AECOM Environment

Submitted to:
NYSDEC Region 3
Regional Water Manager
White Plains, New York

Submitted by:
AECOM
Latham, New York
60319159
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Groundwater Pump and Treat System
2013 Annual Summary of Monitoring Results
American Candle Company (Former Ferroxcube Site)
Saugerties, New York
NYSDEC Site No. 356011

Mark Howard
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Prepared By: Mark J. Howard, Geologist

Richard Hixon
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Reviewed By: Richard Hixon, Senior Program Manager

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1.0 Introduction

AECOM Technical Services, Inc. (AECOM) has prepared this 2013 Annual Summary of Monitoring Results for the American Candle Company (former Ferroxcube, Site Code 356011) property (the Site) on behalf of Philips Electronics North America Corporation (Philips). The Site is located at 1033 Kings Highway, Saugerties, Ulster County, New York. A Site Location Map is provided as **Figure 1**.

The Site has historically been operated by Ferroxcube, and later Philips Components (Philips). Both businesses were owned by Philips, and manufactured electronic components at this Site from 1961 until 2000. Volatile organic compounds (VOCs), specifically halogenated solvents, were used in production operations and this resulted in releases to soil and groundwater. In 1991, Philips discontinued using these solvents. Philips stopped operations at this facility in January 2001, and the property was sold to ClearlyTech. In turn, ClearlyTech leased the property to American Candle, a perfume and candle-manufacturing firm, for several years. The Site is currently vacant.

The New York State Department of Environmental Conservation (NYSDEC) issued a Record of Decision (ROD) in March 1993 identifying the selected remedial alternative for the Site. Pursuant to the ROD, a Remedial Design (RD) and Remedial Action Operation and Maintenance Plan (O&M Plan) were prepared to implement the ROD. The RD, O&M Plan, and subsequent amendments thereto present a remedy for VOC impacts to groundwater at the Site.

The former Solvent Storage Shed Area, in the northern portion of the Site, has been identified as the probable source area for soil and groundwater impacted by tetrachloroethene (PCE) and its breakdown products (1,2-dichloroethene [1,2-DCE] and 1,1-dichloroethene [DCE]). Site soils and groundwater in the northern portion of the property also contain 1,1-dichloroethane (DCA), 1,1,1-trichloroethane (1,1,1-TCA), trichloroethene (TCE), and 1,1,2-trichloro-1,2,2-trifluoroethane (Freon-113).

The highest concentration of halogenated solvent compounds is found in groundwater at the bedrock-overburden interface. Remedial activities in this area of the Site have included air sparging, soil vapor extraction, groundwater pumping and treatment, and permanganate injections. The groundwater pump and treat system was installed at the former Solvent Storage Shed Area to maintain hydraulic control of groundwater flow. Currently, the groundwater treatment system consists of three particulate filters and two granular activated carbon (GAC) beds.

2.0 Groundwater Treatment System Requirements

The groundwater treatment system in the former Solvent Storage Shed Area extracts groundwater from recovery well RW-4, which became operational in January 2004.

Bimonthly site visits are conducted to monitor the groundwater treatment system operation and to document compliance with the New York State Pollutant Discharge Elimination System (SPDES) Permit Equivalent letter of authorization dated July 22, 2009 (i.e., 2009 letter; **Appendix A**), pursuant to the approved remedial alternative. Compliance monitoring and sampling includes checking the system flow, totalizer readings, operation of the pump and treatment equipment, and collecting samples on a monthly basis to evaluate the groundwater treatment system

effectiveness. Samples are collected in laboratory-supplied containers for analysis from three locations within the treatment system (System Influent, Between Carbon, and System Effluent). The samples are submitted to TestAmerica in Amherst, New York, for analysis of VOCs.

3.0 Quarterly Exceptions

The following exceptions applied during this reporting period (2013):

- The groundwater treatment system was shut down temporarily for carbon unit change-out on March 14, 2013 for a portion of the day.
- The groundwater treatment system was shut down temporarily to clean the submersible pump in RW-4 on May 24, 2013 for a portion of the day.
- In January 2013, effluent pH was not measured due to a defective pH meter. pH readings collected in the months before and after this event were within the discharge limits of 6.5 to 8.5 standard units (SU) for the Site as specified in the 2009 letter (**Appendix A**).
- In July 2013, effluent pH was measured at 6.2 SU. The pH readings collected in June and August 2013 were within the discharge limits, and therefore, it was determined that the low pH reading was due to operator error. Additionally, a trace level of naphthalene was detected in the “System Effluent” and “Between Carbon” treatment system samples. However, the compound was not detected in the “System Influent” sample. As a result, the naphthalene detections were determined to be anomalous and were most likely a sampling or laboratory artifact.

