



Environment

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

Submitted by:  
AECOM  
Latham, New York  
60319159  
March 2015

Groundwater Pump and Treat System  
2014 Annual Summary of Monitoring Results  
American Candle Company (Former Ferroxcube Site)  
Saugerties, New York  
NYSDEC Site No. 356011

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Prepared By: Mark J. Howard, Geologist

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Reviewed By: Richard Hixon, Senior Program Manager

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Appendix A NYSDEC June 2, 2014 SPDES Permit Equivalent Letter

## 1.0 Introduction

AECOM has prepared this 2014 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 a 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 renewed on June 2, 2014 (originally granted on July 22, 2009). The SPDES Permit Equivalent approved by the NYSDEC Division of Water authorizes the discharge of effluent from the groundwater pump and treat system to the Mudder Kill (water index number H-171-4, Class C). The effective period of the renewed SPDES Permit Equivalent letter of authorization is from August 16, 2014 through August 15, 2019 and requires additional

monitoring of total iron and cis-1,2-Dichloroethene (cis-1,2-DCE). See **Appendix A** for a copy of the 2014 SPDES Permit Equivalent letter.

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 (2014):

- The groundwater pumping and treatment system was shut down temporarily for carbon unit change-outs on February 28, 2014 and September 2, 2014 for a portion of each day.
- The groundwater pumping and treatment system was shut down temporarily to clean the submersible pump in RW-4 on May 23, 2014 for a portion of the day.

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 2014 through December 2014. Results of system compliance monitoring and sampling during the 2014 calendar year are presented in **Table 1**.

The treated groundwater met the NYSDEC discharge limits for all parameters and sampling events during the 2014 monitoring period.

## 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	8,219 /day		6,696 /day		6,299 /day	
pH (SU)	6.5 - 8.5	8.3		8.0		8.4	
1,1-Dichloroethane	0.01 mg/l	< 0.00059 mg/l	< 0.000040 lbs/day	< 0.00059 mg/l	< 0.000033 lbs/day	< 0.00059 mg/l	< 0.000031 lbs/day
1,1-Dichloroethylene	0.01 mg/l	< 0.00085 mg/l	< 0.000058 lbs/day	< 0.00085 mg/l	< 0.000047 lbs/day	< 0.00085 mg/l	< 0.000045 lbs/day
Tetrachloroethylene	0.002 mg/l	< 0.00034 mg/l	< 0.000023 lbs/day	< 0.00034 mg/l	< 0.000019 lbs/day	< 0.00034 mg/l	< 0.000018 lbs/day
Trans-1,2-dichloroethylene	0.01 mg/l	< 0.00059 mg/l	< 0.000040 lbs/day	< 0.00059 mg/l	< 0.000033 lbs/day	< 0.00059 mg/l	< 0.000031 lbs/day
1,1,1-Trichloroethane	0.01 mg/l	< 0.00039 mg/l	< 0.000027 lbs/day	< 0.00039 mg/l	< 0.000022 lbs/day	< 0.00039 mg/l	< 0.000021 lbs/day
Trichloroethylene	0.01 mg/l	< 0.00060 mg/l	< 0.000041 lbs/day	< 0.00060 mg/l	< 0.000034 lbs/day	< 0.00060 mg/l	< 0.000032 lbs/day
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.01 mg/l	< 0.00036 mg/l	< 0.000025 lbs/day	< 0.00036 mg/l	< 0.000020 lbs/day	< 0.00036 mg/l	< 0.000019 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	5,373 /day		4,481 /day		4,950 /day	
pH (SU)	6.5 - 8.5	8.4		8.4		8.1	
1,1-Dichloroethane	0.01 mg/l	< 0.00059 mg/l	< 0.000026 lbs/day	< 0.00059 mg/l	< 0.000022 lbs/day	< 0.00059 mg/l	< 0.000024 lbs/day
1,1-Dichloroethylene	0.01 mg/l	< 0.00085 mg/l	< 0.000038 lbs/day	< 0.00085 mg/l	< 0.000032 lbs/day	< 0.00085 mg/l	< 0.000035 lbs/day
Tetrachloroethylene	0.002 mg/l	< 0.00034 mg/l	< 0.000015 lbs/day	< 0.00034 mg/l	< 0.000013 lbs/day	< 0.00034 mg/l	< 0.000014 lbs/day
Trans-1,2-dichloroethylene	0.01 mg/l	< 0.00059 mg/l	< 0.000026 lbs/day	< 0.00059 mg/l	< 0.000022 lbs/day	< 0.00059 mg/l	< 0.000024 lbs/day
1,1,1-Trichloroethane	0.01 mg/l	< 0.00039 mg/l	< 0.000017 lbs/day	< 0.00039 mg/l	< 0.000015 lbs/day	< 0.00039 mg/l	< 0.000016 lbs/day
Trichloroethylene	0.01 mg/l	< 0.00060 mg/l	< 0.000027 lbs/day	< 0.00060 mg/l	< 0.000022 lbs/day	< 0.00060 mg/l	< 0.000025 lbs/day
1,1,2-Trichloro-1,2,2-Trifluoroethane	0.01 mg/l	< 0.00036 mg/l	< 0.000016 lbs/day	< 0.00036 mg/l	< 0.000013 lbs/day	< 0.00036 mg/l	< 0.000015 lbs/day

