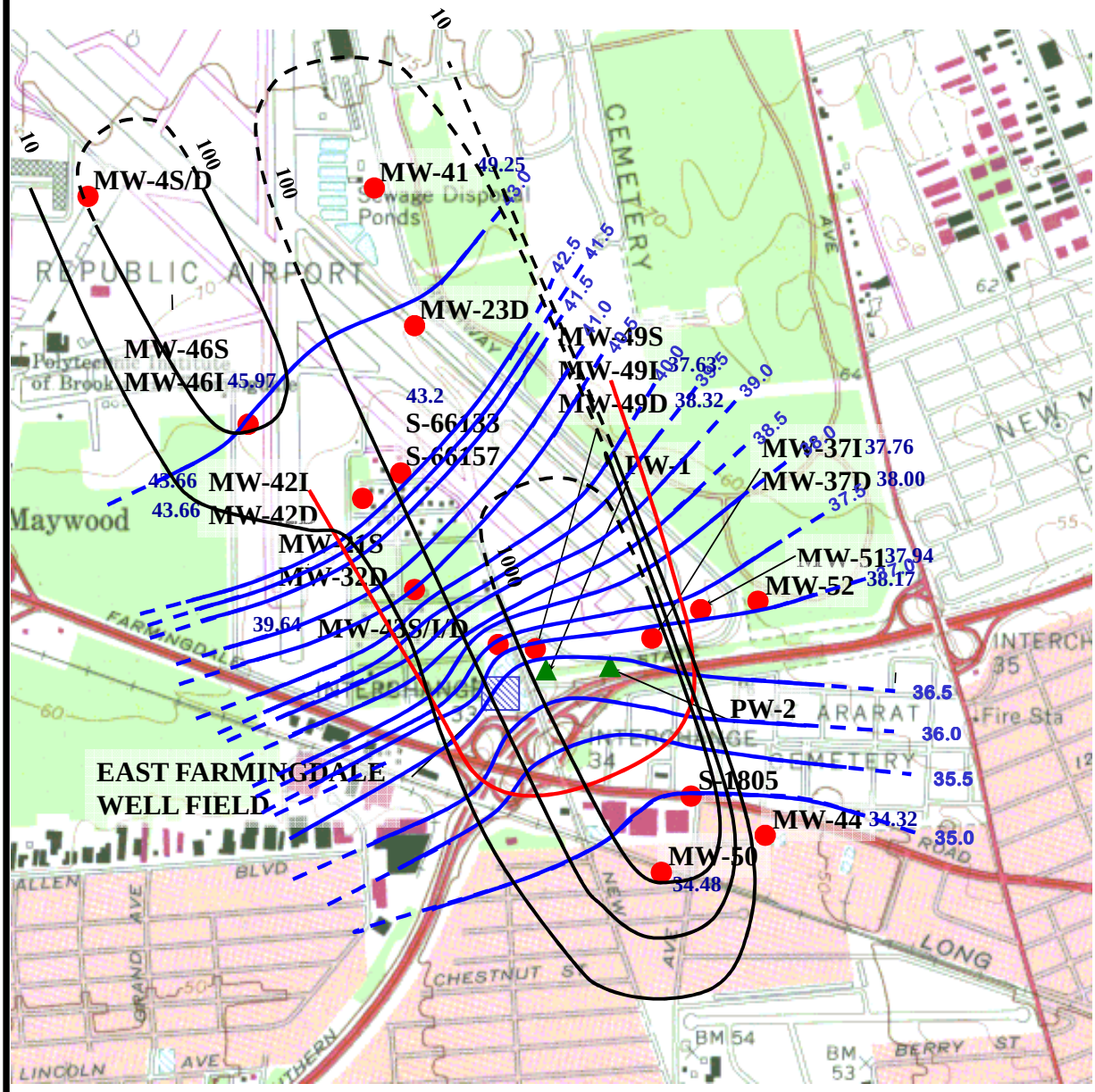
AIR STRIPPER INFLUENT AND EFFLUENT SAMPLING LOCATION
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC.
EAST FARMINGDALE, NEW YORK

FIGURE 3-1



LEGEND

- 100 — ISOCONCENTRATION CONTOUR – JULY 2007 (DASHED WHERE INFERRED)
- LINE OF EQUAL WATER LEVEL ELEVATION (DASHED WHERE INFERRED)
- CAPTURE ZONE
- WELL FIELD
- MONITORING WELL
- RECOVERY WELL
- 43.10 — WATER LEVEL ELEVATION

N

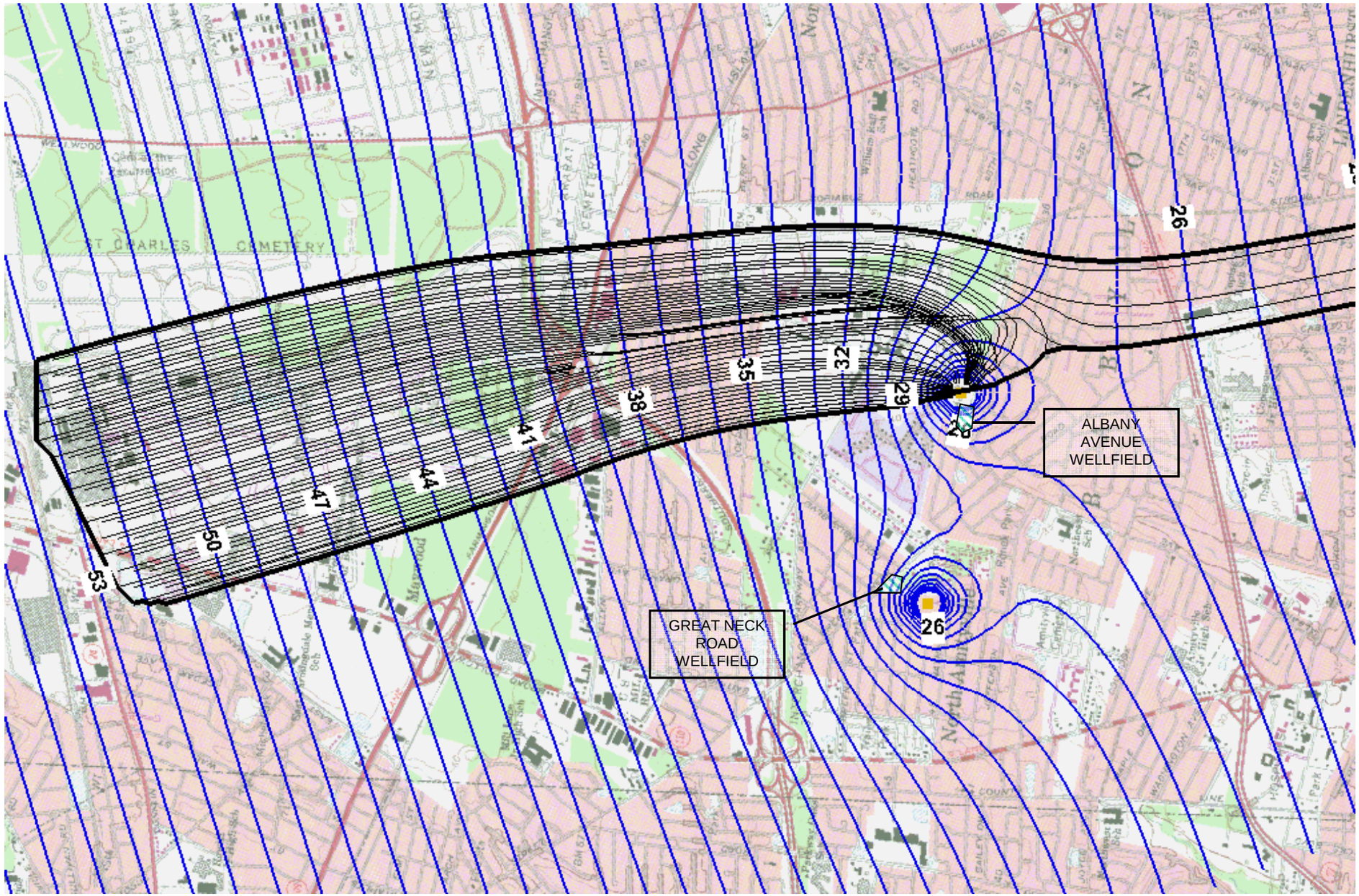
MALCOLM PIRNIE

POTENTIOMETRIC SURFACE MAP – JANUARY 2008
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC
EAST FARMINGDALE, NEW YORK

FIGURE 3-2

LEGEND

Well Field



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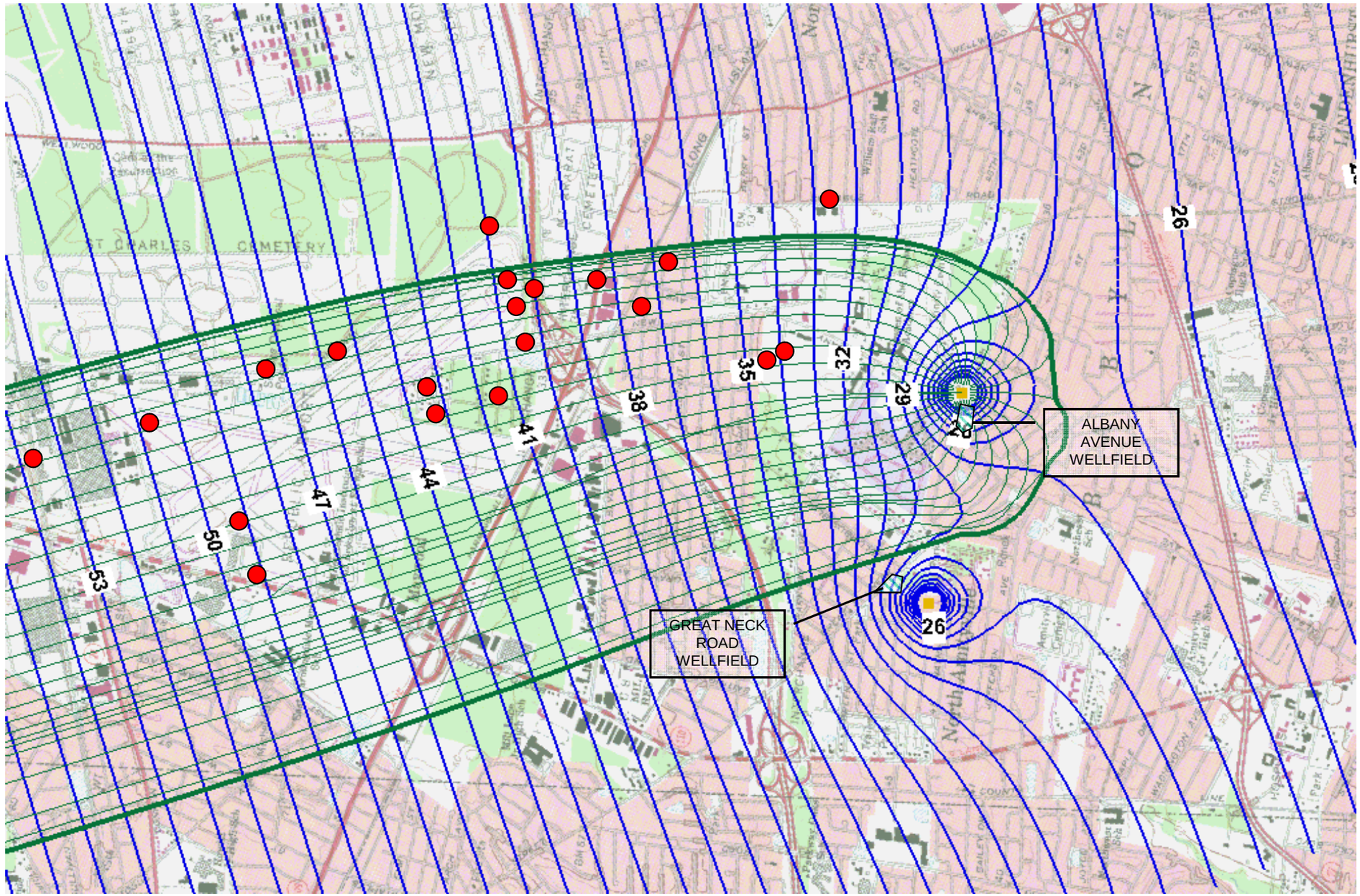
FORWARD PARTICLE TRACKING OF MPS FROM AIRPORT BUILDING AND RECHARGE BASIN
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC.
EAST FARMINGDALE, NEW YORK

MALCOLM PIRNIE, INC.

FIGURE 3-3



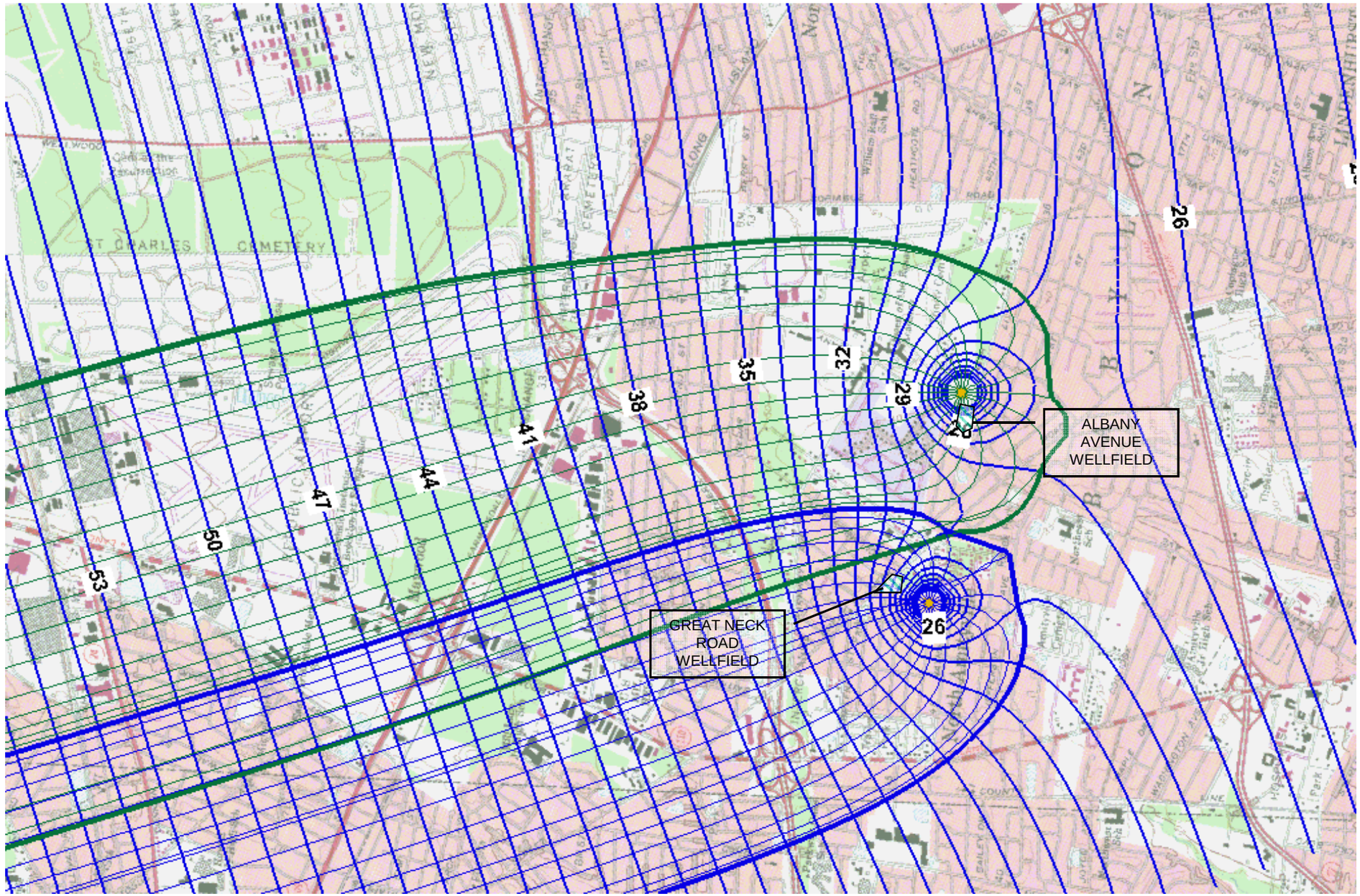
BACKWARD PARTICLE TRACKING FROM ALBANY AVENUE WELL FIELD
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC.
EAST FARMINGDALE, NEW YORK

MALCOLM PIRNIE, INC.

FIGURE 3-4

LEGEND

Well Field



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BACKWARD PARTICLE TRACKING FROM ALBANY AVENUE AND GREAT NECK ROAD WELL FIELDS
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC.
EAST FARMINGDALE, NEW YORK

MALCOLM PIRNIE, INC.

FIGURE 3-5

NOTE: EACH WELL LOCATION MAY REPRESENT MULTIPLE WELLS

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EXISTING OUTPOST MONITORING WELL LOCATIONS
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC.
EAST FARMINGDALE, NEW YORK

FIGURE 3-6

LEGEND

- PROPOSED ADDITIONAL PIEZOMTER/MONITORING WELL
- MONITORING WELL(S)
- RECOVERY WELL
- EXPECTED CAPUTRE ZONE (Approx.)