All samples were collected and analyzed in accordance with the quality assurance/quality control (QA/QC) guidelines in the O&M Plan.

4.0 Results

During this monitoring period, the remedial action and monitoring activities described previously were performed to address the presence of VOCs in groundwater at the former Solvent Storage Shed Area at the Site. Samples of groundwater prior to treatment, between the carbon units, and post-treatment were collected from the groundwater treatment system monthly from January 2013 through December 2013. Results of system compliance monitoring and sampling during the 2013 calendar year are presented in **Table 1**.

The treated groundwater met the NYSDEC discharge limits for all parameters and sampling events during the 2013 monitoring period, except for pH in two instances as discussed in the previous section.

The authorization granted by the NYSDEC Division of Water to discharge the effluent from the groundwater pump and treat system to the Mudder Kill (water index number H-171-4, Class C) in the 2009 letter will expire on August 15, 2014. AECOM is currently in the process of renewing the SPDES permit equivalent in accordance with NYSDEC requirements.

Table

Table 1
Groundwater Treatment System Discharge Summary

Parameter	Discharge Limit	January		February		March	
		Monitoring Results	Mass Loading (estimated max)	Monitoring Results	Mass Loading (estimated max)	Monitoring Results	Mass Loading (estimated max)
Total Flow (gallons/day) - Averaged	14,400 /day	4,975 /day		5,202 /day		5,094 /day	
pH (SU)	6.5 - 8.5	NA		6.9		7.3	
1,1-Dichloroethane	0.01 mg/l	< 0.00059 mg/l	0.000024 lbs/day	< 0.00059 mg/l	0.000026 lbs/day	< 0.00059 mg/l	0.000025 lbs/day
1,1-Dichloroethylene	0.01 mg/l	< 0.00085 mg/l	0.000035 lbs/day	< 0.00085 mg/l	0.000037 lbs/day	< 0.00085 mg/l	0.000036 lbs/day
Tetrachloroethylene	0.002 mg/l	< 0.00034 mg/l	0.000014 lbs/day	< 0.00034 mg/l	0.000015 lbs/day	< 0.00034 mg/l	0.000014 lbs/day
Trans-1,2-dichloroethylene	0.01 mg/l	< 0.00059 mg/l	0.000024 lbs/day	< 0.00059 mg/l	0.000026 lbs/day	< 0.00059 mg/l	0.000025 lbs/day
1,1,1-Trichloroethane	0.01 mg/l	< 0.00039 mg/l	0.000016 lbs/day	< 0.00039 mg/l	0.000017 lbs/day	< 0.00039 mg/l	0.000017 lbs/day
Trichloroethylene	0.01 mg/l	< 0.00060 mg/l	0.000025 lbs/day	< 0.00060 mg/l	0.000026 lbs/day	< 0.00060 mg/l	0.000026 lbs/day
1,1,2-Trichloro-1,2,2 Trifluoroethane	0.01 mg/l	< 0.00036 mg/l	0.000015 lbs/day	< 0.00036 mg/l	0.000016 lbs/day	< 0.00036 mg/l	0.000015 lbs/day

Parameter	Discharge Limit	April		May		June	
		Monitoring Results	Mass Loading (estimated max)	Monitoring Results	Mass Loading (estimated max)	Monitoring Results	Mass Loading (estimated max)
Total Flow (gallons/day) - Averaged	14,400 /day	4,992 /day		5,210 /day		5,435 /day	
pH (SU)	6.5 - 8.5	7.2		7.4		7.7	
1,1-Dichloroethane	0.01 mg/l	< 0.00059 mg/l	0.000025 lbs/day	< 0.00059 mg/l	0.000026 lbs/day	< 0.00059 mg/l	0.000027 lbs/day
1,1-Dichloroethylene	0.01 mg/l	< 0.00085 mg/l	0.000035 lbs/day	< 0.00085 mg/l	0.000037 lbs/day	< 0.00085 mg/l	0.000039 lbs/day
Tetrachloroethylene	0.002 mg/l	< 0.00034 mg/l	0.000014 lbs/day	< 0.00034 mg/l	0.000015 lbs/day	< 0.00034 mg/l	0.000015 lbs/day
Trans-1,2-dichloroethylene	0.01 mg/l	< 0.00059 mg/l	0.000025 lbs/day	< 0.00059 mg/l	0.000026 lbs/day	< 0.00059 mg/l	0.000027 lbs/day
1,1,1-Trichloroethane	0.01 mg/l	< 0.00039 mg/l	0.000016 lbs/day	< 0.00039 mg/l	0.000017 lbs/day	< 0.00039 mg/l	0.000018 lbs/day
Trichloroethylene	0.01 mg/l	< 0.00060 mg/l	0.000025 lbs/day	< 0.00060 mg/l	0.000026 lbs/day	< 0.00060 mg/l	0.000027 lbs/day
1,1,2-Trichloro-1,2,2 Trifluoroethane	0.01 mg/l	< 0.00036 mg/l	0.000015 lbs/day	< 0.00036 mg/l	0.000016 lbs/day	< 0.00036 mg/l	0.000016 lbs/day