**Notes:**

Discharge limits per July 27, 2009 NYSDEC guidance letter

NA - Not available

NS - Not sampled

**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	5,125 /day		5,470 /day		6,641 /day	
pH (SU)	6.5 - 8.5	7.0		7.4		8.2	
Iron, Total	Monitor	NS	NA	0.024 J mg/l	0.001095 lbs/day	0.13 mg/l	0.0 lbs/day
1,1-Dichloroethane	0.01 mg/l	< 0.00059 mg/l	< 0.000025 lbs/day	< 0.00059 mg/l	< 0.000027 lbs/day	< 0.00059 mg/l	< 0.000033 lbs/day
1,1-Dichloroethylene	0.01 mg/l	< 0.00085 mg/l	< 0.000036 lbs/day	< 0.00085 mg/l	< 0.000039 lbs/day	< 0.00085 mg/l	< 0.000047 lbs/day
cis-1,2-Dichloroethylene	0.01 mg/l	< 0.00057 mg/l	< 0.000024 lbs/day	< 0.00057 mg/l	< 0.000026 lbs/day	< 0.00057 mg/l	< 0.000032 lbs/day
Tetrachloroethylene	0.002 mg/l	< 0.00034 mg/l	< 0.000015 lbs/day	< 0.00034 mg/l	< 0.000016 lbs/day	< 0.00034 mg/l	< 0.000019 lbs/day
Trans-1,2-dichloroethylene	0.01 mg/l	< 0.00059 mg/l	< 0.000025 lbs/day	< 0.00059 mg/l	< 0.000027 lbs/day	< 0.00059 mg/l	< 0.000033 lbs/day
1,1,1-Trichloroethane	0.01 mg/l	< 0.00039 mg/l	< 0.000017 lbs/day	< 0.00039 mg/l	< 0.000018 lbs/day	< 0.00039 mg/l	< 0.000022 lbs/day
Trichloroethylene	0.01 mg/l	< 0.00060 mg/l	< 0.000026 lbs/day	< 0.00060 mg/l	< 0.000027 lbs/day	< 0.00060 mg/l	< 0.000033 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	< 0.000020 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	7,694 /day		8,253 /day		8,369 /day	
pH (SU)	6.5 - 8.5	8.0		7.0		7.5	
Iron, Total	Monitor	0.05300 mg/l	0.003403 lbs/day	0.12000 mg/l	0.008265 lbs/day	< 0.05000 mg/l	< 0.003492 lbs/day
1,1-Dichloroethane	0.01 mg/l	< 0.00059 mg/l	< 0.000038 lbs/day	< 0.00059 mg/l	< 0.000041 lbs/day	< 0.00059 mg/l	< 0.000041 lbs/day
1,1-Dichloroethylene	0.01 mg/l	< 0.00085 mg/l	< 0.000055 lbs/day	< 0.00085 mg/l	< 0.000059 lbs/day	< 0.00085 mg/l	< 0.000059 lbs/day
cis-1,2-Dichloroethylene	0.01 mg/l	< 0.00057 mg/l	< 0.000037 lbs/day	< 0.00057 mg/l	< 0.000039 lbs/day	< 0.00057 mg/l	< 0.000040 lbs/day
Tetrachloroethylene	0.002 mg/l	< 0.00034 mg/l	< 0.000022 lbs/day	< 0.00034 mg/l	< 0.000023 lbs/day	< 0.00034 mg/l	< 0.000024 lbs/day
Trans-1,2-dichloroethylene	0.01 mg/l	< 0.00059 mg/l	< 0.000038 lbs/day	< 0.00059 mg/l	< 0.000041 lbs/day	< 0.00059 mg/l	< 0.000041 lbs/day
1,1,1-Trichloroethane	0.01 mg/l	< 0.00039 mg/l	< 0.000025 lbs/day	< 0.00039 mg/l	< 0.000027 lbs/day	< 0.00039 mg/l	< 0.000027 lbs/day
Trichloroethylene	0.01 mg/l	< 0.00060 mg/l	< 0.000039 lbs/day	< 0.00060 mg/l	< 0.000041 lbs/day	< 0.00060 mg/l	< 0.000042 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	< 0.000025 lbs/day	< 0.00036 mg/l	< 0.000025 lbs/day