NOTE: EACH WELL LOCATION MAY REPRESENT MULTIPLE WELLS

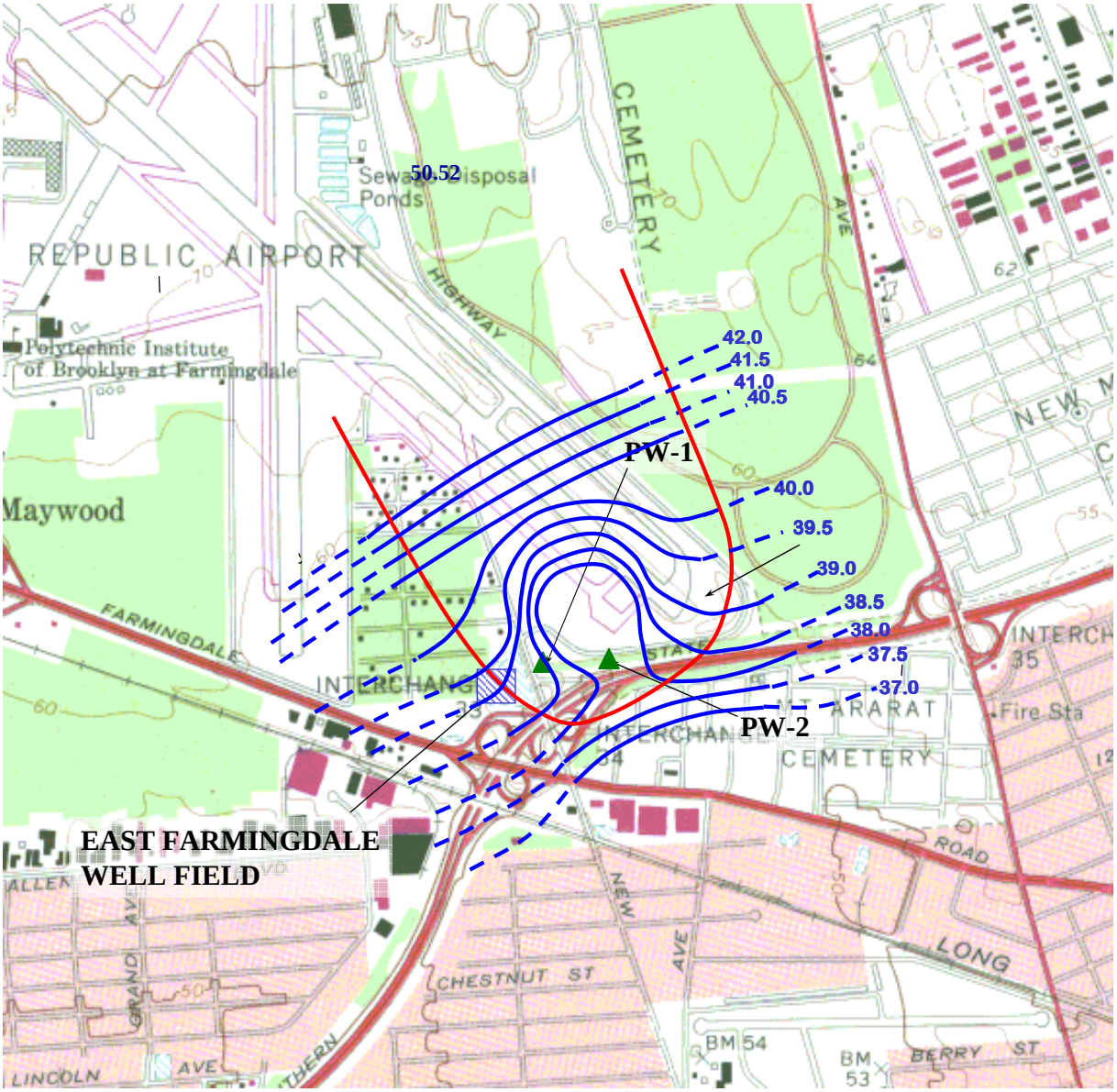
N

0 2,000 4,000 Feet

MALCOLM PIRNIE

HYDRAULIC CONTROLS
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC.
EAST FARMINGDALE, NEW YORK

FIGURE 5-1



0 2,000 4,000 Feet

LEGEND

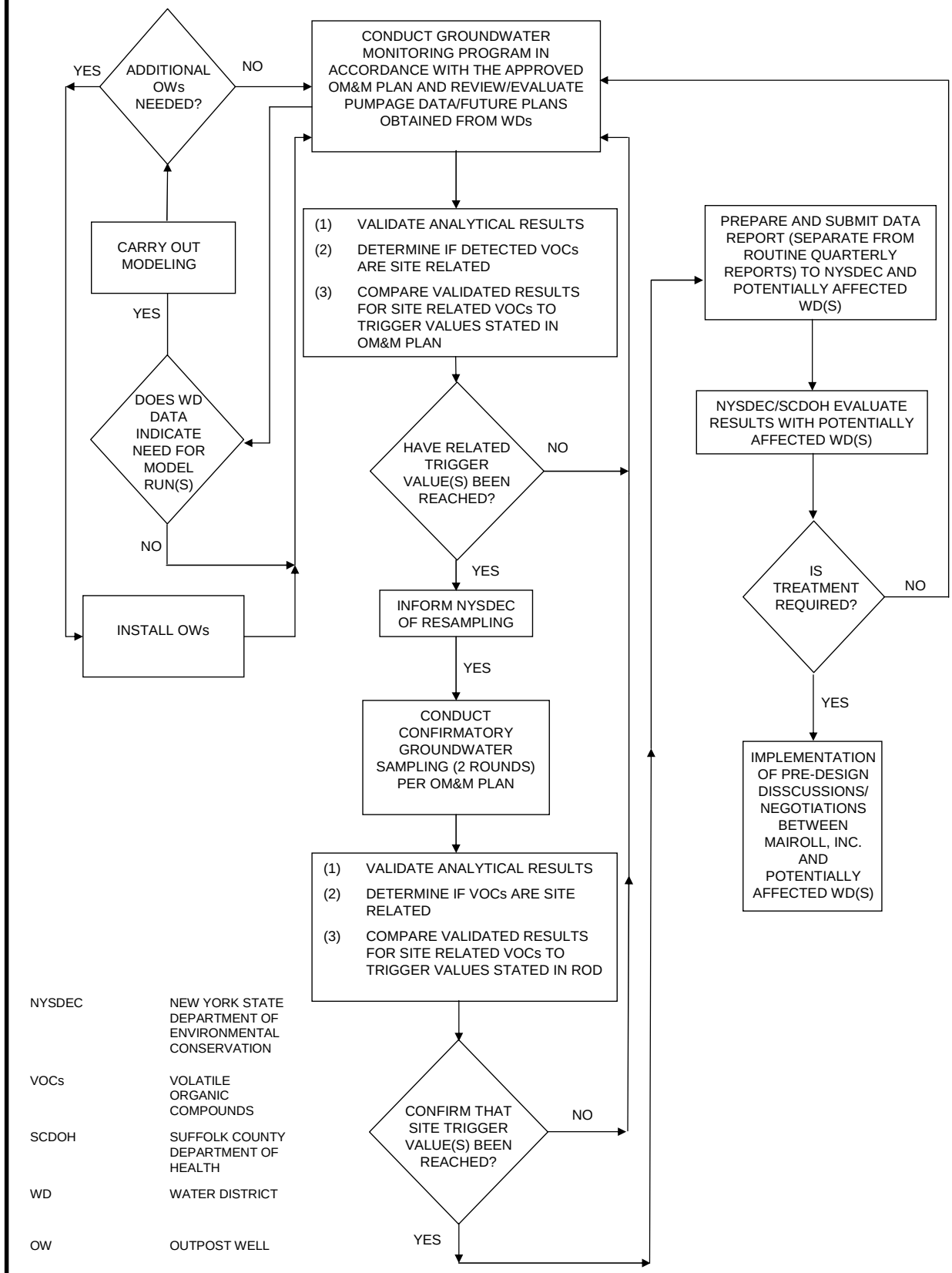
- LINE OF EQUAL WATER LEVEL ELEVATION (DASHED WHERE INFERRED)
- CAPTURE ZONE
- WELL FIELD
- RECOVERY WELL
- 43.10 WATER LEVEL ELEVATION

N

MALCOLM PIRNIE

POTENTIOMETRIC SURFACE MAP – JANUARY 2007
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC
EAST FARMINGDALE, NEW YORK

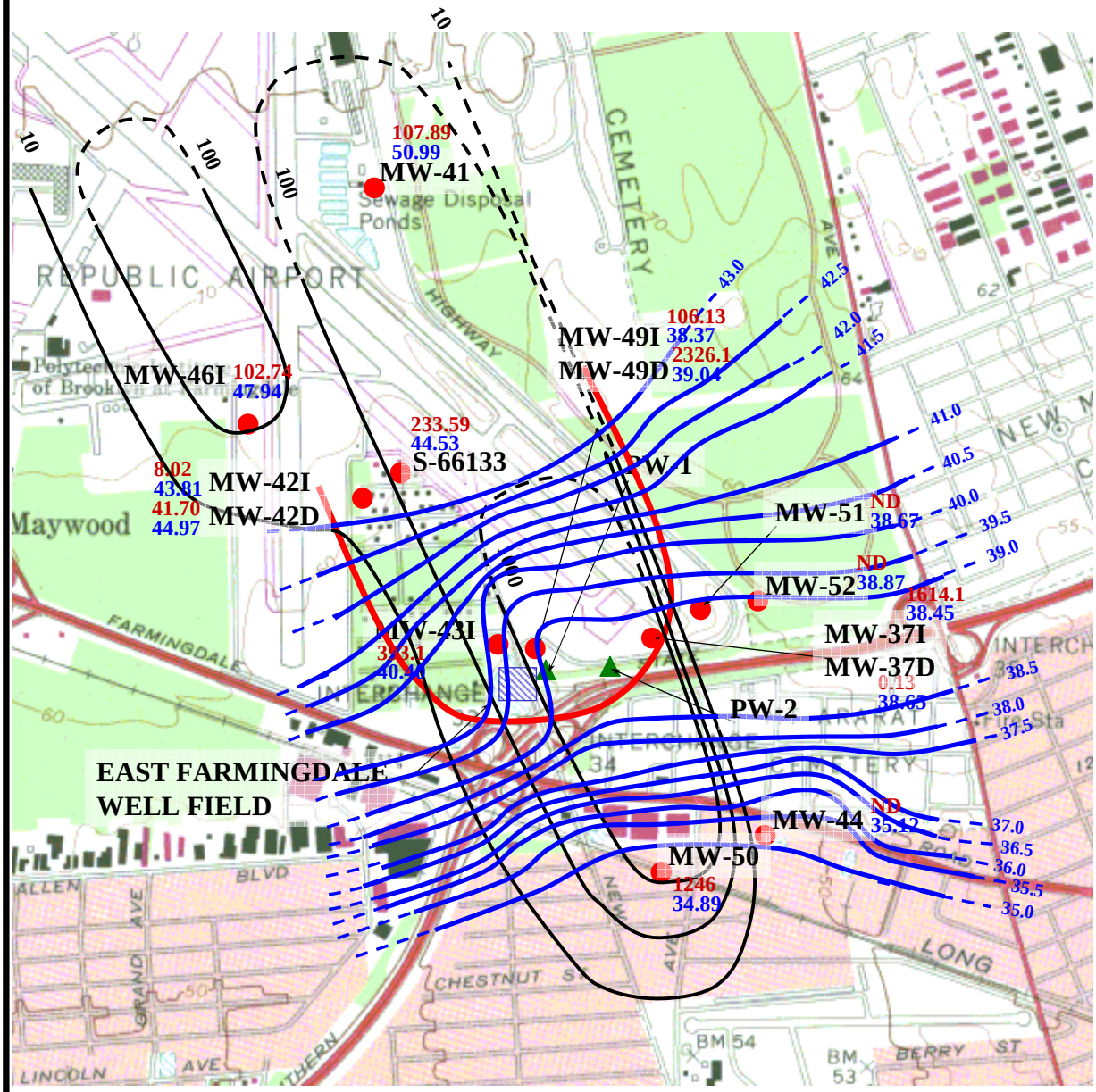
FIGURE 5-2



MALCOLM PIRNIE

WELLHEAD TREATMENT CONTINGENCY DECISION MATRIX
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC.
EAST FARMINGDALE, NEW YORK

FIGURE 6-1



0 2,000 4,000 Feet

LEGEND

- 100 — ISOCONCENTRATION CONTOUR (DASHED WHERE INFERRED)
- LINE OF EQUAL WATER LEVEL ELEVATION (DASHED WHERE INFERRED)
- CAPTURE ZONE AT RATE OF 200 GPM
- WELL FIELD
- MONITORING WELL
- RECOVERY WELL
- 231.00 — TOTAL VOC (ug/L) (May include compounds at estimated ["J" qualifier] concentrations)
- 43.10 — WATER LEVEL ELEVATION
- ND — NON DETECT
- NS — MONITORING WELL NOT SAMPLED
- N/S — MONITORING WELL NOT SURVEYED

N

MALCOLM PIRNIE

CAPTURE ZONE – JULY 2007
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC
EAST FARMINGDALE, NEW YORK

FIGURE 7-1

APPENDIX A

TREATMENT SYSTEM START-UP AND ALARM CONDITIONS

SYSTEM START-UP PROCEDURES

The treatment system requires the following start-up procedures to ensure proper operation. This algorithmic approach will provide the system operator with an integrated checklist of start-up procedures for each individual component. The operator will consult the manufacturers' operation and maintenance manuals for detailed operational specifications prior to startup. The start-up procedures are as follows:

Pre Start-Up:

1. Remove construction debris, foreign objects, etc. from the blower ducting.
2. Check electrical connections to all equipment.
3. Ensure that the sump tank drain valve and the discharge pump valve is closed.
4. Open the well pump (influent) valve and sight tube valve. Adjust the blower damper until it is ½ open.
5. Inspect water levels in stripper sump tank and baffled tray inlet chambers. Ensure that there is at least 5" of clean water in the sump tank and each baffled tray seal pot is filled with clean water. Add clean water, if needed.
6. Prime the discharge pump by filling the entire pump chamber with clean water.
7. Deactivate the autodialer and check interlock connections.
8. Turn all panel control switches to the 'OFF' position, then turn 'ON' the main power disconnect switch.

System Start-Up:

1. Turn the well pump switch to the 'ON' position. Observe flow rate and adjust if needed.
2. Turn the blower switch to the 'ON' position. After 5 minutes of operation, observe air pressure readings. If air pressure is not within system specifications (16 to 18" W.C.), adjust the blower damper.
3. Observe blower belt drive. Ensure that blower is operating without excessive vibrations and is not overheating.

4. Open the discharge valve and turn the discharge pump switch to the ‘ON’ position. Observe water level in sump tank. Adjust discharge pump valve until water level in sight valve is at the proper height.
5. Once the treatment system is fully operational at designed specifications, reactivate the autodialer and press the alarm (interlock) reset switch on the control panel.

Routine system maintenance procedures and system repairs will require the system to be temporarily shut down. The system operator will comply with the following procedures when shutting down the system:

System Shut-Down:

1. Turn the well pump switch to the ‘OFF’ position and close the well pump (influent) valve.
2. Wait five minutes after shutting down the well pump, and then turn the blower switch to the ‘OFF’ position.
3. Turn the discharge pump switch to the ‘OFF’ position and close the discharge valve.
4. Shut off the power to the alarm relay and control panel by pressing the main disconnect switch.

APPENDIX B

TREATMENT SYSTEM OPERATION AND MAINTENANCE LOGS

ALARM CONDITIONS

The pump and treat system includes a number of interlocks and alarms. The alarms and resulting system control actions are summarized below:

Alarm	Condition	Interlock & Action[1]
Low Well Water Level	Water elevation in pumping well casing is below operating level.	• Well pump shutdown • Stripper blower shutdown • Transfer pump shutdown
Low/High Stripper Blower Pressure	Blower pressure is outside operating range.	• Well pump shutdown • Stripper blower shutdown
High sump Tank Water Level	Water level in sump tank is above operating range.	• Well pump shutdown • Stripper blower shutdown
High Leaching Pool water Level	Water level in leaching pool is above normal operating level.	• Well pump shutdown • Stripper blower shutdown

Notes:

[1]: Alarm condition automatically activates Autodialer.

Fairchild Republic Main Plant Site
Site Number: 1-52-130
East Farmingdale, New York

Inspection & Maintenance Checklist

Equipment		Frequency			
Maintenance/Inspection Activity		Every Visit	Monthly	Quarterly	Annually
Building and Grounds:	Inspect Building Perimeter for Damage, vandalism, etc.	X			
	Screen building perimeter for VOCs with PID	X			
Groundwater Pump and Piping:	Inspect piping for leaks	X			
	Record influent and effluent flow rate	X			
	Inspect connection to stripper for leaks	X			
Air Stripper Assembly:	Screen C-gaskets for VOCs with PID	X			
	Screen Stripper Stack Connection for VOCs with PID	X			
	Check and record liquid pressure gauge (sight tube)	X			
	Check and record air pressure differential gauge	X			
	Clean air stripper baffled trays and sump tank				X
	Visually inspect each baffle tray and sump tank	X			
	Inspect sump tank drain valve for tightness/leaks	X			
	Inspect wire mesh demister pad and replace as required				X
Blower:	Remove debris from blower air inlet	X			
	Check blower inlet filter and replace as required			X	
	Check blower wheel for damage, unbalance and vibrations	X			
	Grease fan bearings				X
	Grease blower motor bearings				X
	Check blower bearing locking collars for tightness			X	
	Record line voltage, motor amperage and blower RPM		X		
Discharge Pump:	Inspect motor seals for leakage		X		
	Check and record strainer pressure gauge			X	
	Check and record bearing temperature			X	
	Polish and lubricate pump				X
Control Panel:	Inspect electrical connections to control panel		X		
	Inspect autodialer modem		X		
	Inspect interlock connections to control panel		X		
Recharge System:	Inspect leaching pools for obstructions	X			
	Inspect flow valves and piping		X		

Fairchild Republic Main Plant Site
Site Number: 1-52-130
East Farmingdale, New York

Corrective Action Log

Dates From:_____ **To:**_____

Date Occurred	Source	Problem	Defective Equipment	Corrective Actions	Preventative Measures

Remarks:

Fairchild Republic Main Plant Site
Site Number: 1-52-130
East Farmingdale, New York

Defective Equipment & Repair Log

Dates From:_____ **To:**_____

Inspection Date	Defective Part(s)	Affected Area(s)	Cause	Repairs &/or Replacement Part(s) Installed	Installation date

Remarks:

Fairchild Republic Main Plant Site
Site Number: 1-52-130
East Farmingdale, New York

Equipment Reference Data Sheet

Name and Number:	**Local Representative:**	
Manufacturer:	**Serial Number:**	
Model Number:	**Catalog Number:**	
Reference Drawing(s):	**O&M Manual ID:**	**Site Location:**
Electric Motor:	**Pump:**	**Drive:**
HP:	Capacity:	HP:
Frame:	TDH:	RPM In:
RPM:	NPSH:	RPM Out:
Volts:	Impeller:	
Phase:	Packing:	
Bearing type:	Bearing Type:	
	Lubricant:	
Motor Type:	**Pump Type:**	**Drive Type:**
☐ Synchronous ☐ Induction ☐ _____	☐ Centrifugal ☐ Diaphragm ☐ _____	☐ Gear ☐ V-Belt ☐ Varidrive ☐ _____
Enclosure:	**Installation:**	**Lubrication:**
☐ TEFC ☐ ODP ☐ _____	☐ Horizontal ☐ Vertical ☐ Submerged	☐ Water ☐ Oil ☐ Grease
Comments:		

Fairchild Republic Main Plant Site
Site Number: 1-52-130
East Farmingdale, New York

Replacement Part Log

Dates From:_____ **To:**_____

Inspection Date	Replacement Part(s)	Part Number	Catalog Number	Manufacturer/Distributor	Cost	Installation Date

Remarks:

Fairchild Republic Main Plant Site
Site Number: 1-52-130
East Farmingdale, New York

System Operation Log

Dates From:_____ **To:**_____

Inspection Date	Inspection Time	Flow Meter		Pressure Gauge (psi)	PID Screen			Operator
		gpm	Total		Bldg. Perimeter	Stack Connection	C-Gaskets	

Remarks:

APPENDIX C

AIR STRIPPER INFLUENT AND EFFLUENT SAMPLING PROCEDURES

Fairchild Republic Main Plant Site
East Farmingdale, New York
Site #1-52-130

Air Stripper Influent and Effluent Sampling Procedures

(1) Place new plastic sheeting below the sample tap so that a 5 **x** 5 foot clean surface is created for the sampling equipment. All materials, tools and equipment will be cleaned prior to placement on the plastic.