Notes:
Discharge limits per July 27, 2009 NYSDEC guidance letter
NA - Not available

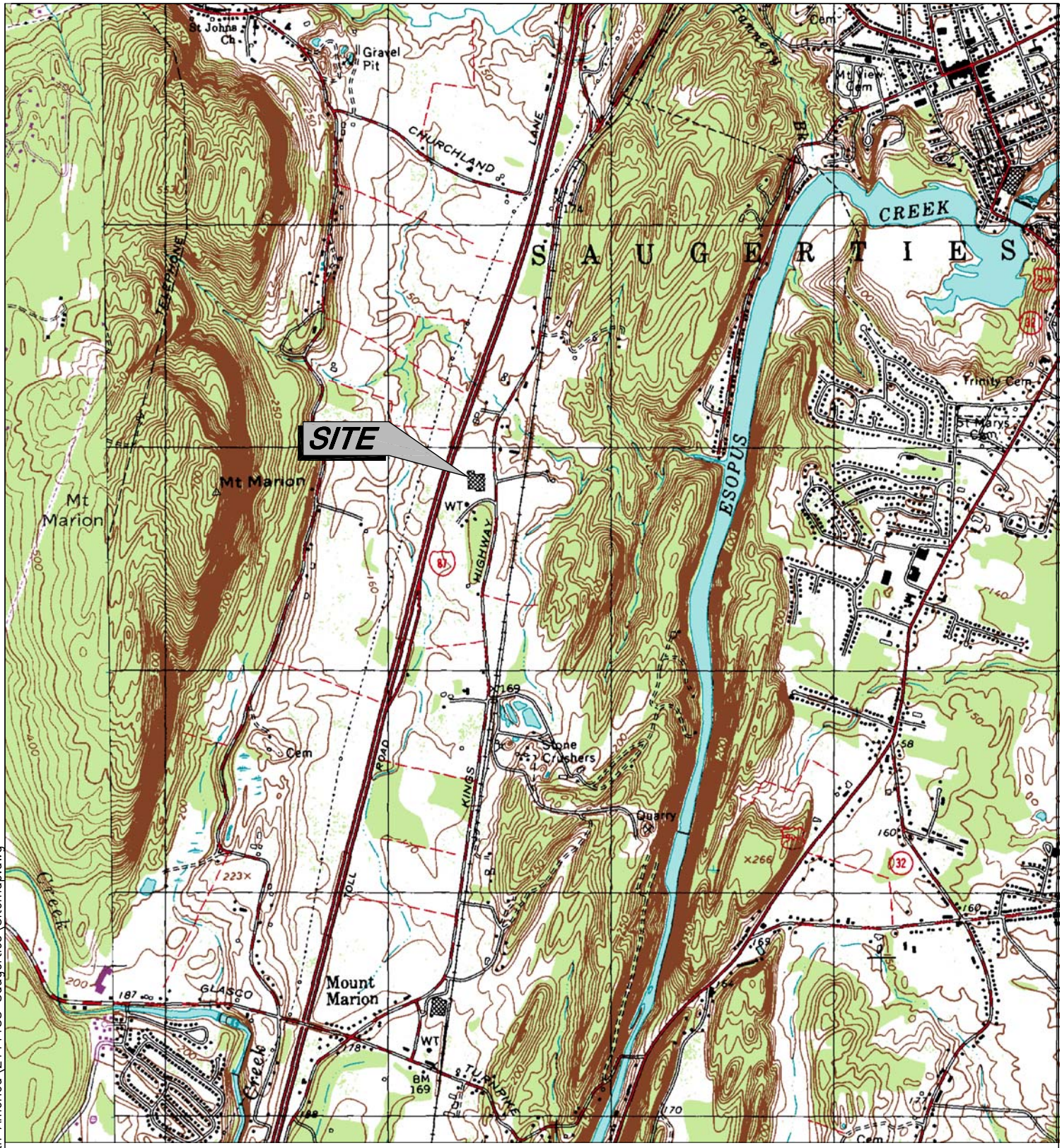
Table 1
Groundwater Treatment System Discharge Summary