**Notes:**

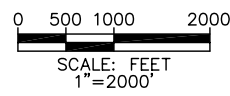
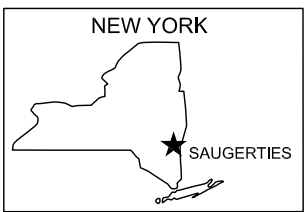
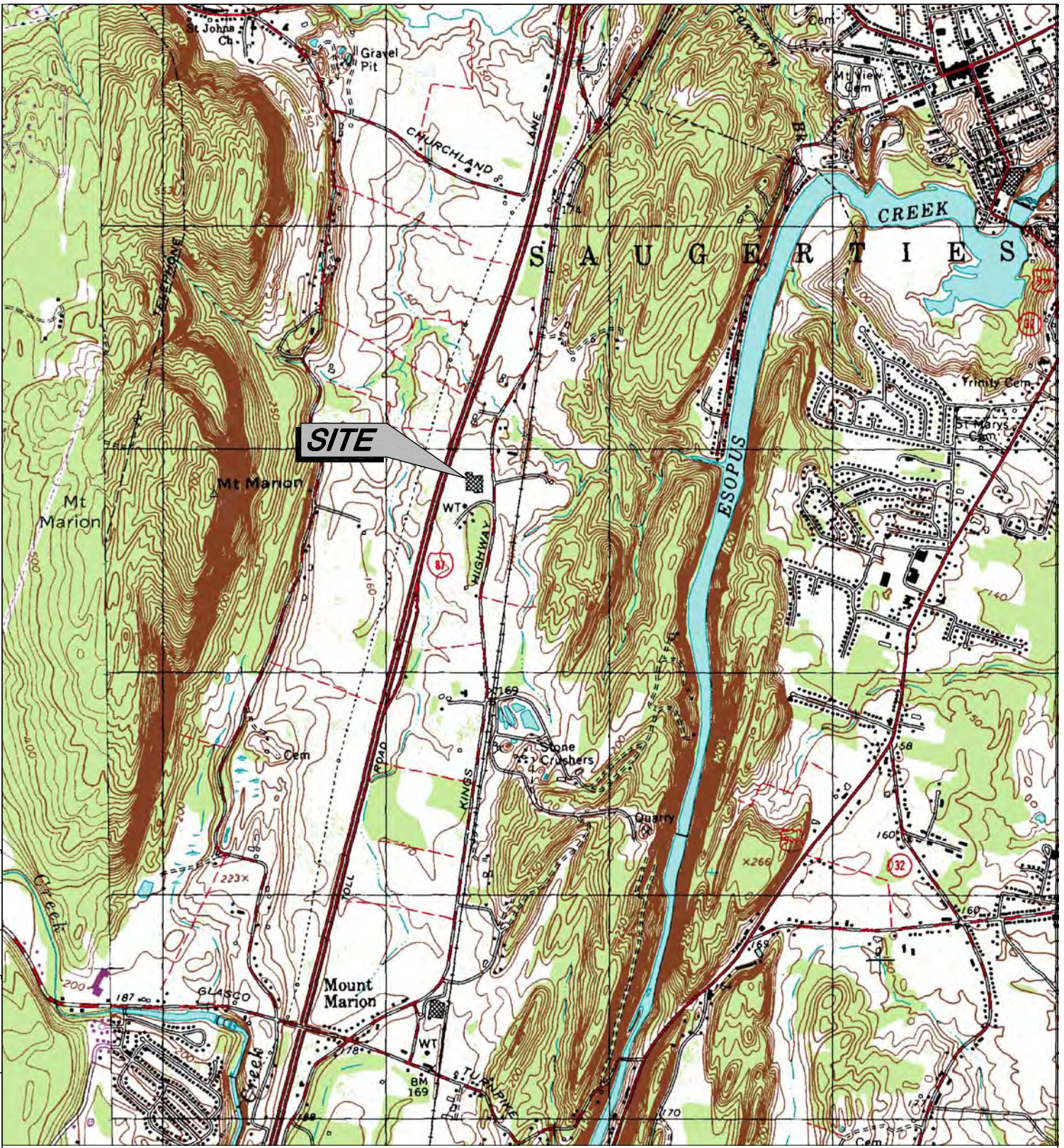
Discharge limits per June 2, 2014 NYSDEC guidance letter renewal