(2) Open sample tap and purge the sample line for one minute.

(3) Record the physical appearance and temperature of the purged groundwater

(4) Prepare sample bottles to receive samples.

(5) Immediately pour the sample into the respective sample bottles. Vials used for VOC samples must be filled with no headspace or air bubbles visible once capped.

(6) Discard plastic sheeting, and other expendable materials.

(7) Samples will be placed on ice and brought to the laboratory with chain of custody documentation.

Comments:_____

_____

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_____

Note: Purged water will be collected in a five gallon bucket and stored in the mechanical equipment building for proper disposal.

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS Site No 1-52-130
During the period beginning August 2002
and lasting until July 2007

the discharges from the treatment facility to infiltration basins, shall be limited and monitored by the operator as specified below:

Outfall Number and Parameter	Discharge Limitations		Units	Minimum Monitoring Requirements	
	Daily Ave.	Daily Max		Measurement Frequency	Sample Type
Outfall 001 - Treated Groundwater Remediation Discharge:					
Flow	Monitor	648,000	gpd	Continuous	Meter
pH (range)	6.5 to 8.5		SU	Monthly	Grab
Total Dissolved Solids	Monitor	1,000	mg/L	Monthly	Grab
Vinyl Chloride	Monitor	2.0	ug/L	Monthly	Grab
1,1 Dichloroethene	Monitor	5.0	ug/L	Monthly	Grab
1,1 Dichloroethane	Monitor	5.0	ug/L	Monthly	Grab
cis 1,2 Dichloroethene	Monitor	5.0	ug/L	Monthly	Grab
Chloroform	Monitor	7.0	ug/L	Monthly	Grab
1,1,1 Trichloroethane	Monitor	5.0	ug/L	Monthly	Grab
Benzene	Monitor	1.0	ug/L	Monthly	Grab
Trichloroethylene	Monitor	5.0	ug/L	Monthly	Grab
Tetrachloroethylene	Monitor	5.0	ug/L	Monthly	Grab
Freon 113	Monitor	5.0	ug/L	Monthly	Grab
Iron, Total	Monitor	Monitor	ug/L	Monthly	Grab
Manganese, Total	Monitor	Monitor	ug/L	Monthly	Grab
Zinc, Total	Monitor	Monitor	ug/L	Monthly	Grab

APPENDIX D

U.S. ENVIRONMENTAL PROTECTION AGENCY REGION II GROUND WATER SAMPLING PROCEDURE LOW STRESS (Low Flow) PURGING AND SAMPLING AND GROUNDWATER SAMPLING CHECKLIST

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION II

GROUND WATER SAMPLING PROCEDURE
LOW STRESS (Low Flow) PURGING AND SAMPLING

I. SCOPE & APPLICATION

This Low Stress (or Low-Flow) Purging and Sampling Procedure is the EPA Region II standard method for collecting low stress (low flow) ground water samples from monitoring wells. Low stress Purging and Sampling results in collection of ground water samples from monitoring wells that are representative of ground water conditions in the geological formation. This is accomplished by minimizing stress on the geological formation and minimizing disturbance of sediment that has collected in the well. The procedure applies to monitoring wells that have an inner casing with a diameter of 2.0 inches or greater, and maximum screened intervals of ten feet unless multiple intervals are sampled. The procedure is appropriate for collection of ground water samples that will be analyzed for volatile and semi-volatile organic compounds (VOCs and SVOCs), pesticides, polychlorinated biphenyls (PCBs), metals, and microbiological and other contaminants in association with all EPA programs.

This procedure does not address the collection of light or dense non-aqueous phase liquids (LNAPL or DNAPL) samples, and should be used for aqueous samples only. For sampling NAPLs, the reader is referred to the following EPA publications: DNAPL Site Evaluation (Cohen & Mercer, 1993) and the RCRA Ground-Water Monitoring: Draft Technical Guidance (EPA/530-R-93-001), and references therein.

II. METHOD SUMMARY

The purpose of the low stress purging and sampling procedure is to collect ground water samples from monitoring wells that are representative of ground water conditions in the geological formation. This is accomplished by setting the intake velocity of the sampling pump to a flow rate that limits drawdown inside the well casing.

Sampling at the prescribed (low) flow rate has three primary benefits. First, it minimizes disturbance of sediment in the bottom of the well, thereby producing a sample with low turbidity (i.e., low concentration of suspended particles). Typically, this saves time and analytical costs by eliminating the need for collecting and analyzing an

additional filtered sample from the same well. Second, this procedure minimizes aeration of the ground water during sample collection, which improves the sample quality for VOC analysis. Third, in most cases the procedure significantly reduces the volume of ground water purged from a well and the costs associated with its proper treatment and disposal.

III. ADDRESSING POTENTIAL PROBLEMS

Problems that may be encountered using this technique include a) difficulty in sampling wells with insufficient yield; b) failure of one or more key indicator parameters to stabilize; c) cascading of water and/or formation of air bubbles in the tubing; and d) cross-contamination between wells.

Insufficient Yield

Wells with insufficient yield (i.e., low recharge rate of the well) may dewater during purging. Care should be taken to avoid loss of pressure in the tubing line due to dewatering of the well below the level of the pump's intake. Purging should be interrupted before the water level in the well drops below the top of the pump, as this may induce cascading of the sand pack. Pumping the well dry should therefore be avoided to the extent possible in all cases. Sampling should commence as soon as the volume in the well has recovered sufficiently to allow collection of samples. Alternatively, ground water samples may be obtained with techniques designed for the unsaturated zone, such as lysimeters.

Failure to Stabilize Key Indicator Parameters

If one or more key indicator parameters fails to stabilize after 4 hours, one of four options should be considered: a) continue purging in an attempt to achieve stabilization; b) discontinue purging, do not collect samples, and document attempts to reach stabilization in the log book; c) discontinue purging, collect samples, and document attempts to reach stabilization in the log book; or d) Secure the well, purge and collect samples the next day (preferred). The key indicator parameter for samples to be analyzed for VOCs is dissolved oxygen. The key indicator parameter for all other samples is turbidity.

Cascading

To prevent cascading and/or air bubble formation in the tubing, care should be taken to ensure that the flow rate is sufficient to maintain

pump suction. Minimize the length and diameter of tubing (i.e., 1/4 or 3/8 inch ID) to ensure that the tubing remains filled with ground water during sampling.

Cross-Contamination

To prevent cross-contamination between wells, it is strongly recommended that dedicated, in-place pumps be used. As an alternative, the potential for cross-contamination can be reduced by performing the more thorough "daily" decontamination procedures between sampling of each well in addition to the start of each sampling day (see Section VII, below).

Equipment Failure

Adequate equipment should be on-hand so that equipment failures do not adversely impact sampling activities.

IV. PLANNING DOCUMENTATION AND EQUIPMENT

- Approved site-specific Field Sampling Plan/Quality Assurance Project Plan (QAPP). This plan must specify the type of pump and other equipment to be used. The QAPP must also specify the depth to which the pump intake should be lowered in each well. Generally, the target depth will correspond to the mid-point of the most permeable zone in the screened interval. Borehole geologic and geophysical logs can be used to help select the most permeable zone. However, in some cases, other criteria may be used to select the target depth for the pump intake. In all cases, the target depth must be approved by the EPA hydrogeologist or EPA project scientist.

- Well construction data, location map, field data from last sampling event.

- Polyethylene sheeting.

- Flame Ionization Detector (FID) and Photo Ionization Detector (PID).

- Adjustable rate, positive displacement ground water sampling pump (e.g., centrifugal or bladder pumps constructed of stainless steel or Teflon). A peristaltic pump may only be used for inorganic sample collection.

- Interface probe or equivalent device for determining the presence or absence of NAPL.

- Teflon or Teflon-lined polyethylene tubing to collect samples for organic analysis. Teflon or Teflon-lined polyethylene, PVC, Tygon or polyethylene tubing to collect samples for inorganic analysis. Sufficient tubing of the appropriate material must be available so that each well has dedicated tubing.

- Water level measuring device, minimum 0.01 foot accuracy, (electronic preferred for tracking water level drawdown during all pumping operations).

- Flow measurement supplies (e.g., graduated cylinder and stop watch or in-line flow meter).
- Power source (generator, nitrogen tank, etc.).
- Monitoring instruments for indicator parameters. Eh and dissolved oxygen must be monitored in-line using an instrument with a continuous readout display. Specific conductance, pH, and temperature may be monitored either in-line or using separate probes. A nephalometer is used to measure turbidity.

- Decontamination supplies (see Section VII, below).

- Logbook (see Section VIII, below).

- Sample bottles.

- Sample preservation supplies (as required by the analytical methods).

- Sample tags or labels, chain of custody.

V. SAMPLING PROCEDURES

Pre-Sampling Activities

1. Start at the well known or believed to have the least contaminated ground water and proceed systematically to the well with the most contaminated ground water. Check the well, the lock, and the locking cap for damage or evidence of tampering. Record observations.

2. Lay out sheet of polyethylene for placement of monitoring and sampling equipment.

3. Measure VOCs at the rim of the unopened well with a PID and FID instrument and record the reading in the field log book.

4. Remove well cap.

5. Measure VOCs at the rim of the opened well with a PID and an FID instrument and record the reading in the field log book.
6. If the well casing does not have a reference point (usually a V-cut or indelible mark in the well casing), make one. Note that the reference point should be surveyed for correction of ground water elevations to the mean geodesic datum (MSL).

7. Measure and record the depth to water (to 0.01 ft) in all wells to be sampled prior to purging. Care should be taken to minimize disturbance in the water column and dislodging of any particulate matter attached to the sides or settled at the bottom of the well.

8. If desired, measure and record the depth of any NAPLs using an interface probe. Care should be taken to minimize disturbance of any sediment that has accumulated at the bottom of the well. Record the observations in the log book. If LNAPLs and/or DNAPLs are detected, install the pump at this time, as described in step 9, below. Allow the well to sit for several days between the measurement or sampling of any DNAPLs and the low-stress purging and sampling of the ground water.

Sampling Procedures

9. Install Pump: Slowly lower the pump, safety cable, tubing and electrical lines into the well to the depth specified for that well in the EPA-approved QAPP or a depth otherwise approved by the EPA hydrogeologist or EPA project scientist. The pump intake must be kept at least two (2) feet above the bottom of the well to prevent disturbance and resuspension of any sediment or NAPL present in the bottom of the well. Record the depth to which the pump is lowered.

10. Measure Water Level: Before starting the pump, measure the water level again with the pump in the well. Leave the water level measuring device in the well.

11. Purge Well: Start pumping the well at 200 to 500 milliliters per minute (ml/min). The water level should be monitored approximately every five minutes. Ideally, a steady flow

rate should be maintained that results in a stabilized water level (drawdown of 0.3 ft or less). Pumping rates should, if needed, be reduced to the minimum capabilities of the pump to ensure stabilization of the water level. As noted above, care should be taken to maintain pump suction and to avoid entrainment of air in the tubing. Record each adjustment made to the pumping rate and the water level measured immediately after each adjustment.

12. Monitor Indicator Parameters: During purging of the well, monitor and record the field indicator parameters (turbidity, temperature, specific conductance, pH, Eh, and DO) approximately every five minutes. The well is considered stabilized and ready for sample collection when the indicator parameters have stabilized for three consecutive readings as follows (Puls and Barcelona, 1996):

    $\pm$0.1 for pH
    $\pm$3% for specific conductance (conductivity)
    $\pm$10 mv for redox potential
    $\pm$10% for DO and turbidity

    Dissolved oxygen and turbidity usually require the longest time to achieve stabilization. The pump must not be removed from the well between purging and sampling.

13. Collect Samples: Collect samples at a flow rate between 100 and 250 ml/min and such that drawdown of the water level within the well does not exceed the maximum allowable drawdown of 0.3 ft. VOC samples must be collected first and directly into sample containers. All sample containers should be filled with minimal turbulence by allowing the ground water to flow from the tubing gently down the inside of the container.

    Ground water samples to be analyzed for volatile organic compounds (VOCs) require pH adjustment. The appropriate EPA Program Guidance should be consulted to determine whether pH adjustment is necessary. If pH adjustment is necessary for VOC sample preservation, the amount of acid to be added to each sample vial prior to sampling should be determined, drop by drop, on a separate and equal volume of water (e.g., 40 ml). Ground water purged from the well prior to sampling can be used for this purpose.

14. Remove Pump and Tubing: After collection of the samples, the tubing, unless permanently installed, must be properly discarded

or dedicated to the well for resampling by hanging the tubing inside the well.

15. Measure and record well depth.

16. Close and lock the well.

VI. FIELD QUALITY CONTROL SAMPLES

Quality control samples must be collected to determine if sample collection and handling procedures have adversely affected the quality of the ground water samples. The appropriate EPA Program Guidance should be consulted in preparing the field QC sample requirements of the site-specific QAPP.

All field quality control samples must be prepared exactly as regular investigation samples with regard to sample volume, containers, and preservation. The following quality control samples should be collected during the sampling event:

- Field duplicates
- Trip blanks for VOCs only
- Equipment blank (not necessary if equipment is dedicated to the well)

As noted above, ground water samples should be collected systematically from wells with the lowest level of contamination through to wells with highest level of contamination. The equipment blank should be collected after sampling from the most contaminated well.

VII. DECONTAMINATION

Non-disposable sampling equipment, including the pump and support cable and electrical wires which contact the sample, must be decontaminated thoroughly each day before use (“daily decon”) and after each well is sampled (“between-well decon”). Dedicated, in-place pumps and tubing must be thoroughly decontaminated using “daily decon” procedures (see #17, below) prior to their initial use. For centrifugal pumps, it is strongly recommended that non-disposable sampling equipment, including the pump and support cable and electrical wires in contact with the sample, be decontaminated thoroughly each day before use (“daily decon”).

EPA’s field experience indicates that the life of centrifugal pumps may be extended by removing entrained grit. This also permits

inspection and replacement of the cooling water in centrifugal pumps. All non-dedicated sampling equipment (pumps, tubing, etc.) must be decontaminated after each well is sampled ("between-well decon," see #18 below).

17. **Daily Decon**

A) Pre-rinse: Operate pump in a deep basin containing 8 to 10 gallons of potable water for 5 minutes and flush other equipment with potable water for 5 minutes.

B) Wash: Operate pump in a deep basin containing 8 to 10 gallons of a non-phosphate detergent solution, such as Alconox, for 5 minutes and flush other equipment with fresh detergent solution for 5 minutes. Use the detergent sparingly.

C) Rinse: Operate pump in a deep basin of potable water for 5 minutes and flush other equipment with potable water for 5 minutes.

D) Disassemble pump.

E) Wash pump parts: Place the disassembled parts of the pump into a deep basin containing 8 to 10 gallons of non-phosphate detergent solution. Scrub all pump parts with a test tube brush.

F) Rinse pump parts with potable water.

G) Rinse the following pump parts with distilled/ deionized water: inlet screen, the shaft, the suction interconnector, the motor lead assembly, and the stator housing.

H) Place impeller assembly in a large glass beaker and rinse with 1% nitric acid (HNO_3).

I) Rinse impeller assembly with potable water.

J) Place impeller assembly in a large glass bleaker and rinse with isopropanol.

K) Rinse impeller assembly with distilled/deionized water.

18. **Between-Well Decon**

A) Pre-rinse: Operate pump in a deep basin containing 8 to 10 gallons of potable water for 5 minutes and flush other equipment with potable water for 5 minutes.
B) Wash: Operate pump in a deep basin containing 8 to 10 gallons of a non-phosphate detergent solution, such as Alconox, for 5 minutes and flush other equipment with fresh detergent solution for 5 minutes. Use the detergent sparingly.

C) Rinse: Operate pump in a deep basin of potable water for 5 minutes and flush other equipment with potable water for 5 minutes.

D) Final Rinse: Operate pump in a deep basin of distilled/deionized water to pump out 1 to 2 gallons of this final rinse water.

VIII. FIELD LOG BOOK

A field log book must be kept each time ground water monitoring activities are conducted in the field. The field log book should document the following:

- Well identification number and physical condition.
- Well depth, and measurement technique.
- Static water level depth, date, time, and measurement technique.
- Presence and thickness of immiscible liquid layers and detection method.
- Collection method for immiscible liquid layers.
- Pumping rate, drawdown, indicator parameters values, and clock time, at three to five minute intervals; calculate or measure total volume pumped.
- Well sampling sequence and time of sample collection.
- Types of sample bottles used and sample identification numbers.
- Preservatives used.
- Parameters requested for analysis.
- Field observations of sampling event.
- Name of sample collector(s).
- Weather conditions.
- QA/QC data for field instruments.

IX. REFERENCES

Cohen, R.M. and J.W. Mercer, 1993, DNAPL Site Evaluation, C.K. Smoley Press, Boca Raton, Florida.

Puls, R.W. and M.J. Barcelona, 1996, Low-Flow (Minimal Drawdown) Ground-water Sampling Procedures, EPA/540/S-95/504.

U.S. EPA, 1993, RCRA Ground-Water Monitoring: Draft Technical Guidance, EPA/530-R-93-001.

U.S. EPA Region II, 1989, CERCLA Quality Assurance Manual.

Fairchild Republic Main Plant Site

East Farmingdale, New York
Site #1-52-130

Groundwater Sampling Checklist

Monitoring Well ID_____ Date_____

____ Place new plastic sheeting over and around the monitoring well so that a 5 x 5 foot clean surface is used for the sampling equipment.