Parameter	Discharge Limit	July		August		September	
		Monitoring Results	Mass Loading (estimated max)	Monitoring Results	Mass Loading (estimated max)	Monitoring Results	Mass Loading (estimated max)
Total Flow (gallons/day) - Averaged	14,400 /day	5,529 /day		6,087 /day		7,162 /day	
pH (SU)	6.5 - 8.5	6.2		7.4		7.8	
1,1-Dichloroethane	0.01 mg/l	< 0.00059 mg/l	0.000027 lbs/day	< 0.00059 mg/l	0.000030 lbs/day	< 0.00059 mg/l	0.000035 lbs/day
1,1-Dichloroethylene	0.01 mg/l	< 0.00085 mg/l	0.000039 lbs/day	< 0.00085 mg/l	0.000043 lbs/day	< 0.00085 mg/l	0.000051 lbs/day
Tetrachloroethylene	0.002 mg/l	< 0.00034 mg/l	0.000016 lbs/day	< 0.00034 mg/l	0.000017 lbs/day	< 0.00034 mg/l	0.000020 lbs/day
Trans-1,2-dichloroethylene	0.01 mg/l	< 0.00059 mg/l	0.000027 lbs/day	< 0.00059 mg/l	0.000030 lbs/day	< 0.00059 mg/l	0.000035 lbs/day
1,1,1-Trichloroethane	0.01 mg/l	< 0.00039 mg/l	0.000018 lbs/day	< 0.00039 mg/l	0.000020 lbs/day	< 0.00039 mg/l	0.000023 lbs/day
Trichloroethylene	0.01 mg/l	< 0.00060 mg/l	0.000028 lbs/day	< 0.00060 mg/l	0.000030 lbs/day	< 0.00060 mg/l	0.000036 lbs/day
1,1,2-Trichloro-1,2,2 Trifluoroethane	0.01 mg/l	< 0.00036 mg/l	0.000017 lbs/day	< 0.00036 mg/l	0.000018 lbs/day	< 0.00036 mg/l	0.000022 lbs/day

Parameter	Discharge Limit	October		November		December	
		Monitoring Results	Mass Loading (estimated max)	Monitoring Results	Mass Loading (estimated max)	Monitoring Results	Mass Loading (estimated max)
Total Flow (gallons/day) - Averaged	14,400 /day	7,660 /day		8,541 /day		9,478 /day	
pH (SU)	6.5 - 8.5	7.2		6.7		7.9	
1,1-Dichloroethane	0.01 mg/l	< 0.00059 mg/l	0.000038 lbs/day	< 0.00059 mg/l	0.000042 lbs/day	< 0.00059 mg/l	0.000047 lbs/day
1,1-Dichloroethylene	0.01 mg/l	< 0.00085 mg/l	0.000054 lbs/day	< 0.00085 mg/l	0.000061 lbs/day	< 0.00085 mg/l	0.000067 lbs/day
Tetrachloroethylene	0.002 mg/l	< 0.00034 mg/l	0.000022 lbs/day	< 0.00034 mg/l	0.000024 lbs/day	< 0.00034 mg/l	0.000027 lbs/day
Trans-1,2-dichloroethylene	0.01 mg/l	< 0.00059 mg/l	0.000038 lbs/day	< 0.00059 mg/l	0.000042 lbs/day	< 0.00059 mg/l	0.000047 lbs/day
1,1,1-Trichloroethane	0.01 mg/l	< 0.00039 mg/l	0.000025 lbs/day	< 0.00039 mg/l	0.000028 lbs/day	< 0.00039 mg/l	0.000031 lbs/day
Trichloroethylene	0.01 mg/l	< 0.00060 mg/l	0.000038 lbs/day	< 0.00060 mg/l	0.000043 lbs/day	< 0.00060 mg/l	0.000047 lbs/day
1,1,2-Trichloro-1,2,2 Trifluoroethane	0.01 mg/l	< 0.00036 mg/l	0.000023 lbs/day	< 0.00036 mg/l	0.000026 lbs/day	< 0.00036 mg/l	0.000028 lbs/day