NA - Not available

NS - Not sampled

**Figure**





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



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

SITE LOCATION MAP

FIGURE  
1

## **Appendix A**

**NYSDEC June 2, 2014 SPDES Permit Equivalent Letter**

**New York State Department of Environmental Conservation**

**Division of Water,**

**Bureau of Water Permits, 4<sup>th</sup> Floor**

625 Broadway, Albany, New York 12233-3505

**Phone:** (518) 402-8111 • **Fax:** (518) 402-9029

**Website:** [www.dec.ny.gov](http://www.dec.ny.gov)



Joe Martens  
Commissioner

**MEMORANDUM**

**TO:** George Heitzman, DER, Remedial Bureau C

**FROM:** Bruce Terbush, DOW, 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:** June 2, 2014

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This is in response to the April 14, 2014 and May 7, 2014 submissions from Ms. Lindsey Mitchell with AECOM 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 bag filters and granular activated carbon units to treat 14,400 gallons per day of contaminated groundwater at this site. The pump and treat system discharges to the Mudder Kill, a Class C waterbody. The effluent criteria for this discharge is attached. The revised permit equivalent includes effluent criteria for cis-1,2-dichloroethylene and monitoring for total iron.

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 apprised 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) S. Karimipour, Regional Water Engineer, Region 3  
S. Mitchell

## EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning August 16, 2014

and lasting until August 15, 2019

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	
<b>Outfall 001 - Treated Groundwater Remediation Discharge</b>						
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	
cis-1,2-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	
Iron, Total		Monitor	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:

George Heitzman  
Remedial Bureau C  
NYSDEC - Division of Environmental Remediation  
625 Broadway  
Albany, NY 12233-7014  
Phone: (518) 402-9662

With an annual summary of monitoring results sent to:

Regional Water Engineer  
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 ug/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.