____ Measure the depth to water below the reference point (top of casing) using a chalked, steel tape or electric sensor to the nearest 0.01 foot.

____ Purge well with submersible pump using low-flow sampling methods

____ Record the physical appearance and temperature of the purged groundwater.

____ Measure and record water level, pumping rate, specific conductance, temperature, pH, DO, ORP/Eh, and turbidity every three to five minutes.

____ Prepare sample bottles to receive samples.

____ Immediately pour the sample into the respective sample bottles. Vials used for VOC samples must be filled with no headspace or air bubbles visible once capped.

Comments:_____

_____

_____

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_____

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_____

APPENDIX E

MONITORING WELL INSPECTION CHECKLIST

Fairchild Republic Main Plant Site
East Farmingdale, New York
Site #1-52-130

Monitoring Well Inspection Checklist

Monitoring Well ID_____ Date_____

____ Note the condition of the well protective cover or flush-mounted curb box.

____ Examine the well cap for a locking device.

____ Note conditions inside the well enclosure, such as standing water, damage and any obvious signs of contamination (oily sheen, staining, odors, etc.).

____ Replace well cap and lock.

____ Discard plastic sheeting and other expendable materials.

Comments:_____

_____

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_____

_____

Notes:

1. Use the comment section to document the need for corrective actions and the date that the corrective actions are completed.

APPENDIX F

EXAMPLE CHAIN-OF-CUSTODY, CUSTODY SEAL, AND SAMPLE LABEL

STL EDISON
777 New Durham Road
Edison, New Jersey 08817
Phone: (732) 549-3900 Fax: (732) 549-3679

CHAIN OF CUSTODY / ANALYSIS REQUEST

PAGE ___ OF ___

Name (for report and invoice)	Samplers Name (Printed)	Site/Project Identification
Company	P.O. #	State (Location of site): NJ: ☐ NY: ☐ Other:
		Regulatory Program:
Address	Analysis Turnaround Time Standard ☐ Rush Charges Authorized For: 2 Week ☐ 1 Week ☐ Other ☐ ____	ANALYSIS REQUESTED (ENTER "X" BELOW TO INDICATE REQUEST)
City State		
Phone Fax		

Sample Identification	Date	Time	Matrix	No. of Cont.												LAB USE ONLY Project No: Job No: Sample Numbers
Preservation Used: 1 = ICE, 2 = HCl, 3 = H_2SO_4, 4 = HNO_3, 5 = NaOH					Soil:											
6 = Other _____, 7 = Other _____					Water:											

Special Instructions_____ Water Metals Filtered (Yes/No)?_____

Relinquished by	Company	Date / Time	Received by	Company
1)		/	1)	
Relinquished by	Company	Date / Time	Received by	Company
2)		/	2)	
Relinquished by	Company	Date / Time	Received by	Company
3)		/	3)	
Relinquished by	Company	Date / Time	Received by	Company
4)		/	4)	

Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132).

CUSTODY SEAL

CLIENT/SOURCE	☐GRAB ☐COMPOSITE OTHER:
SITE NAME	DATE
SAMPLE #	TIME
ANALYSIS	PRESERVATIVE
	COLL. BY

SAMPLE LABEL

APPENDIX G

SITE SPECIFIC HEALTH AND SAFETY PLAN

SITE SPECIFIC HEALTH AND SAFETY PLAN

MALCOLM PIRNIE

SECTION 1: GENERAL INFORMATION AND DISCLAIMER		PROJECT NUMBER:	4724006
PROJECT NAME:	Fairchild Republic	CLIENT NAME:	The Faichild Corporation
PROJECT MANAGER:	Daniel St. Germain	PROJECT LEADER:	Arnas Nemickas
PREPARED BY:	Arnas Nemickas	DATE:	4/16/2008

NOTE: This site specific Health and Safety Plan - Short Form (HASP-SF) has been prepared for use by **Malcolm Pirnie, Inc.** employees for work at this site / facility. **The plan is written for the specific site / facility conditions, purposes, tasks, dates and personnel specified, and must be amended and reviewed by those personnel named in Section 4 if these conditions change.** Malcolm Pirnie, Inc. is not responsible for its use by others.

Subcontractors shall be solely responsible for the health and safety of their employees and shall comply with all applicable laws and regulations. In accordance with 1910.120(b)(1)(iv) and (v), Malcolm Pirnie, Inc. will inform subcontractors of the site / facility emergency response procedures, and any potential fire, explosion, health, safety or other hazards by making this Site Specific Health and Safety Plan and site information obtained by others available during regular business hours. All contractors and subcontractors are responsible for: (1) developing their own Health and Safety Plan, including a written Hazard Communication Program and any other written hazard specific or safety programs required by federal, state and local laws and regulations, that details subcontractor tasks, potential or actual hazards identified as a result of a risk analysis of those tasks, and the engineering controls, work practices and personal protective equipment to be utilized to minimize or eliminate employee exposure to the hazard; (2) providing their own personal protective equipment; (3) providing documentation that their employees have been health and safety trained in accordance with applicable federal, state and local laws and regulations; (4) providing evidence of medical surveillance and medical approvals for their employees; and (5) designating their own site safety officer responsible for ensuring that their employees comply with their own Health and Safety plan and taking any other additional measures required by their site activities.

Providing a copy of this Malcolm Pirnie plan to subcontractors, does not establish, nor is it intended to establish a "joint employer" relationship between the Contractor and Malcolm Pirnie. This allowance does not establish, nor is it intended to establish, a direct or indirect employer/employee relationship with subcontractor's employees.

THIS SITE SPECIFIC HASP MUST BE REVIEWED AND APPROVED BY CORPORATE HEALTH AND SAFETY FOR ONE OR MORE OF THE FOLLOWING CONDITIONS: IF AN UPGRADE TO "LEVEL C" OR ABOVE IS ANTICIPATED; A PERMIT REQUIRED CONFINED SPACE ENTRY OR ENTRY INTO AN EXCAVATION IS ANTICIPATED; SAMPLING OF UNKNOWN DRUMS AND/OR IN UNKNOWN CONDITIONS IS ANTICIPATED, OR IF THERE MAY BE RADIATION LEVELS GREATER THAN 0.5 mR (500µR)/HOUR.

SECTION 2: EMERGENCY INFORMATION

(A) LOCAL RESOURCES	SERVICE NAME	TELEPHONE NUMBER
EMERGENCY MEDICAL SERVICES	Farmingdale Fire Dept.	516-531-9820 / 911
HOSPITAL (Map attached)	Brunswick Hospital Ctr	631-789-7000
FIRE DEPARTMENT	Farmingdale Fire Dept.	516-531-9820 / 911
POLICE / SECURITY	Suffolk Police Dept.	631-957-3133 / 911
HAZMAT/ SPILL / OTHER RESPONSE	NYSDEC	1-800-457-7362

(B) CORPORATE RESOURCES

MALCOLM PIRNIE 24 / 7 EMERGENCY / INCIDENT TELEPHONE NUMBERS		(800) 478-6870 (24 HOURS)
CORPORATE HEALTH AND SAFETY **	MARK MCGOWAN, CIH, CSP	(914) 641-2484 WHI
	JOSEPH GOLDEN, EMT-P, CET, CHMM	(914) 641-2978 WHI
CORPORATE HUMAN RESOURCES **	HOLLY LYONS (WORKERS COMP / OSHA LOG)	(914) 641-2674 WHI
LEGAL DEPARTMENT **	JERRY CAVALUZZI	(914) 641-2950 WHI

**** TO BE NOTIFIED IN CASE OF ACCIDENT**

SECTION 3: PROJECT INFORMATION

(A) SITE / FACILITY INFORMATION:

SITE NAME: Faichild Republic

ADDRESS:

TOWNSHIP/ COUNTY Suffolk County, NY

☐ FEDERAL ☐ STATE

SITE CLIENT CONTACT: Susan Hall

PHONE NUMBER:

SITE SAFETY CONTACT:

☐ MUNICIPAL / REGIONAL ☒ PRIVATE

☐ HAZARDOUS (RCRA)	☐ UST / LUST	☐ REFINERY
☐ HAZARDOUS (CERCLA / STATE)	☐ BROWNFIELD	☐ WTP / WWTP
☐ CONSTRUCTION	☐ CHEMICAL PLANT	☐ OTHER:
☐ LANDFILL (NON-HAZARDOUS)	☐ CHEMICAL PLANT	
☐ ACTIVE	☐ INACTIVE	
☐ HAZARDOUS WASTE	☐ SOLID WASTE	☐ CONSTRUCTION
☐ HYDROGEOLOGY	☒ ENVIRONMENTAL	☐ AIR / ODOR
☐ WASTE WATER	☐ WATER	☐ OTHER:
☐ PRE-JOB VISIT	☐ AUDIT	☐ AIR ☐ SEDIMENT
☐ (SUB) CONTRACTOR OVERSIGHT	☐ OTHER:	☐ SURFACE WATER ☐ SURFACE SOIL
☐ CONSTRUCTION MGMT		☒ GROUND WATER ☐ LANDFILL
☐ INSPECTION		☐ WASTE WATER ☐ OTHER
☐ INVESTIGATION SURVEY		☐ WASTE STREAM

DATE(S) OF FIELD ACTIVITIES:

(E) **FIELD TASKS**

MALCOLM PIRNIE TASKS (List field tasks to be performed by Malcolm Pirnie staff)

M1. Groundwater sampling and water level measurements.

M2. Treatment system inspection and maintenance.

M3.

M4.

TASKS PERFORMED BY OTHERS (List field tasks to be performed by client, subcontractors, or contractors)

01.

02.

03.

04.

SECTION 4: PROJECT SAFETY ORGANIZATION, HEALTH AND SAFETY TRAINING, AND MEDICAL MONITORING

(A) PROJECT HEALTH AND SAFETY ROLES, RESPONSIBILITIES AND COORDINATION

PROJECT OFFICER	The Project Officer (PO) is ultimately responsible for project performance. The PO seeks and gets appropriate approvals for risk management decisions (e.g. from Regional/Practice Director(s), Legal Council, Corporate Health and Safety), and selects and effective and qualified project team. The PO supports the Project Manager or Deputy Project Manager with appropriate resources.
PROJECT MANAGER DEPUTY PROJECT MANAGER	The Project Manager (PM) has the responsibility for executing the project in accordance with the scope of work and good engineering practice. The PM will supervise the allocation of resources and staff to implement specific aspects of this HASP and may delegate authority to expedite and facilitate any application of the program. The PM implements and executes an effective program of site-specific personnel protection and accident prevention. The Project Manager reports to the Project Officer. Deputy Project Managers (DPM) are assigned all duties and responsibilities of the Site Safety Officer in his/her absence.
CORPORATE HEALTH & SAFETY	Corporate Health and Safety is responsible for Malcolm Pirnie's overall Health and Safety Program and provides project guidance on air monitoring methodology, data interpretation and assistance in determining appropriate project engineering controls, work practices, and personal protective equipment. Corporate Health and Safety also reviews and approve HASPs in accordance with Section 1.
SITE SAFETY OFFICER ALTERNATE SITE SAFETY OFFICER (S)	The Site Safety Officer (SSO) is responsible for interpreting and implementing the site health and safety provisions set out in this HASP, and will guide the efforts of field team personnel in their day-to-day compliance with this HASP. The SSO has the ability and authority to make necessary changes or additions to this HASP and provide technical assistance to field team personnel on problems relating to worksite safety. The SSO has the authority to correct safety-related deficiencies in materials or practice and to call a Project STOP in the most serious cases. Alternate Site Safety Officer (ASSO) is assigned all duties and responsibilities of the Site Safety Officer in his/her absence.
PUBLIC INFORMATION OFFICER:	The Public Information Officer (PIO) is responsible for all public, press and other news media request for information, and is the only person authorized to provide such information
SITE RECORDKEEPER:	The Site Recordkeeper is responsible for the documentation of all related heath and safety data documentation, including but not limited to metrological data, instrument calibration, accident and injury reports, and air monitoring data.
FIELD TEAM LEADER:	The Field Team Leader (FTL) is responsible for leading "on-site" activities of field team personnel, and to ensure field team personnel perform only those tasks that have been identified in this HASP.
FIELD TEAM PERSONNEL	Field personnel have the following health and safety responsibilities: • Implement the procedures set forth in the HASP; • Take all reasonable precautions to prevent injury to themselves and their fellow employees; and • Perform only those tasks that they believe they can do safely, and immediately report any accidents and/or unsafe conditions in accordance with Section 1.

(B) PROJECT TEAM - The following Malcolm Pirnie personnel are designated to carry out the stated project job functions on site. THE SITE SAFETY OFFICER, OR A DESIGNATED ALTERNATE WILL BE ON-SITE DURING **ALL** SITE ACTIVITIES. (NOTE: One person may carry out more than one job function.)

PROJECT MANAGER: Daniel St. Germain

SITE SAFETY OFFICER: _____

ALTERNATE SAFETY OFFICER(S): _____

_____

PUBLIC INFORMATION OFFICER: Client

SITE RECORDKEEPER: _____

FIELD TEAM LEADER: _____

FIELD TEAM PERSONNEL: _____

_____

_____

_____

The following subcontractors and governmental agencies have been informed by Malcolm Pirnie of emergency response procedures, and any potential fire, explosion, health, safety or other hazards of the site / facility by making this Site Specific Health and Safety Plan and site information obtained by others available during regular business hours. Subcontractors and governmental agencies shall be solely responsible for the health and safety of their employees and shall comply with all applicable laws and regulations as described in **Section 1** of this plan.

SUBCONTRACTOR(S): _____

_____

FEDERAL AND STATE AGENCY REPS: _____

_____

OTHER AGENCY REPS: _____

(C) HEALTH AND SAFETY TRAINING, MEDICAL MONITORING, AND FIT TESTING PROGRAM

The following project staff is included in the Malcolm Pirnie Health and Safety Training and Medical Monitoring programs. The details of these programs can be found in the Health and Safety Policies and Written Programs. (NOTE: At least one CPR/First Aid Trained person must be on-site during HAZWOPER and confined space entry activities.)

	HAZWOPER TRAINING				OTHER TRAINING					
NAME	INITIAL (DATE)	8HR (DATE)	MGR (DATE)	DOT (DATE)	CSE (DATE)	CPR / First Aid / BBP (DATE)	MEDICAL (DATE)	FIT TEST MAKE / SIZE / TYPE		(DATE)

SECTION 5: HAZARD ANALYSIS

(A) **ACTUAL OR POTENTIAL PHYSICAL HAZARDS** – (Check all that apply to Malcolm Pirnie activities)

- ☐ ANIMALS / PLANTS
- ☐ ASBESTOS / LEAD
- ☒ CHEMICAL EXPOSURE (See Section 5B/5C)
- ☐ CONFINED SPACE (See Section 12)
- ☐ DEMOLITION
- ☐ DRILLING
- ☐ DRUM HANDLING
- ☐ DUST, HARMFUL
- ☐ DUST, NUISANCE
- ☐ ELECTRICAL
- ☐ EXCAVATIONS (See Section 13)
- ☐ EXTREME COLD (See Section 10)
- ☐ FALL, >6' VERTICAL
- ☐ FALLING OBJECTS
- ☐ HEAT STRESS
- ☐ HEAVY EQUIPMT
- ☐ HEAVY LIFTING
- ☐ HOT WORK
- ☐ HUNTING SEASON
- ☐ IMMERSION
- ☐ IONIZING RADIATION
- ☐ LIGHT RADIATION (i.e., Welding, High Intensity)
- ☐ LIMITED CONTACT
- ☐ MOVING PARTS (LO / TO)
- ☐ NOISE (> 85 dB)
- ☐ NON-IONIZING RADIATION
- ☐ OVERHEAD OBJECTS
- ☐ POWERED PLATFORMS
- ☐ POOR VISIBILITY
- ☐ ROLLING OBJECTS
- ☐ SCAFFOLDING
- ☐ SHARP OBJECTS
- ☐ STEEP / UNEVEN
- ☐ TERRAIN
- ☒ TRAFFIC (STRUCK BY)
- ☐ OTHER: _____

(B) **PRESENCE OF HAZARDOUS MATERIALS STORED OR USED ON SITE** (CHECK ALL THAT APPLY)

☐ YES By Client / Owner ☐ YES By Malcolm Pirnie (See Section 11) ☒ NO

TYPE

- ☐ EXPLOSIVES
- ☐ COMPRESSED GASES
- ☐ FLAMMABLE / COMBUSTIBLE LIQUIDS
- ☐ FLAMMABLE / REACTIVE SOLIDS
- ☐ OXIDIZERS
- ☐ TOXIC / INFECTIOUS
- ☐ RADIOACTIVE
- ☐ CORROSIVE
- ☐ MISCELLANEOUS
- ☐ HAZARDOUS WASTE (Stored)

(C) **CHEMICAL HAZARDS OF CONTAMINANTS INFORMATION**

(1) IDENTIFIED CONTAMINANTS - Known or suspected hazardous/toxic materials (attach historical information, physical description, map of contamination and tabulated data, if available)

SUBSTANCES INVOLVED	CHARACTERISTICS	MEDIA	ESTIMATED CONCENTRATIONS	LOWEST PEL, or TLV
VOCs		GW		☒ PPM ☐ mg/m^3
				☐ PPM ☐ mg/m^3
				☐ PPM ☐ mg/m^3

Media types: GW (ground water), SW (surface water), WW (wastewater), AIR (air), SL (soil), SD (sediment), WL (waste, liquid), WS (waste, solid), WD (waste, sludge), WG (waste, gas), OT (other).

Characteristics: CA (corrosive, acid), CC (corrosive, caustic), IG (ignitable), RA (radioactive), VO (volatile), TO (toxic), RE (reactive), BIO (infectious), UN (unknown), OT (other, describe

(2) DESCRIBE POTENTIAL FOR CONTACT WITH EACH MEDIA TYPE FOR EACH OF THE MPI TASKS LISTED IN SEC 3 (E):

MPI TASK	ROUTE OF EXPOSURE (INHAL/INGEST/CONTACT/ABSORB)	POTENTIAL FOR CONTACT (HIGH / MEDIUM / LOW)	METHOD OF CONTROL
GW Smplg	Contact	low	Mod level "D" PPE

The Site Safety Officer will brief the MPI field team on symptoms and signs of overexposure to chemical hazards

SECTION 6: SITE CONTROL MEASURES

(A) WORK ZONES - EXCAVATIONS, DRILLING OPERATIONS, AND HEAVY EQUIPMENT

_____ has been designated to coordinate access control and security for Malcolm Pirnie operations on site. It is a Malcolm Pirnie policy that Malcolm Pirnie personnel will not enter trench or excavated areas without approval of Corporate Health and Safety. A safe perimeter has been established at the boundary of any excavation and/or a safe distance from excavators, drill rigs and other heavy equipment.