Notes:
Discharge limits per July 27, 2009 NYSDEC guidance letter
NA - Not available

Figure



NEW YORK

SAUGERTIES

SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC QUADS OF SAUGERTIES, N.Y. (1997) AND WOODSTOCK, N.Y. (1990)

0 500 1000 2000

SCALE: FEET
1"=2000'

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AECOM

PHILIPS ELECTRONICS NORTH AMERICA
FORMER FERROXCUBE SITE
1033 KINGS HIGHWAY
SAUGERTIES, NEW YORK

SITE LOCATION MAP

FIGURE
1

Appendix A

NYSDEC July 22, 2009 SPDES Permit Equivalent letter

New York State Department of Environmental Conservation
Division of Water
Bureau of Water Permits, 4th Floor
625 Broadway, Albany, New York 12233-3505
Phone: (518) 402-8111 • **FAX:** (518) 402-9029
Website: www.dec.state.ny.us

Alexander B. Grannis
Commissioner

MEMORANDUM

TO: Michelle Tipple, DER - Region 3 New Paltz

FROM: Bruce Terbush, Bureau of Water Permits BRT

SUBJECT: American Candle Company (formerly Ferroxcube) - DER Site 3-56-011 Groundwater Pump and Treat System

DRAINAGE BASIN: 13

DATE: July 22, 2009

This is in response to the July 13, 2009 letter from Ms. Andrea Simmons of MWH Americas, Inc. requesting renewal of the SPDES Permit Equivalent for the groundwater pump and treat system at the American Candle Company (formerly Ferroxcube) site located at 1033 Kings Highway, Saugerties, New York.

The SPDES Permit Equivalent is being renewed at this time for a treatment system consisting of a particulate filter, air stripper (optional) and activated carbon beds to treat 14,400 gallons per day of contaminated groundwater at this site. The effluent criteria for this discharge is attached.

The Division of Water does not have any regulatory authority over a discharge from a State, PRP, or Federal Superfund Site. The Division of Environmental Remediation will be responsible for ensuring compliance with the attached effluent criteria and approval of all engineering submissions. Additional Condition (1) identifies the appropriate DER Section Chief 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 these discharges 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 (518) 402-8235.

Attachment

cc: (w/att) T. Rudolph, Regional Water Manager, Region 3
C. Webber
J. Occidental

American Candle Company (formerly Ferroxcube) Site
Groundwater Pump and Treat System

DER Site No. 3-56-011

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning August 16, 2009

and lasting until August 15, 2014

the discharge from the treatment facility to the Mudder Kill [water index number H-171-4, Class C] shall be limited and monitored by the operator as specified below:

Outfall Number and Parameter	Discharge Limitations		Units	Minimum Monitoring Requirements		Footnote
	Daily Avg.	Daily Max		Measurement Frequency	Sample Type	
Outfall 001 - Treated Groundwater Remediation Discharge						
Flow	Monitor	14,400	GPD	Continuous	Meter	
pH (range)	6.5 to 8.5		SU	Monthly	Grab	
1,1-Dichloroethane		0.01	mg/l	Monthly	Grab	
1,1-Dichloroethylene		0.01	mg/l	Monthly	Grab	
trans-1,2-Dichloroethylene		0.01	mg/l	Monthly	Grab	
Tetrachloroethylene		0.002	mg/l	Monthly	Grab	
1,1,1-Trichloroethane		0.01	mg/l	Monthly	Grab	
Trichloroethylene		0.01	mg/l	Monthly	Grab	
1,1,2-Trichloro-1,2,2-Trifluoroethane		0.01	mg/l	Monthly	Grab	

Additional Conditions:

(1) 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:

Michelle Tipple
Engineering Geologist II
NYSDEC - Division of Environmental Remediation
21 South Putt Corners Road
New Paltz, NY 12561
Phone: (845) 256-3153

With an annual summary of monitoring results sent to:

Regional Water Manager
NYSDEC - Region 3
100 Hillside Avenue, Suite 1W
White Plains, NY 10603
Phone: (914) 428-0323

(2) Only contaminated groundwater from this site is authorized for treatment and discharge.

(3) Authorization to discharge is valid only for the period noted on the previous page 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, biocidal-type compounds, or other water treatment chemicals used in the treatment process must be approved by the department prior to use.

(6) This discharge and administration of this discharge must comply with the substantive requirements of 6NYCRR Part 750.