These boundaries are identified by: _____

_____

_____

No unauthorized person should be within this area.

(B) WORK ZONES - CONTAMINATION

The prevailing wind conditions are _____ A wind direction indicator is used to determine daily wind direction. The Command Post is located upwind from the Exclusion Zone or at a sufficient distance to prevent exposure should a release occur.

Control boundaries have been established and Exclusion Zone(s) (the contaminated area) have been identified. (Attach site map)

These boundaries are identified by: NA

_____

_____

No unauthorized person should be within this area.

SECTION 7: SAFETY PROCEDURES / EQUIPMENT REQUIRED

Identify all procedures and equipment needed to eliminate or minimize exposure to hazards identified in Section 5.

- ☐ AIR MONITORING EQUIPMENT (See Section 9)
- ☐ BARRIER TAPE
- ☐ COMMUNICATIONS - ONSITE
- ☒ COMMUNICATIONS - OFFSITE (i.e., cell/digital phones if no other means)
- ☐ CONFINED SPACE PROGRAM & EQUIPMENT (See Section 12)
- ☐ EYE WASH
- ☐ EMERGENCY SHOWERS
- ☐ EMERGENCY AIR HORN
- ☐ FALL PROTECTION PROGRAM & EQUIPMENT
- ☐ FIRE EXTINGUISHER(S) - ABC
- ☒ FIRST AID KIT / BBP KIT
- ☐ FLOTATION DEVICE (USCG)
- ☐ GFCI EXTENSION CORDS
- ☐ HARNESS(S) / LIFELINE(S)
- ☐ INSECT / TICK REPELLANT
- ☐ HUNTING SEASON
- ☐ LADDER(S)
- ☐ LIGHTING - HAND HELD
- ☐ LIGHTING - FIXED / EMERGENCY
- ☐ LOCKOUT/TAGOUT PROGRAM & EQUIPMENT
- ☐ MSDSs – ATTACHED (See Section 11)
- ☐ MSDSs - FACILITY / OTHERS
- ☐ PPE - PHYSICAL HAZARDS (See Section 15)
- ☒ PPE - CHEMICAL HAZARDS (See Section 15)
- ☐ RESPIRATORY PROTECTION PROGRAM & EQUIPMENT (APR) (See Section 15)
- ☐ RESPIRATORY PROTECTION PROGRAM & EQUIPMENT (SAR) (See Section 15)
- ☒ TRAFFIC CONES
- ☐ VENTILATION EQUIPMENT
- ☐ OTHER:

_____

_____

SECTION 8: COMMUNICATIONS AND SAFE WORK PRACTICES

(A) COMMUNICATIONS - ONSITE

Whenever possible, communications between site personnel should be face-to-face. When verbal communications is not possible, radio communications shall be established.

In case of radio communications failure, or when respiratory protection is in use, the following hand signals will be used:

OK; I AM ALL RIGHT; I UNDERSTAND	THUMBS UP
NO; NEGATIVE	THUMBS DOWN
NEED ASSISTANCE	BOTH HANDS ON TOP OF HEAD
DANGER - NEED TO LEAVE AREA, NO QUESTIONS	GRIP PARTNERS WRIST WITH BOTH HANDS
HAVING DIFFICULTY BREATHING	HANDS TO THROAT

(B) COMMUNICATIONS - OFF SITE

If applicable, telephone communication to the Command Post should be established as soon as practical.

Telephone numbers that can be used to reach the command post are: _____ and _____

(C) SAFE WORK PRACTICES

1. A "BUDDY SYSTEM" IN WHICH ANOTHER WORKER IS CLOSE ENOUGH TO RENDER IMMEDIATE AID WILL BE IN EFFECT. CLIENTS AND/OR CONTRACTORS MAY SERVE AS A "DESIGNATED BUDDY."
2. WHERE THE EYES OR BODY MAY BE EXPOSED TO CORROSIVE MATERIALS, SUITABLE FACILITIES FOR QUICK DRENCHING OR FLUSHING SHALL BE AVAILABLE FOR IMMEDIATE USE (SEE SECTION 7).
3. DO NOT KNEEL ON THE GROUND WHEN CHEMICAL PROTECTIVE CLOTHING IS BEING USE.
4. IF DRILLING EQUIPMENT IS INVOLVED, HAVE A CURRENT UTILITY SURVEY, AND KNOW WHERE THE 'KILL SWITCH' IS.
5. CONTACT WITH SAMPLES, EXCAVATED MATERIALS, OR OTHER CONTAMINATED MATERIALS MUST BE MINIMIZED.
6. ALL ELECTRICAL EQUIPMENT USED IN OUTSIDE LOCATIONS, WET AREAS OR NEAR WATER MUST BE PLUGGED INTO GROUND FAULT CIRCUIT INTERRUPTER (GFCI) PROTECTED OUTLETS (SEE SECTION 7).
7. IN THE EVENT OF TREACHEROUS WEATHER-RELATED WORKING CONDITIONS (I.E., THUNDERSTORM, LIMITED VISIBILITY, EXTREME COLD OR HEAT) FIELD TASKS WILL BE SUSPENDED UNTIL CONDITIONS IMPROVE OR APPROPRIATE PROTECTION FROM THE ELEMENTS IS PROVIDED.
8. SMOKING, EATING, CHEWING GUM OR TOBACCO, OR DRINKING ARE FORBIDDEN EXCEPT IN CLEAN OR DESIGNATED AREAS.
9. USE OF CONTACT LENSES NEAR CHEMICALS OR DURING USE OF RESPIRATORY PROTECTION IS PROHIBITED AT ALL TIMES.
10. GOOD HOUSEKEEPING PRACTICES ARE TO BE MAINTAINED.
11. SITE / FACILITY SPECIFIC SAFE WORK PRACTICES:

_____

_____

_____

SECTION 9: ENVIRONMENTAL MONITORING ☐ THIS SECTION NOT APPLICABLE TO SITE ACTIVITIES

(A) The following environmental monitoring instruments shall be used on site at the specified intervals and recorded in the site logbook. (NOTE: If monitoring period is "OTHER", monitoring schedule will be attached to this plan.)

EQUIPMENT	MONITORING PERIOD				ACTION LEVEL
☐ Combustible Gas Indicator	☐ Continuous	☐ Hourly	☐ x Day	☐ Other	
☐ O_2 Meter	☐ Continuous	☐ Hourly	☐ x Day	☐ Other	
☐ Toxics: ☐ CO ☐ H_2S	☐ Continuous	☐ Hourly	☐ x Day	☐ Other	
☐ Other: _____	☐ Continuous	☐ Hourly	☐ x Day	☐ Other	
☒ PID (Lamp 10.6 eV)	☐ Continuous	☐ Hourly	☐ x Day	☒ Other	5
☐ FID					
☐ Colorimetric tubes:					
_____	☐ Continuous	☐ Hourly	☐ x Day	☐ Other	
_____	☐ Continuous	☐ Hourly	☐ x Day	☐ Other	
☐ Radiation: ☐ α ☐ β ☐ gamma	☐ Continuous	☐ Hourly	☐ x Day	☐ Other	
☐ Respirable Dust Meter	☐ Continuous	☐ Hourly	☐ x Day	☐ Other	
☐ Noise Meter	☐ Continuous	☐ Hourly	☐ x Day	☐ Other	
☐ Other:	☐ Continuous	☐ Hourly	☐ x Day	☐ Other	
_____	☐ Continuous	☐ Hourly	☐ x Day	☐ Other	
_____	☐ Continuous	☐ Hourly	☐ x Day	☐ Other	

(B) Monitoring equipment is to calibrated according to manufacturers' instructions. Record calibration data and air concentrations in the Health and Safety on-site log book.

(C) Recommended Action Levels for Upgrade or Downgrade of Respiratory Protection, or Site Shutdown and Evacuation. These are average values. Consideration should be given to the potential for release of highly toxic compounds from the waste or from reaction by-products. Levels are for persistent (> 10 min) breathing zone measurements in non-confined spaces. **For unexpected conditions, stop all work and contact Corporate Health and Safety.**

<u>Oxygen Levels</u>	
Less than 19.5%	Level B necessary for work to start / continue. Consider toxicity potential.
19.5% to 23.5%	Work may start / continue. Investigate changes. Continuous monitoring.
Greater than 23.5%	PROHIBITED WORK CONDITION
<u>Flammability / Explosive Hazards</u>	
Less than 10% of LEL	Work may start / continue. Consider toxicity potential.
10% to 25% of LEL	Work may start / continue. Continuous monitoring.
Greater than 25% of LEL	PROHIBITED WORK CONDITION.
<u>Uncharacterized Airborne Organic Vapors or Gases</u>	
Background*	Work may start / continue. Continue to monitor conditions.
Up to 5 meter units (m.u. or "ppm") above background	Level C necessary for work to start / continue. Continuous monitoring. Use Colorimetric tubes to characterize vapors.
Up to 50 m.u. above background	Level B necessary for work to start / continue. Continuous monitoring.
Greater than 50 m.u.	PROHIBITED WORK CONDITION.
*** Off-site clean air measurement**	
<u>Characterized Airborne Organic Vapors or Gases</u>**	
Up to 50% of TLV, or PEL or REL	Work may start / continue. Continue to monitor conditions.
Up to 25 times the TLV, or PEL or REL	Level C necessary for work to start / continue. Continuous monitoring.
Up to 500 times the TLV, or PEL or REL	Level B necessary for work to start / continue. Continuous monitoring.
Greater than 500 times the TLV, or PEL or REL	PROHIBITED WORK CONDITION.
** **Use mixture calculations (% allowed = $3C_NEL_N$) if more than one contaminant is present.**	
<u>Radiation</u>	
Less than 0.5 mR/Hour (500 μR)	Work may start / continue. Continue to monitor conditions.
Up to 1 mR/Hour above background	Work may start / continue with Radiation Safety Officer present on site.
Greater than 1 mR/Hour above background	PROHIBITED WORK CONDITION.

SECTION 10: PERSONAL MONITORING ☒ THIS SECTION NOT APPLICABLE TO SITE ACTIVITIES

(A) PERSONAL EXPOSURE SAMPLING (Consider if high levels of noise or high concentrations of lead, mercury or arsenic are present)

The following personal monitoring will be in effect on site: _____

A copy of personal monitoring results is to be sent to Corporate Health and Safety for inclusion in the Employee's Confidential Exposure Record File.

(B) HEAT / COLD STRESS MONITORING

The expected air temperature will be 80 ºF. If it is determined that heat stress or cold stress monitoring is required (mandatory for heavy exertion in PPE at temperatures over 70ºF, or at temperatures under 40ºF or wind chill equivalent), the following procedures shall be followed (describe procedures in effect, for heat stress i.e., monitoring body temperature, body weight, pulse rate; for cold stress i.e., appropriate clothing, shelter breaks):

SECTION 11: HAZARD COMMUNICATION PROGRAM ☒ THIS SECTION NOT APPLICABLE TO SITE ACTIVITIES

If chemicals are introduced to the site by Malcolm Pirnie (e.g., decontamination liquids, preservatives, etc.), a copy of the Malcolm Pirnie Hazard Communication Program and Material Safety Data Sheets (MSDSs) of chemicals introduced by Malcolm Pirnie to the site is attached to this plan. The Site Safety Officer will review this information with all field personnel prior to the start of the project, and will inform other employers (e.g., Owner, Contractor and Subcontractors) the availability and location of this information. The Comprehensive List of Chemicals introduced by Malcolm Pirnie to this site is:

All chemicals being introduced to the site, hazardous/potentially hazardous samples prepared at the site, and/or any hazardous materials previously sent to the site, **that will be stored at the site or will be transported from the site by common carrier**, will be packaged, labeled and identified as hazardous materials in accordance with U.S. Department of Transportation (DOT) and/or International Air Transport Association (IATA) regulations by a trained HazMat employee.

(NOTE: At multi-employer sites, the Site Safety Officer will obtain information, if applicable, on hazardous chemicals other employers may produce or introduce to the job site to which Malcolm Pirnie employees may be exposed, including the location of their written hazard communication program(s), labeling program(s), and Material Safety Data Sheet(s).

SECTION 12: CONFINED SPACE ENTRY ☒ THIS SECTION NOT APPLICABLE TO SITE ACTIVITIES

If a permit-required confined space entry will be made on site, a copy of the Malcolm Pirnie Confined Space Entry Program, and a completed Malcolm Pirnie Confined Space Pre-Entry Inspection Check List will be attached to this plan. A Confined Space Entry Permit must be completed and posted outside the confined space prior to entry, and the entry will follow the Malcolm Pirnie Confined Space Entry written program. Permits are to be saved and logged with project documentation.

SECTION 13: EXCAVATION SAFETY ☒ THIS SECTION NOT APPLICABLE TO SITE ACTIVITIES

Excavations being created in order to accomplish Malcolm Pirnie tasks or in progress during Malcolm Pirnie inspection of other activities or tasks, shall be shored or slopped or otherwise protected to prevent accidental collapse prior to entry, in accordance with Subpart F of 29 CFR 1926. It is Malcolm Pirnie policy that Malcolm Pirnie personnel will not enter trench or excavated areas without approval of Corporate Health and Safety. If an entry into an excavation by Malcolm Pirnie personnel is necessary, a Excavation Plan identifying the Competent Person and the protective measure to be used (i.e., sloping, shoring, trench box) will be attached to this plan.

SECTION 14: DECONTAMINATION PROCEDURES ☒ THIS SECTION NOT APPLICABLE TO SITE ACTIVITIES

Personnel and equipment leaving the Exclusion Zone shall be thoroughly decontaminated. The Site Safety Officer is responsible for monitoring adherence with this decontamination plan.

A _____ decontamination protocol shall be used with the following decontamination stations:

(1) _____

(2) _____

(3) _____

(4) _____

(5) _____

(6) _____

(7) _____

(8) _____

(Other) _____

The following decontamination equipment is required: _____

☐ Decon Pad (Plastic Sheet) ☐ Dry Brushes ☐ Buckets Other _____

☐ Trash Cans/Bags ☐ Wet Brushes ☐ Hose / Spray _____

_____ Will be used as the decontamination solution

SECTION 15: PERSONAL PROTECTIVE EQUIPMENT

TASK *	RESPIRATORS & CARTRIDGE[1]	USE ** (See Section 16)	CLOTHING	GLOVES	BOOTS	OTHER
GW Smplg				Latex		

* Same as Section 3E

**UP = Upgrade
CONT = Continuous

NOTE: PPE use will be in accordance with Malcolm Pirnie's Health and Safety Policy and Written Programs

CODES:

RESPIRATORS[1]
HF = Half Face APR
FF = Full Face APR
ESCBA = Escape Bottle
SAR = Airline
SCBA = SCBA

CARTRIDGES[1]
P = Particulate
OV = Organic Vapors
AG = Acid Gas
Mult = Multi-Gas/Vapor
Other

CLOTHING
N/S = No Special
C = Coveralls
T = Tyvek
Sx = Saranex
PT = PE Tyvek

GLOVES[2]
Co = Cotton
Le = Leather
L = Latex
N = Nitrile
B = Butyl
Neo = Neoprene
V = Viton
PVC = Polyvinyl Chloride
PVA = Polyvinyl Alcohol
Other:

BOOTS
SL = Leather Safety
H = Hip (Fireman)
O = Latex overboots

OTHER
HH = Hard Hat
G = Safety Glasses
GP = Glare Protection
GI = Goggles - Impact
GS = Goggles - Splash
FS = Face Shield
HP = Hearing Protection

1 - List all that apply, i.e., FF w/ OV/AG/P

2 - Use same codes for clothing and boots of same material

Respiratory protection will be upgraded under the following conditions: NA

The following cartridge change out schedule is to be followed onsite (attach any calculations to plan):

NA

SECTION 16: EMERGENCY ACTION PLAN

The following standard emergency response procedures will be used by onsite personnel. The Site Safety Officer shall be notified of any onsite emergencies and be responsible for ensuring that the appropriate procedure are followed.

(A) EVACUATION

All work activities are suspended and the site is to be EVACUATED IMMEDIATELY, when there is a threat to life or health as determined by individual good judgement, i.e. fire, hazardous chemical spill, dangerous gas leak, severe weather (i.e., tornado); or when notified by other site / facility staff and local fire or police officials.

If an evacuation is called for, the emergency alarm system for weather-related, medical, fire and other evacuation emergencies is:

Evacuation from the Exclusion Zone should whenever possible occur through the decontamination line. In those situations where egress in this manner cannot occur, the following emergency escape routes have been designated (document on map if possible):

_____

_____

Once evacuated off site, all staff should gather at _____ which is a minimum of 250 feet away from the incident

(B) FIRE OR EXPLOSION

Upon discovery of a fire or an explosion, the above-designated emergency signal shall be sounded and all personnel shall assemble at the decontamination line. The fire department is to be notified and all personnel moved to a safe distance (minimum 250') from the involved area.

If a person's clothing should catch fire, burning clothing may be extinguished by having the individual drop to the floor and roll. If necessary, physically restrain the person and roll them around on the floor to smother the flames. Use a fire blanket or extinguisher if one is readily available and you have been trained in its use. Call emergency medical services if not already done so.

If a person's clothing should become saturated with a chemical, douse the individual with water from the nearest safety shower if available. Consult the chemical Material Safety Data Sheets (MSDSs) for further information. Call emergency medical services if indicated by the MSDSs.

NEVER RE-ENTER THE SITE / FACILITY until the emergency has been declared over and permission to re-enter has been given by site / facility health and safety staff or local fire or police officials. If any staff is unaccounted for, notify an individual in charge.

(C) MEDICAL EMERGENCY

If you discover a medical emergency and are by yourself, CALL OUT FOR HELP. When someone arrives, tell them to call for help. If no one comes or you know you are alone, provide whatever care you can for 1 minute, then make the call yourself. (See Section 2)

Upon notification of an injury in the Exclusion Zone, the designated emergency signal shall be sounded. All site personnel shall assemble at the decontamination line. The SSO or alternate should evaluate the nature of the injury, and the affected person should be decontaminated to the extent possible prior to movement to the Support Zone. The onsite CPR/FA personnel shall initiate the appropriate first aid, and contact should be made for an ambulance (and other emergency services as needed) and with the designated medical facility (if required). No persons shall reenter the Exclusion Zone until the cause of the injury or symptoms is determined.

The hospital is 5-10 minutes from the site. Ambulance response time is _____ minutes. _____ of _____ was contacted on _____ and briefed on the situation, the potential hazards, and the substances involved. When IDLH conditions exist, arrangements should be made for onsite standby of emergency services.
A map for directions to the nearest hospital is attached to this plan. If not, the directions are: _____

_____

(D) SAFETY EQUIPMENT FAILURE

If any other equipment (i.e., air monitoring) on site fails to operate properly, the FTL and/or SSO shall be notified to determine the effect of this failure on continuing operations on site. If the failure affects the safety of personnel or prevents completion of the Work Plan tasks, all personnel shall leave the work area until the situation is evaluated and appropriate actions taken.

(E) FOLLOW UP

In all situations, when an on site / facility emergency results in evacuation of the work area, or a “large spill” has occurred, staff shall not resume work until:

- The conditions resulting in the emergency have been corrected;
- The hazards reassessed by the SSO and Corporate Health and Safety;
- The HASP has been reviewed by the SSO and Corporate Health and Safety; and
- Site personnel have been briefed on any changes in the HASP by the SSO.

SECTION 17: SPILL CONTAINMENT / CONTROL ☐ THIS SECTION NOT APPLICABLE TO SITE ACTIVITIES

For most chemicals introduced to the worksite, or under control of Malcolm Pirnie employees, spills of chemicals would be considered incidental and would be controlled in the immediate area of the spill. Such spills shall be handled utilizing precautions appropriate for the chemical characteristics specified in the MSDS for the chemical including spill control methods and selection and use of minimum personal protective equipment.

For chemicals introduced to the worksite, or under control of Malcolm Pirnie employees, that would cause a ″large spill″ (greater than 55 gallons), a copy of the appropriate Emergency Response Guidebook (ERG) guide shall be attached to this plan, and a spill response contractor shall be identified in Section 2.

SECTION 18: EMPLOYEE ACKNOWLEDGEMENTS

PLAN REVIEWED BY:		DATE
Project Manager:	Daniel St. Germain	
Project Leader:	Arnas Nemickas	01/12/2005
Local H&S Coordinator:		
Corporate H & S		

I acknowledge that I have read the information on this HASP, attached Material Safety Data Sheets (MSDSs), DOT Emergency Response Guides, and Health and Safety Programs.
I understand the site / facility hazards as described and agree to comply with the contents of the plan.

EMPLOYEE (Print Name)

VISITOR (Print Name)

ATTACHED DOCUMENTS

- ☐ MSDS(s)
- ☐ Hazard Communication Written Program
- ☐ Confined Space Entry Written Program
- ☐ DOT ERG Guides
- ☐ Site Map
- ☐ Personal Protective Equipment Written Program
- ☐ Excavation Safety Plan
- ☐ Respiratory Protection Program
- ☐ Hospital Directions
- ☐ Emergency Action Plan
- ☐ Evacuation Routes
- ☐ Cartridge Change Out Calculations
- ☐ Other

APPENDIX H

OPERATING DATA COLLECTION SHEETS

GROUNDWATER TREATMENT AND RECHARGE SYSTEM
OPERATING DATA
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC.
EAST FARMINGDALE, NEW YORK

	UNITS	SET POINT	4/1/2005	4/3/2005	4/5/2005	4/6/2005	4/11/2005	4/12/2005	4/13/2005	4/14/2005	4/15/2005	4/18/2005	4/19/2005
TIME OF DAY			2:30 PM	12:30 PM	3:30 PM	3:36 PM	5:02 PM	4:23 PM	4:43 PM	3:09 PM	4:15 PM	5:15 PM	12:03PM
TOTALIZER WATER METER READING	GALLONS		4,017,900	5,421,170	5,960,250	6,451,290	8,937,425	9,421,780	9,924,993	10,398,350	10,876,260	12,313,446	12,688,300
TOTAL KWH			--	--	--	--			33,995	35,354	36,909	41,338	42,483
BUILDING INTERIOR TEMPERATURE	^{o}F					67	66	63	66	66	64	70	68
BUILDING INTERIOR RELATIVE HUMIDITY	%		--	--	--				--	--	--	--	--
OUTSIDE TEMPERATURE	^{o}F		50	51	64	62	46	54	53	54	53	62	72
OUTSIDE RELATIVE HUMIDITY	%								--	--	--	--	--
GROUNDWATER EXTRACTION WELL (RW-1)													
WATER LEVEL/DRAWLDOWN (READING TAKEN FROM HMI SCREEN)	FT		61	61	62	62	61	61	62	62	62	62	62
Well Total Runtime	HOURS			309	335	359	479	503	527	549	574	647	667
WELL PUMP FLOW RATE (READING TAKEN FROM FLOWMETER)	GPM	250	237	239	240	239	241	236	236	225.7	224.68	224.56	223
WELL PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	(PSI)	30 - 35	33	33	33	33	33	33	33	35	35	35	35
WELL FLOW CONTROL VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		55%	55%	55%	55%	55%	55%	55%	45%	55%	55%	55%
GROUNDWATER EXTRACTION WELL (RW-2)													
WATER LEVEL/DRAWLDOWN (READING TAKEN FROM HMI SCREEN)	FT		71	71	71	71	72	72	71	71	71	71	71
Well Total Runtime	HOURS			167	193	217	481	361	385	407	432	649	524
WELL PUMP FLOW RATE (READING TAKEN FROM FLOWMETER)	GPM	150	134	134	133	133	134	132	132	137.3	137.38	137.35	137
WELL PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	(PSI)	25 - 30	27	27.5	27.5	27.5	27.5	27.5	27.5	27	27	27	27
WELL FLOW CONTROL VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		55%	55%	55%	40%	40%	40%	40%	40%	40%	40%	40%
AIR STRIPPER NO. 1													
BLOWER VACUUM PRESSURE (READING TAKEN FROM GAUGE)	" w.c.		26	26	26	26	26	26	26	26	26	26	26
DISCHARGE PUMP MOTOR SPEED (READING TAKEN FROM HMI SCREEN)	Hz		54	54	54	54	54	54	54	53	53	53	52
PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	PSI		14	14	14	14	14	14	14	13.5	13.5	13.5	13.5
DISCHARGE/EFFLUENT VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		100%	100%	100%	100%	100%	100%	100%	75%	75%	75%	75%
AIR STRIPPER NO. 2													
BLOWER PRESSURE (READING TAKEN FROM GAUGE)	" w.c.		21	21	21	21	21	21	21	21	21	21	20
DISCHARGE PUMP MOTOR SPEED (READING TAKEN FROM HMI SCREEN)	Hz		40	39	40	40	43	40	43	38	40	41	42
PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	PSI		6.5	8	8	8	8	8	8	8	8	7	7
DISCHARGE/EFFLUENT FLOW (READING TAKEN FROM FLOW METER INDICATIOR)	GPM		371	377	351	339	343	336	350	320.07	343.5	342.35	330
DISCHARGE/EFFLUENT VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%

: Inaccurate Readings/Malfunctioning Totalizer

GROUNDWATER TREATMENT AND RECHARGE SYSTEM
OPERATING DATA
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC.
EAST FARMINGDALE, NEW YORK

	UNITS	SET POINT	4/20/2005	4/21/2005	4/22/2005	4/25/2005	4/26/2005	5/2/2005	5/3/2005	5/4/2005	5/5/2005	5/6/2005	5/9/2005
TIME OF DAY			4:32 PM	4:27 PM	3:35 PM	4:55 PM	2:23 PM	3:05 PM	3:47 PM	2:20 PM	4:27 PM	4:19 PM	3:15 PM
TOTALIZER WATER METER READING	GALLONS		13,243,584	13,762,201	14,259,502	15,838,821	16,297,883	19,011,390	19,543,310	20,033,228	20,567,655	21,075,920	22,621,191
TOTAL KWH			44,207	45,652	47,038	51,372	52,695	60,162	61,622	62,968	64,485	-	-
BUILDING INTERIOR TEMPERATURE	^{o}F		74	68	64	62	61	66	66	66	68	63	69
BUILDING INTERIOR RELATIVE HUMIDITY	%		--					--	--		--	--	--
OUTSIDE TEMPERATURE	^{o}F		77	70	51	53	62	55	53	58	58	53	61
OUTSIDE RELATIVE HUMIDITY	%		--					--	--		--	--	--
GROUNDWATER EXTRACTION WELL (RW-1)													
WATER LEVEL/DRAWLDOWN (READING TAKEN FROM HMI SCREEN)	FT		62	62	62	62	61	62	62	63	63	63	63
Well Total Runtime	HOURS		694	718	741	812	836	962	986	1009	1033	1056	1127
WELL PUMP FLOW RATE (READING TAKEN FROM FLOWMETER)	GPM	250	223	223	223	224	223	225	225	225	226	225	225
WELL PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	(PSI)	30 - 35	35	35	35	35.5	35	35	35	35	35	35	35
WELL FLOW CONTROL VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		55%	55%	55%	55%	55%	55%	55%	55%	55%	40%	40%
GROUNDWATER EXTRACTION WELL (RW-2)													
WATER LEVEL/DRAWLDOWN (READING TAKEN FROM HMI SCREEN)	FT		71	71	71	71	70	71	72	72	72	72	72
Well Total Runtime	HOURS		552	576	599	671	694	820	844	867	890	914	985
WELL PUMP FLOW RATE (READING TAKEN FROM FLOWMETER)	GPM	150	137	136	137	137	136	137	137	137	138	136	137
WELL PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	(PSI)	25 - 30	27	27	27	27	27	27	27	27	27	27	27
WELL FLOW CONTROL VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
AIR STRIPPER NO. 1													
BLOWER VACUUM PRESSURE (READING TAKEN FROM GAUGE)	" w.c.		26	26	26	26	26	26	26	26	26	26	26
DISCHARGE PUMP MOTOR SPEED (READING TAKEN FROM HMI SCREEN)	Hz		52	52	52	52	52	49	49	49	49	49	49
PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	PSI		13.5	13.5	13.5	13.5	13	14	14	14	14	14	14
DISCHARGE/EFFLUENT VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		75%	75%	75%	75%	75%	75%	75%	75%	100%	100%	100%
AIR STRIPPER NO. 2													
BLOWER PRESSURE (READING TAKEN FROM GAUGE)	" w.c.		20	20	20	20.5	20.5	20	20	20	20	20	20
DISCHARGE PUMP MOTOR SPEED (READING TAKEN FROM HMI SCREEN)	Hz		38	38	38	39	38	42	39	40	42	41	41
PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	PSI		7	7	7	7.5	7.5	7	7	7	7	6.5	6.5
DISCHARGE/EFFLUENT FLOW (READING TAKEN FROM FLOW METER INDICATIOR)	GPM		332	368	350	346	347	370	375	366	352	372	362
DISCHARGE/EFFLUENT VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		65%	65%	65%	65%	65%	65%	65%	65%	65%	65%	65%

: Inaccurate Readings/Malfunctioning Totalizer

GROUNDWATER TREATMENT AND RECHARGE SYSTEM
OPERATING DATA
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC.
EAST FARMINGDALE, NEW YORK

	UNITS	SET POINT	5/10/2005	5/11/2005	5/12/2005	5/13/2005	5/16/2005	5/17/2005	5/18/2005	5/20/2005	5/23/2005	5/24/2005	5/25/2005
TIME OF DAY			3:55 PM	4:48 PM	4:04 PM	3:42 PM	3:50 PM	6:17 PM	2:42 PM	4:03 PM	4:05 PM	4:09 PM	3:51 PM
TOTALIZER WATER METER READING	GALLONS		23,153,136	23,594,187	24,119,450	24,673,261	26,335,910	26,886,980	27,384,261	28,472,453	30,221,640	30,804,965	31,379,637
TOTAL KWH			-	-	74,171	75,660	79,977	81,436	82,725	85,548	90,006	91,485	92,949
BUILDING INTERIOR TEMPERATURE	^{o}F		70	67	70	69	71	70	70	64	70	65	62
BUILDING INTERIOR RELATIVE HUMIDITY	%		--	--	--			--			--	--	--
OUTSIDE TEMPERATURE	^{o}F		60	58	62	60	62	62	60	52	58	51	51
OUTSIDE RELATIVE HUMIDITY	%		--	--	--			--			--	--	--
GROUNDWATER EXTRACTION WELL (RW-1)													
WATER LEVEL/DRAWLDOWN (READING TAKEN FROM HMI SCREEN)	FT		62	63	61	62	61	62	61	61	61	61	61
Well Total Runtime	HOURS		1152	1172	1193	1219	1291	1315	1336	1380	1452	1476	1500
WELL PUMP FLOW RATE (READING TAKEN FROM FLOWMETER)	GPM	250	224	226	245	246	246	254	252	252	153	251	252
WELL PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	(PSI)	30 - 35	35	35	32	32	32	31	31	31	31	31	31
WELL FLOW CONTROL VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		40%	40%	50%	50%	50%	50%	50%	50%	50%	50%	50%
GROUNDWATER EXTRACTION WELL (RW-2)													
WATER LEVEL/DRAWLDOWN (READING TAKEN FROM HMI SCREEN)	FT		71	72	71	71	71	70	70	71	70	70	70
Well Total Runtime	HOURS		1010	1030	1053	1077	1149	1173	1193	1238	1310	1334	1358
WELL PUMP FLOW RATE (READING TAKEN FROM FLOWMETER)	GPM	150	137	138	139	139	139	154	153	153	251	153	154
WELL PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	(PSI)	25 - 30	27	27	27	27	27	24	24	25	25	24	24
WELL FLOW CONTROL VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		40%	40%	40%	40%	45%	50%	50%	50%	50%	50%	50%
AIR STRIPPER NO. 1													
BLOWER VACUUM PRESSURE (READING TAKEN FROM GAUGE)	" w.c.		26	26	26	26	26	26	27	27	26	27	27
DISCHARGE PUMP MOTOR SPEED (READING TAKEN FROM HMI SCREEN)	Hz		49	52	52	52	52	57	54	54	54	54	54
PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	PSI		14	14	15	15	15	16	16	15	15	16	16
DISCHARGE/EFFLUENT VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
AIR STRIPPER NO. 2													
BLOWER PRESSURE (READING TAKEN FROM GAUGE)	" w.c.		20	20	20	20	20	20	20	21	21	21	21
DISCHARGE PUMP MOTOR SPEED (READING TAKEN FROM HMI SCREEN)	Hz		39	42	44	42	45	42	45	47	44	46	46
PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	PSI		6.5	7	8	8	8	11	10	11	11	9	10
DISCHARGE/EFFLUENT FLOW (READING TAKEN FROM FLOW METER INDICATIOR)	GPM		362	350	383	382	382	406	406	399	406	400	407
DISCHARGE/EFFLUENT VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		65%	65%	65%	65%	65%	65%	50%	40%	65%	40%	60%

= Inaccurate Readings/Malfunctioning Totalizer

GROUNDWATER TREATMENT AND RECHARGE SYSTEM
OPERATING DATA
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC.
EAST FARMINGDALE, NEW YORK

	UNITS	SET POINT	5/26/2005	5/27/2005	5/31/2005	6/1/2005	6/2/2005	6/3/2005	6/605	6/7/2005	6/8/2005	6/10/2005	6/13/2005	6/14/2005	6/15/2005
TIME OF DAY			4:54 PM	3:34 PM	3:50 PM	4:51 PM	3:57 PM	4:03 PM	4:41 PM	3:31 PM	4:01 PM	4:23 PM	4:23 PM	4:00 PM	3:31 PM
TOTALIZER WATER METER READING	GALLONS		31,690,852	32,325,606	34,545,594	35,075,455	35,602,350	36,231,946	37,978,277	38,439,551	39,033,412	40,204,285	40,588,149	41,157,980	41,724,076
TOTAL KWH			93,794	95,193	101,091	102,449	103,814	105,439	109,909	111,107	112,626	115,610	116,608	118,018	119,388
BUILDING INTERIOR TEMPERATURE	^{o}F		64	71	74	70	71	72	77	77	83	76	78	82	72
BUILDING INTERIOR RELATIVE HUMIDITY	%		--	--		--	--	--							
OUTSIDE TEMPERATURE	^{o}F		59	65	68	55	65	65	72	80	88	80	80	89	63
OUTSIDE RELATIVE HUMIDITY	%		--	--		--	--	--							
GROUNDWATER EXTRACTION WELL (RW-1)															
WATER LEVEL/DRAWLDOWN (READING TAKEN FROM HMI SCREEN)	FT		62	61	61	60	60	60	60	60	60	60	62	60	60
Well Total Runtime	HOURS		1512	1535	1631	1653	1675	1701	1772	1791	1815	1864	1879	1903	1926
WELL PUMP FLOW RATE (READING TAKEN FROM FLOWMETER)	GPM	250	249	251	250	261	260	261	260	255	254	254	255	252	252
WELL PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	(PSI)	30 - 35	32	32	31	29	29	29	30	30	30	30	31	30	31
WELL FLOW CONTROL VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		50%	50%	50%	51%	51%	51%	50%	50%	50%	50%	50%	50%	50%
GROUNDWATER EXTRACTION WELL (RW-2)															
WATER LEVEL/DRAWLDOWN (READING TAKEN FROM HMI SCREEN)	FT		71	71	71	70	70	70	69	70	70	69	70	69	69
Well Total Runtime	HOURS		1370	1393	1489	1511	1533	1558	1629	1648	1673	1721	1737	1761	1784
WELL PUMP FLOW RATE (READING TAKEN FROM FLOWMETER)	GPM	150	149	150	150	148	147	147	147	150	150	150	151	148	151
WELL PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	(PSI)	25 - 30	25	25	25	25	24	25	25	25	24	17	25	24	25
WELL FLOW CONTROL VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		50%	50%	50%	50%	49%	49%	50%	50%	50%	50%	50%	50%	50%
AIR STRIPPER NO. 1															
BLOWER VACUUM PRESSURE (READING TAKEN FROM GAUGE)	" w.c.		27	27	27	27	28	28	27	28	30	30	31	34	36
DISCHARGE PUMP MOTOR SPEED (READING TAKEN FROM HMI SCREEN)	Hz		57	54	54	55	55	55	55	55	54	55	54	54	55
PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	PSI		15	17	15	17	17	17	17	17	16	17	19	17	16
DISCHARGE/EFFLUENT VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		100%	100%	100%	100%	100%	100%	97%	77%	77%	77%	77%	77%	77%
AIR STRIPPER NO. 2															
BLOWER PRESSURE (READING TAKEN FROM GAUGE)	" w.c.		21	20	20	21	21	21	21	21	21	21	21	21	21
DISCHARGE PUMP MOTOR SPEED (READING TAKEN FROM HMI SCREEN)	Hz		50	47	48	50	47	48	48	48	50	47	49	49	48
PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	PSI		15	14	14	14	15	15.5	16	13.5	15	16	14	14	14
DISCHARGE/EFFLUENT FLOW (READING TAKEN FROM FLOW METER INDICATIOR)	GPM		403	403	400	405	408	401	404	401	409	407	401	403	407
DISCHARGE/EFFLUENT VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		55%	50%	50%	50%	52%	51%	51%	51%	45%	55%	55%	55%	55%

: Inaccurate Readings/Malfunctioning Totalizer

GROUNDWATER TREATMENT AND RECHARGE SYSTEM
OPERATING DATA
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC.
EAST FARMINGDALE, NEW YORK

	UNITS	SET POINT	6/16/2005	6/17/2005	6/21/2005	6/22/2005	6/23/2005	6/24/2005	6/27/2005	6/28/2005	6/29/2005	6/30/2005	7/1/2005	7/5/2005	7/6/2005	7/7/2005
TIME OF DAY			3:33 PM	3:22 PM	3:02 PM	10:49 PM	8:50 AM	12:00 PM	9:50 AM	9:50 AM	11:55 PM	9:18 AM	11:15 AM	11:30 AM	9:50 AM	9:45 AM
TOTALIZER WATER METER READING	GALLONS		42,298,554	42,872,770	44,441,870	44,920,211	45,450,785	46,103,919	47,786,690	48,368,600	48,995,146	49,511,020	50,139,161		52,657,156	53,098,507
TOTAL KWH			120,771	122,232	-	127,583	128,957	130,639	134,881	136,321	137,878	139,146	140,680	145,655	147,019	148,164
BUILDING INTERIOR TEMPERATURE	^{o}F		73	71	77	75	75	78	74	72	75	71	72	72	75	71
BUILDING INTERIOR RELATIVE HUMIDITY	%															
OUTSIDE TEMPERATURE	^{o}F		67	73	82	74	75	82	78	75	78	75	80			
OUTSIDE RELATIVE HUMIDITY	%															
GROUNDWATER EXTRACTION WELL (RW-1)																
WATER LEVEL/DRAWLDOWN (READING TAKEN FROM HMI SCREEN)	FT		60	60	60	59	59	59	60	59	59	60	56	59	59	59
Well Total Runtime	HOURS		1950	1974	2038	2058	2080	2107	2177	2201	2227	2249	2275	2356	2379	2396
WELL PUMP FLOW RATE (READING TAKEN FROM FLOWMETER)	GPM	250	252	251	251	250	251	251	251	251	250	252	251	251	251	260
WELL PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	(PSI)	30 - 35	31	31	31	31	30	31	31	31	31	31	31	31	31	29
WELL FLOW CONTROL VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	52%
GROUNDWATER EXTRACTION WELL (RW-2)																
WATER LEVEL/DRAWLDOWN (READING TAKEN FROM HMI SCREEN)	FT		27	69	69	69	68	69	69	69	69	69	69	86	69	69
Well Total Runtime	HOURS		57	1832	1896	1916	1938	1965	2035	2059	2085	2106	2132	2214	2236	2254
WELL PUMP FLOW RATE (READING TAKEN FROM FLOWMETER)	GPM	150	150	151	150	150	150	150	150	150	150	151	150	150	151	154
WELL PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	(PSI)	25 - 30	24	24	24	24	24	24	24	24	24	24	24	23	24	123
WELL FLOW CONTROL VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	52%
AIR STRIPPER NO. 1																
BLOWER VACUUM PRESSURE (READING TAKEN FROM GAUGE)	" w.c.		27	27	26	27	27	27	27	28	28	28	28	27	28	27
DISCHARGE PUMP MOTOR SPEED (READING TAKEN FROM HMI SCREEN)	Hz		57	54	54	54	54	54	54	54	54	54	54	54	54	54
PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	PSI		17	16	17	16	16	17	17	16	17	16	16	17	17	18
DISCHARGE/EFFLUENT VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		77%	77%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
AIR STRIPPER NO. 2																
BLOWER PRESSURE (READING TAKEN FROM GAUGE)	" w.c.		21	21	21	21	21	21	20	20	20	20	20	21	21	21
DISCHARGE PUMP MOTOR SPEED (READING TAKEN FROM HMI SCREEN)	Hz		43	46	47	44	48	45	47	48	45	44	47	48	45	48
PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	PSI		12	12	11	13	13	12	11	13	11.5	13	13	12	14	15
DISCHARGE/EFFLUENT FLOW (READING TAKEN FROM FLOW METER INDICATIOR)	GPM		404	408	400	408	401	402	404	399	402	409	409	412	400	418
DISCHARGE/EFFLUENT VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		55%	55%	60%	60%	60%	60%	100%	60%	60%	60%	60%	60%	60%	60%

: Inaccurate Readings/Malfunctioning Totalizer

GROUNDWATER TREATMENT AND RECHARGE SYSTEM
OPERATING DATA
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC.
EAST FARMINGDALE, NEW YORK

	UNITS	SET POINT	7/8/2005	7/11/2005	7/12/2005	7/13/2005	7/14/2005	7/15/2005	7/20/2005	7/29/2005	8/1/2005	8/19/2005	8/22/2005	8/31/2005	9/9/2005	9/16/2005
TIME OF DAY			9:36 AM	9:34 AM	9:57 AM	9:46 AM	10:14 AM	1:48 PM	2:05 PM	10:57 AM	2:50 PM	9:19 AM	2:33 PM	12:50 PM	11:08 PM	10:33 AM
TOTALIZER WATER METER READING	GALLONS		53,695,210	55,491,433	56,098,701	56,690,041	57,298,762	57,985,735	60,993,665	66,379,511	68,166,757	76,835,845	78,753,929	4,066,497	89,174,306	*99,249,577*
TOTAL KWH			149,677	154,209	155,710	157,220	158,764	160,501	168,095	181,398	186,223	209,692	214,527	227,950	241,153	249,577
BUILDING INTERIOR TEMPERATURE	°F		70	75	77	73	74	81	83	77	80	74	83	80	72	75
BUILDING INTERIOR RELATIVE HUMIDITY	%															
OUTSIDE TEMPERATURE	°F		67	80	80	77		80	89	85	80	77	83	85		
OUTSIDE RELATIVE HUMIDITY	%													82		
GROUNDWATER EXTRACTION WELL (RW-1)																
WATER LEVEL/DRAWLDOWN (READING TAKEN FROM HMI SCREEN)	FT		59	60	59	59	59	59	59	59	58	63	63	63	63	64
Well Total Runtime	HOURS		2420	2492	2517	2541	2565	2593	2713	2926	3002	3281	3359	3573	3779	3915
WELL PUMP FLOW RATE (READING TAKEN FROM FLOWMETER)	GPM	250	260	260	259	259	259	260	260	261	260	260	259	255	259	259
WELL PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	(PSI)	30 - 35	29	29	29	29	29	29	29	29	29	29	29	29	28	29
WELL FLOW CONTROL VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		52%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%
GROUNDWATER EXTRACTION WELL (RW-2)																
WATER LEVEL/DRAWLDOWN (READING TAKEN FROM HMI SCREEN)	FT		69	69	68	69	69	68	68	68	68	68	67	67	67	67
Well Total Runtime	HOURS		2278	2350	2374	2398	2423	2450	2570	2783	2859	3277	3355	3569	3776	3912
WELL PUMP FLOW RATE (READING TAKEN FROM FLOWMETER)	GPM	150	154	155	154	153	154	154	154	154	152	153	152	151	152	151
WELL PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	(PSI)	25 - 30	23	123	23	22	23	23	23	23	23	22	22	23	23	23
WELL FLOW CONTROL VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%	51%
AIR STRIPPER NO. 1																
BLOWER VACUUM PRESSURE (READING TAKEN FROM GAUGE)	" w.c.		27	28	28	28	27.5	28	29	29	28	29	30	29	27	23
DISCHARGE PUMP MOTOR SPEED (READING TAKEN FROM HMI SCREEN)	Hz		56	56	56	55	56	56	56	56	56	56	56	56	55	56
PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	PSI		18	17	17	18	18	18	18	18	19	17	318	17	18	18
DISCHARGE/EFFLUENT VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
AIR STRIPPER NO. 2																
BLOWER PRESSURE (READING TAKEN FROM GAUGE)	" w.c.		21	20	20	21	21	21	20	21	21	21	21	22	21	22
DISCHARGE PUMP MOTOR SPEED (READING TAKEN FROM HMI SCREEN)	Hz		49	49	46	49	46	47	49	50	49	46	50	49	48	48
PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	PSI		13	15	15	15	15	15	14	13	14	13	16	14	14	16
DISCHARGE/EFFLUENT FLOW (READING TAKEN FROM FLOW METER INDICATIOR)	GPM		411	420	415	424	421	422	427	420	419	424	421	410	406	409
DISCHARGE/EFFLUENT VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		55%	60%	60%	55%	60%	60%	55%	60%	60%	58%	58%	58%	52%	52%

: Inaccurate Readings/Malfunctioning Totalizer

GROUNDWATER TREATMENT AND RECHARGE SYSTEM
OPERATING DATA
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC.
EAST FARMINGDALE, NEW YORK

	UNITS	SET POINT	9/23/2005	10/7/2005	10/28/2005	12/16/2005	12/29/2005	1/5/2006	1/10/2006	1/20/2006	1/27/2006	2/10/2006	2/17/2006	2/23/2006	3/2/2006	3/17/2006
TIME OF DAY			9:40 AM	3:01 PM	8:30 AM	3:29 PM	2:32pm	1:25 PM	3:07 PM	1:02 PM	3:30 AM	3:35pm	3:13 PM	4:32 PM	2:20pm	3:50 AM
TOTALIZER WATER METER READING	GALLONS		*106,128,825*	*111,872,995*	*116,698,821*	*4,180,430*	*9,594,313*	*2,738,349*	*5,032,277*	129,489,950	132,697,040	139,016,185		144,328,505	146,528,586	151,799,675
TOTAL KWH			258,557	274,229	289,736	312,566	328,789	338,192	345,058	358,464	368,159	387,096	394,971	403,224	410,664	426,883
BUILDING INTERIOR TEMPERATURE	^{o}F		74	72	61	60	60	60	60	60	60	60	60	60	58	60
BUILDING INTERIOR RELATIVE HUMIDITY	%															
OUTSIDE TEMPERATURE	^{o}F						50	40	50	57	45	37	54	40	27	45
OUTSIDE RELATIVE HUMIDITY	%															
GROUNDWATER EXTRACTION WELL (RW-1)																
WATER LEVEL/DRAWLDOWN (READING TAKEN FROM HMI SCREEN)	FT		63	63	63	60	60	61	61	61	61	61	61	66	69	69
Well Total Runtime	HOURS		4061	4334	4632	5029	5316	5483	5605	5842	6013	6349	6488	6633	4689	4975
WELL PUMP FLOW RATE (READING TAKEN FROM FLOWMETER)	GPM	250	254	199	195	191	190	191	191	191	191	189	190	189	190	200
WELL PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	(PSI)	30 - 35	30	39	42	43	43	43	43	44	43	43	43	43	44	41
WELL FLOW CONTROL VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		50%	30%	25%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
GROUNDWATER EXTRACTION WELL (RW-2)																
WATER LEVEL/DRAWLDOWN (READING TAKEN FROM HMI SCREEN)	FT		69	70	75	75	75	75	75	75	76	68	67	67	75	79
Well Total Runtime	HOURS		4057	4331	4556	4952	5240	5407	5528	5764	5934	6270	6409	6554	4626	4912
WELL PUMP FLOW RATE (READING TAKEN FROM FLOWMETER)	GPM	150	153	98	94	120	119	120	120	120	121	119	120	119	120	50
WELL PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	(PSI)	25 - 30	23	32	35	30	30	30	30	30	30	30	30	30	30	40
WELL FLOW CONTROL VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		50%	30%	25%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	25%
AIR STRIPPER NO. 1																
BLOWER VACUUM PRESSURE (READING TAKEN FROM GAUGE)	" w.c.		27	27	25	25	26	26	26	27	27	26	26	26	27	26
DISCHARGE PUMP MOTOR SPEED (READING TAKEN FROM HMI SCREEN)	Hz		58	42	39	44	44	44	44	44	44	44	44	44	44	37
PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	PSI		16	11	10	11	11	11	11	11	11	11	11	11	11	8
DISCHARGE/EFFLUENT VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		100%	100%	100%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
AIR STRIPPER NO. 2																
BLOWER PRESSURE (READING TAKEN FROM GAUGE)	" w.c.		20	20	20	20	21	21	21	21	21	21	21	21	21	21
DISCHARGE PUMP MOTOR SPEED (READING TAKEN FROM HMI SCREEN)	Hz		48	32	26	38	37	37	38	36	38	37	38	38	35	29
PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	PSI		14	7	7	9	9	9	9	8	8	9	9	9	8	5
DISCHARGE/EFFLUENT FLOW (READING TAKEN FROM FLOW METER INDICATIOR)	GPM		407	300	310	301	307	320	310	304	315	305	313	320	308	250
DISCHARGE/EFFLUENT VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		55%	55%	55%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

: Inaccurate Readings/Malfunctioning Totalizer

GROUNDWATER TREATMENT AND RECHARGE SYSTEM
OPERATING DATA
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC.
EAST FARMINGDALE, NEW YORK

	UNITS	SET POINT	3/24/2006	3/30/2006	4/5/2006	4/21/2006	4/26/2006	5/3/2006	5/17/2006	6/9/2006	6/30/2006	7/6/2006	7/21/2006	8/4/2006	8/23/2006
TIME OF DAY			12:00 PM	2:35pm	4:28 PM	4:09PM	4:43pm	1:50 PM	2:11 PM	1:10pm	2:23 PM	1:55 PM	1:10pm	2:00 PM	2:45 PM
TOTALIZER WATER METER READING	GALLONS		153,649,350	155,772,350	157,793,670	161,327,252	163,153,872	165,619,765	169,996,070	175,552,550	178,086,869	178,348,119	181,190,923	184,265,939	188,553,510
TOTAL KWH			433,550	441,052	448,195	460,706	467,178	476,152	491,469	510,744	519,572	520,647	531,135	541,663	556,191
BUILDING INTERIOR TEMPERATURE	^{o}F		62	67	62	68	67	70	71	71	77	73	80	85	81
BUILDING INTERIOR RELATIVE HUMIDITY	%														
OUTSIDE TEMPERATURE	^{o}F		45	63	39	51	50	65	66	73	80	74	81	86	86
OUTSIDE RELATIVE HUMIDITY	%														
GROUNDWATER EXTRACTION WELL (RW-1)															
WATER LEVEL/DRAWLDOWN (READING TAKEN FROM HMI SCREEN)	FT		69	69	69	58	58	59	59	59	59	60	59	57	57
Well Total Runtime	HOURS		5098	5237	5370	5601	5722	5884	6172	6537	6703	6722	5762	5963	6200
WELL PUMP FLOW RATE (READING TAKEN FROM FLOWMETER)	GPM	250	206	203	203	203	204	204	204	204.81	203.23	203.24	208.42	203.74	204.15
WELL PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	(PSI)	30 - 35	39	40	40	40	40	40	39	40	40	40	39	39	39
WELL FLOW CONTROL VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		30%	30%	30%	30%	30%	30%	30%	30%	30%	30%	27%	27%	27%
GROUNDWATER EXTRACTION WELL (RW-2)															
WATER LEVEL/DRAWLDOWN (READING TAKEN FROM HMI SCREEN)	FT		79	76	76	85	85	69	69	69	69	69	69	69	69
Well Total Runtime	HOURS		5260	5173	5306	5538	5884	5820	6108	6474	6640	6658	5699	5899	6179
WELL PUMP FLOW RATE (READING TAKEN FROM FLOWMETER)	GPM	150	47	50	51	47	47	48	47	47.05	46.83	49.34	48.38	51.72	49.66
WELL PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	(PSI)	25 - 30	40	40	40	40	40	40	40	40	40	39	39	38	38
WELL FLOW CONTROL VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
AIR STRIPPER NO. 1															
BLOWER VACUUM PRESSURE (READING TAKEN FROM GAUGE)	" w.c.		21	22	26	27	26	27	27	27	27	28	27	28	27
DISCHARGE PUMP MOTOR SPEED (READING TAKEN FROM HMI SCREEN)	Hz		38	38	38	37	37	38	38	37	38	37	42	39	39
PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	PSI		9	9	8	9	8	9	9	9	9	9	9	8	8
DISCHARGE/EFFLUENT VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
AIR STRIPPER NO. 2															
BLOWER PRESSURE (READING TAKEN FROM GAUGE)	" w.c.		21	21	21	21	21	21	21	20	20	20	20	20	20
DISCHARGE PUMP MOTOR SPEED (READING TAKEN FROM HMI SCREEN)	Hz		28	30	28	30	30	30	29	35	28	28	33	26	29
PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	PSI		6	6	6	7	5	7	6	12	6	7	7	5	5
DISCHARGE/EFFLUENT FLOW (READING TAKEN FROM FLOW METER INDICATIOR)	GPM		247	253	263	258	256	244	250	247.72	260.36	246.41	268.16	250.54	240.63
DISCHARGE/EFFLUENT VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

: Inaccurate Readings/Malfunctioning Totalizer

GROUNDWATER TREATMENT AND RECHARGE SYSTEM
OPERATING DATA
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC.
EAST FARMINGDALE, NEW YORK

	UNITS	SET POINT	8/26/2006	9/6/2006	9/22/2006	10/6/2006	10/18/2006	10/26/2006	11/22/2006	12/8/2006	12/13/2006	2/27/2007	3/7/2007	3/20/2007	3/30/2007
TIME OF DAY			11:30 PM	1:20 PM	1:50 PM	9:05 AM	3:25pm	4:48pm	2:27 PM	3:38 PM	5:20 PM	2:50 PM	4:46 PM	3:20 AM	5:00 PM
TOTALIZER WATER METER READING	GALLONS		188,836,268	190,132,440	193,856,060	197,101,368	199,358,840	201,575,795	202,554,727	205,711,143	206,932,841	213,758,086	215,646,598	217,830,141	220,440,380
TOTAL KWH			557,196	561,521	577,180	590,919	600,385	609,872	613,778	623,810	627,568	652,737	652,737	670,366	681,465
BUILDING INTERIOR TEMPERATURE	^{o}F		71	74	73	67	71	64	63	61	63	60	59	60	66
BUILDING INTERIOR RELATIVE HUMIDITY	%														
OUTSIDE TEMPERATURE	^{o}F		75	72	67	54	72	54	45	29	45	37	21	45	52
OUTSIDE RELATIVE HUMIDITY	%											89	62	29	50
GROUNDWATER EXTRACTION WELL (RW-1)															
WATER LEVEL/DRAWLDOWN (READING TAKEN FROM HMI SCREEN)	FT		59	58	59	60	60	60	58	58	58	90	90	90	90
Well Total Runtime	HOURS		6215	6297	6596	6866	7052	7246	7312	7481	7548	5659	5811	5990	6198
WELL PUMP FLOW RATE (READING TAKEN FROM FLOWMETER)	GPM	250	205.05	205.39	152.42	151.15	141.88	140.38	229.7	206.42	206.85	155.28	149	159.51	154.26
WELL PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	(PSI)	30 - 35	39	39	52	52	55	55	35	39	39	51	53	50	52
WELL FLOW CONTROL VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		27%	27%	25%	25%	25%	25%	40%	30%	30%	25%	25%	28%	25%
GROUNDWATER EXTRACTION WELL (RW-2)															
WATER LEVEL/DRAWLDOWN (READING TAKEN FROM HMI SCREEN)	FT		69	69	69	69	69	69	69	69	69	69	69	69	79
Well Total Runtime	HOURS		6198	6280	6579	6849	7035	7229	7296	7464	7531	5580	5733	5911	6120
WELL PUMP FLOW RATE (READING TAKEN FROM FLOWMETER)	GPM	150	52.12	49.17	48.77	52.84	49.68	49.1	85.68	99.51	98.78	52.61	56	55.48	50.42
WELL PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	(PSI)	25 - 30	39	39	38	39	39	39	34	32	32	38	38	39	39
WELL FLOW CONTROL VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		25%	25%	25%	25%	25%	25%	30%	30%	30%	25%	25%	28%	28%
AIR STRIPPER NO. 1															
BLOWER VACUUM PRESSURE (READING TAKEN FROM GAUGE)	" w.c.		28	27	27	28	27	27	27	28	28	27	21	27	27
DISCHARGE PUMP MOTOR SPEED (READING TAKEN FROM HMI SCREEN)	Hz		42	39.6	33.3	33.6	32.3	32.2	47.5	46.3	46.3	34.4	33.8	35.2	34.1
PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	PSI		9	9	5	8	6	6	12	11	11	7	6	6	6
DISCHARGE/EFFLUENT VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		50%	50%	50%	50%	50%	50%	100%	100%	100%	100%	50%	100%	100%
AIR STRIPPER NO. 2														21	
BLOWER PRESSURE (READING TAKEN FROM GAUGE)	" w.c.		20	20	19	20	20	20	21	21	21	20	21	24.1	20
DISCHARGE PUMP MOTOR SPEED (READING TAKEN FROM HMI SCREEN)	Hz		32	25.1	24.9	20	21.4	24.7	40.3	36.7	35.4	26	25.4	25.4	24.9
PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	PSI		8	6	5	4	5	6	10	8	8	6	5	6	6
DISCHARGE/EFFLUENT FLOW (READING TAKEN FROM FLOW METER INDICATIOR)	GPM		247.1	262.19	214.32	232.66	200.64	183.12	320	305.74	303.83	189.72	211.16	225.62	213.18
DISCHARGE/EFFLUENT VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		100%	100%	100%	100%	50%	50%	50%	55%	55%	50%	50%	50%	50%

: Inaccurate Readings/Malfunctioning Totalizer

GROUNDWATER TREATMENT AND RECHARGE SYSTEM
OPERATING DATA
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC.
EAST FARMINGDALE, NEW YORK

	UNITS	SET POINT	4/4/2007	4/27/2007	5/4/2007	5/11/2007	6/13/2007	6/22/2007	7/12/2007	8/3/2007	8/10/2007	8/24/2007	9/14/2007	9/28/2007
TIME OF DAY			4:45 PM	3:40 PM	4:39 PM	4:30 PM	1:30 PM	3:30 PM	3:45 PM	4:03pm	4:00 PM	1:17 PM	9:57 AM	4:15 PM
TOTALIZER WATER METER READING	GALLONS		221,091,447	222,529,297	222,671,960	222,926,107	226,247,267	228,168,691	231,772,495	235,675,515	236,491,693	238,132,773	241,984,437	244,891,682
TOTAL KWH			684,424	691,939	693,023		710,265	718,452	729,015	740,972	744,869	752,560	769,750	782,454
BUILDING INTERIOR TEMPERATURE	^{o}F		61	63	68	64	71	76	80	85	74	78	73	76
BUILDING INTERIOR RELATIVE HUMIDITY	%													
OUTSIDE TEMPERATURE	^{o}F		42	54	54	72	63	74	82	83	61	78	72	76
OUTSIDE RELATIVE HUMIDITY	%		100	97	97	84	75	35	35	69	88	65	42	50
GROUNDWATER EXTRACTION WELL (RW-1)														
WATER LEVEL/DRAWLDOWN (READING TAKEN FROM HMI SCREEN)	FT		90	90	90	90	90	90	69	69	69	69	69	69
Well Total Runtime	HOURS		6252	6371	6382	6405	6665	6814	4892			5406		5945
WELL PUMP FLOW RATE (READING TAKEN FROM FLOWMETER)	GPM	250	151.24	155.14	155.84	152.99	153.11	150.04	152.25	151.47	152.44	155.56	156.34	158.69
WELL PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	(PSI)	30 - 35	51	52	52	52	52	52	51	52	51	51	50	50
WELL FLOW CONTROL VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		25%	25%	25%	25%	25%	25%	27%	27%	27%	27%	27%	27%
GROUNDWATER EXTRACTION WELL (RW-2)														
WATER LEVEL/DRAWLDOWN (READING TAKEN FROM HMI SCREEN)	FT		69	69	69	69	69	69	69	69	69	69	69	69
Well Total Runtime	HOURS		6400	6292	6304	6319	6579	6728	4832		5201	5332		5870
WELL PUMP FLOW RATE (READING TAKEN FROM FLOWMETER)	GPM	150	49.25	47.34	47.74	45.08	58.59	58.22	46.78	53.92	54.39	50.54	52.44	49.45
WELL PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	(PSI)	25 - 30	39	40	40	39	38	38	39	38	38	39	39	39
WELL FLOW CONTROL VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		25%	25%	25%	25%	25%	25%	25%	25%	27%	27%	25%	25%
AIR STRIPPER NO. 1														
BLOWER VACUUM PRESSURE (READING TAKEN FROM GAUGE)	" w.c.		27	27	27	27	28	28	27	29	28	29	28	28
DISCHARGE PUMP MOTOR SPEED (READING TAKEN FROM HMI SCREEN)	Hz		33.7	32.4	34.7	33.5	35.1	34.8	33.7	34.6	34.8	34.9	35.2	35.1
PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	PSI		7	7	7	7	7	6	6	5	7	7	6	6
DISCHARGE/EFFLUENT VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
AIR STRIPPER NO. 2														
BLOWER PRESSURE (READING TAKEN FROM GAUGE)	" w.c.		21	21	21	20	21	20	20	29	21	20	21	21
DISCHARGE PUMP MOTOR SPEED (READING TAKEN FROM HMI SCREEN)	Hz		25.8	24.3	22.6	21.1	22.9	23.7	23	34.6	27.2	22.7	26.5	22.7
PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	PSI		6	7	7	6	6	6	7	5	6	6	6	6
DISCHARGE/EFFLUENT FLOW (READING TAKEN FROM FLOW METER INDICATIOR)	GPM		215.48	207.42	177.05	213.33	204.78	216.27	189.05	212.18	220.43	206.01	208.72	204.9
DISCHARGE/EFFLUENT VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		50%	50%	50%	26%	50%	50%	50%	50%	50%	50%	50%	50%

: Inaccurate Readings/Malfunctioning Totalizer

GROUNDWATER TREATMENT AND RECHARGE SYSTEM
OPERATING DATA
FAIRCHILD REPUBLIC MAIN PLANT SITE
MAIROLL, INC.
EAST FARMINGDALE, NEW YORK

	UNITS	SET POINT	11/1/2007	11/20/2007	11/30/2007	12/7/2007	12/14/2007	12/21/2007	12/28/2007	1/4/2008	1/10/2008	1/17/2008	1/24/2008
TIME OF DAY			4:00 PM	12:47 PM	3:19 PM	2:10 PM	4:35 PM	3:15 PM	2:50 PM	3:49 PM	5:02 PM	4:34 PM	2:38 PM
TOTALIZER WATER METER READING	GALLONS		251,071,597	259,460,267	263,932,956	2,666,296,636	268,774,842	270,544,113	272,440,848	272,876,237	273,797,607	275,822,619	277,820,104
TOTAL KWH			809,065	834,766	848,195	856,127	862,844	868,667	874,950	877,010	881,035	889,689	898,224
BUILDING INTERIOR TEMPERATURE	^{o}F		67	60	60	60	60	59	61	59	60	59	59
BUILDING INTERIOR RELATIVE HUMIDITY	%												
OUTSIDE TEMPERATURE	^{o}F		76	47	40	34	40	37	45	35	48	37	31
OUTSIDE RELATIVE HUMIDITY	%		50	93	41	52	63	67	1	31	33	57	39
GROUNDWATER EXTRACTION WELL (RW-1)													
WATER LEVEL/DRAWLDOWN (READING TAKEN FROM HMI SCREEN)	FT		58	58	58	58	58	58	59	60	60	60	60
Well Total Runtime	HOURS		6466	6920	7162	7308	7423	7521	7625	7659	7735	7903	8069
WELL PUMP FLOW RATE (READING TAKEN FROM FLOWMETER)	GPM	250	203.49	202.57	201.79	204.74	206.31	193.37	193.21	154.37	148.49	148.69	148.53
WELL PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	(PSI)	30 - 35	39	39	39	38	39	41	41	51	52	52	52
WELL FLOW CONTROL VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		30%	30%	30%	30%	30%	30%	30%	27%	25%	25%	25%
GROUNDWATER EXTRACTION WELL (RW-2)													
WATER LEVEL/DRAWLDOWN (READING TAKEN FROM HMI SCREEN)	FT		69	69	69	69	69	62	62	65	65	66	66
Well Total Runtime	HOURS		6163	6616	6859	7005	7119	7217	7321	7355	7431	7598	7764
WELL PUMP FLOW RATE (READING TAKEN FROM FLOWMETER)	GPM	150	101.76	102.22	101.36	101.09	102.49	106.67	106.87	46.74	51.33	50.7	50.31
WELL PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	(PSI)	25 - 30	31	31	31	31	31	30	30	39	39	39	39
WELL FLOW CONTROL VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		27%	27%	27%	27%	27%	27%	27%	25%	25%	25%	25%
AIR STRIPPER NO. 1													
BLOWER VACUUM PRESSURE (READING TAKEN FROM GAUGE)	" w.c.		29	30	30	30	22	30	30	25	25	25	25
DISCHARGE PUMP MOTOR SPEED (READING TAKEN FROM HMI SCREEN)	Hz		47.8	47.9	47.8	48.1	47.5	47.2	47.5	34.7	34.4	34.5	34.5
PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	PSI		12	11	11	11	8	11	13	6	6	7	6
DISCHARGE/EFFLUENT VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
AIR STRIPPER NO. 2													
BLOWER PRESSURE (READING TAKEN FROM GAUGE)	" w.c.		21	21	20	22	30	25	24	22	22	24	22
DISCHARGE PUMP MOTOR SPEED (READING TAKEN FROM HMI SCREEN)	Hz		33.9	34.5	34.3	27.3	33.9	33.5	37.7	23.1	24.7	24.7	24.2
PUMP DISCHARGE PRESSURE (READING TAKEN FROM GAUGE)	PSI		7	8	7	8	11	8	9	6	5	6	6
DISCHARGE/EFFLUENT FLOW (READING TAKEN FROM FLOW METER INDICATIOR)	GPM		318.23	303.03	290.21	308.19	296.47	308.03	307.19	201.75	207.51	203.14	202.21
DISCHARGE/EFFLUENT VALVE POSITION (READING TAKEN FROM VALVE OPERATOR)	% OPEN		50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%

= Inaccurate Readings/Malfunctioning Totalizer

APPENDIX I

NYSDEC DISCHARGE REQUIREMENTS

New York State Department of Environmental Conservation
Division of Water
Bureau of Water Permits,
625 Broadway, Albany, New York 12233-3505
Phone: (518) 402- 8111 • **FAX:** (518) 402-9029
Website: www.dec.state.ny.us

Erin M. Crotty
Acting
Commissioner

MEMORANDUM

TO: Steven Scharf, BERA, DER
FROM: Sudhir Mahatma, BWP, DOW SM
SUBJECT: Fairchild Republic Site # 1-52-130
DATE: February 12, 2002

In response to your request dated January 16, 2002 to me, attached please find effluent criteria for the above noted groundwater remediation discharge.

The DOW does not have any regulatory authority over a discharge from a State, PRP, or Federal Superfund Site. DER will be responsible for ensuring compliance with the attached effluent criteria and approval of all engineering submissions. Footnote 1 identifies the Bureau of Site Control as the place to send all effluent results, engineering submissions and modification requests. The Regional Water Engineer should be kept appraised of the status of this discharge and, in accordance with the attached criteria, receive a copy of the effluent results for informational purposes.

If you have any questions, please call me at 2-8126.

Attachments (Effluent Criteria, General Conditions)

cc: Robert Schneck, Regional Water Engineer, R-1 (w/Effluent Criteria)
A. Eaton, DOW (w/Effluent Criteria)
Jim Beach, DOW (w/Effluent Criteria)

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning August 2002

and lasting until July 2007

the discharges from the treatment facility to infiltration basins, shall be limited and monitored by the operator as specified below:

Outfall Number and Parameter	Discharge Limitations		Units	Minimum Monitoring Requirements	
	Daily Avg.	Daily Max		Measurement Frequency	Sample Type
Outfall 001 - Treated Groundwater Remediation Discharge: [redacted] WRB,000					
Flow	Monitor	360,000	GPD	Continuous	Meter
pH (range)	6.5 to 8.5		SU	~~Weekly~~ Monthly	Grab
Total Dissolved Solids	Monitor	1000	mg/l	Monthly	Grab
Vinyl Chloride	Monitor	2.0	µg/l	~~Weekly~~ Monthly	Grab
1,1 Dichloroethene	Monitor	5.0	µg/l	~~Weekly~~ Monthly	Grab
1,1 Dichloroethane	Monitor	5.0	µg/l	~~Weekly~~ Monthly	Grab
cis 1,2 Dichloroethene	Monitor	5.0	µg/l	~~Weekly~~	Grab
Chloroform	Monitor	7.0	µg/l	~~Weekly~~	Grab
1,1,1 Trichloroethane	Monitor	5.0	µg/l	~~Weekly~~	Grab
Benzene	Monitor	1.0	µg/l	~~Weekly~~	Grab
Trichloroethylene	Monitor	5.0	µg/l	~~Weekly~~	Grab
Tetrachloroethene	Monitor	5.0	µg/l	~~Weekly~~	Grab
Freon 113	Monitor	5.0	µg/l	~~Weekly~~	Grab
Iron, Total	Monitor	~~600~~ Monitor	µg/l	~~Weekly~~	Grab
Manganese, Total	Monitor	Monitor	µg/l	Monthly	Grab
Zinc, Total	Monitor	Monitor	µg/l	Monthly	Grab

John P. Cahill
Commissioner

New York State Department of Environmental Conservation
Division of Water
Bureau of Water Permits, Room 314
50 Wolf Road, Albany, New York 12233-3505
Phone: (518) 457-1157 FAX: (518) 485-7786

APPLICATION REQUIREMENTS

REMEDIATION DISCHARGES TO SURFACE OR GROUNDWATERS

To request effluent criteria for direct discharges of remediation wastewaters, please provide the following:

1. Discharge rate (i.e. treatment system design capacity),

2. A brief description/flow diagram for the proposed treatment system,

3. A description of the receiving stream, including an accurate map showing the stream and discharge location. When available, provide latitude and longitude of discharge point.

4. Provide available wastewater monitoring data in a tabular format (NYSDEC Form NY-2C, section II, outfall information should be used). Data must be provided for all substances detected in the wastewater source, not just those substances identified as parameters of concern. Concentration data should represent worst case discharge (i.e. "hottest well", etc.).

5. The proposed first day of discharge (for pump test discharges please do not encourage pump tests during summer low flow periods).

6. Proposed duration of discharge.

7. State whether it is a potentially responsible party, federal superfund or state superfund site.

8. Please note that it is not unusual for a DOW review to take 8 weeks. Please inform responsible parties to plan on submitting requests for effluent criteria at least 8 weeks in advance of the proposed first day of discharge.

9. Include the name and telephone number of the responsible DHWR project engineer to contact if we have questions or want to borrow a copy of the RI report.

10. The Site number.

11. The DHWR contact/address where compliance monitoring data is to be sent.

If you have any questions or comments, please do not hesitate to call Angus Eaton at 7-6717.

Additional Conditions:

(1) Discharge is not authorized until such time as an engineering submission showing the method of treatment is approved by the Department. The discharge rate may not exceed the effective or design treatment system capacity. All monitoring data, engineering submissions and modification requests must be submitted to:

Chief - Operation Maintenance and Support Section
Bureau of Hazardous Site Control
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, N.Y. 12233-7010

With a copy sent to:

Robert Schneck, RWE, R-1
NYSDEC
Building 40 - SUNY @ Stony Brook
Stony Brook, NY 11790-2356

(2) Only site generated wastewater is authorized for treatment and discharge.

(3) Authorization to discharge is valid only for the period noted above but may be renewed if appropriate. A request for renewal must be received 6 months prior to the expiration date to allow for a review of monitoring data and reassessment of monitoring requirements.

(4) Both concentration (mg/l or µg/l) and mass loadings (lbs/day) must be reported to the Department for all parameters except flow and pH.

(5) Any use of corrosion/scale inhibitors or biocidal-type compounds used in the treatment process must be approved by the department prior to use.

(6) This discharge and adminstration of this discharge must comply with the attached General Conditions.