AECOM Environment

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

Submitted by:
AECOM
Latham, New York
60492748
April 2016

# Groundwater Pump and Treat System
# 2015 Annual Summary of Monitoring Results
# American Candle Company (Former Ferroxcube Site)
# Saugerties, New York
# NYSDEC Site No. 356011

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Reviewed By: Richard Hixon, Senior Program Manager

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## 1.0 Introduction

AECOM has prepared this 2015 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 were observed during this reporting period (2015):

- The groundwater pumping and treatment system was shut down temporarily for carbon unit change-out on October 30, 2015 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 2015 through December 2015.

Results of system compliance monitoring and sampling during the 2015 calendar year are presented in **Table 1**.The treated groundwater met the NYSDEC discharge limits for all parameters and sampling events during the 2015 monitoring period. However, in September, the effluent pH was measured at 5.9 standard units (SU), which is not within the discharge limit range of 6.5 to 8.5 SU for the Site as specified in the 2014 letter. pH readings collected in August and October 2015 were within the discharge limits. It was determined that the low pH reading was due to operator error.

# 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 | 7,012 /day | | 6,254 /day | | 5,574 /day | |
| pH (SU) | 6.5 - 8.5 | 7.7 | | 7.9 | | 8.2 | |
| Iron, Total | Monitor | < 0.05000 mg/l | < 0.002926 lbs/day | < 0.05000 mg/l | < 0.002610 lbs/day | < 0.05000 mg/l | < 0.002326 lbs/day |
| 1,1-Dichloroethane | 0.01 mg/l | < 0.00059 mg/l | < 0.000035 lbs/day | < 0.00059 mg/l | < 0.000031 lbs/day | < 0.00059 mg/l | < 0.000027 lbs/day |
| 1,1-Dichloroethylene | 0.01 mg/l | < 0.00085 mg/l | < 0.000050 lbs/day | < 0.00085 mg/l | < 0.000044 lbs/day | < 0.00085 mg/l | < 0.000040 lbs/day |
| cis-1,2-Dichloroethylene | 0.01 mg/l | < 0.00057 mg/l | < 0.000033 lbs/day | < 0.00057 mg/l | < 0.000030 lbs/day | < 0.00057 mg/l | < 0.000027 lbs/day |
| Tetrachloroethylene | 0.002 mg/l | < 0.00034 mg/l | < 0.000020 lbs/day | < 0.00034 mg/l | < 0.000018 lbs/day | < 0.00034 mg/l | < 0.000016 lbs/day |
| Trans-1,2-dichloroethylene | 0.01 mg/l | < 0.00059 mg/l | < 0.000035 lbs/day | < 0.00059 mg/l | < 0.000031 lbs/day | < 0.00059 mg/l | < 0.000027 lbs/day |
| 1,1,1-Trichloroethane | 0.01 mg/l | < 0.00039 mg/l | < 0.000023 lbs/day | < 0.00039 mg/l | < 0.000020 lbs/day | < 0.00039 mg/l | < 0.000018 lbs/day |
| Trichloroethylene | 0.01 mg/l | < 0.00060 mg/l | < 0.000035 lbs/day | < 0.00060 mg/l | < 0.000031 lbs/day | < 0.00060 mg/l | < 0.000028 lbs/day |
| 1,1,2-Trichloro-1,2,2 Trifluoroethane | 0.01 mg/l | < 0.00036 mg/l | < 0.000021 lbs/day | < 0.00036 mg/l | < 0.000019 lbs/day | < 0.00036 mg/l | < 0.000017 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 | 5,174 /day | | 4,620 /day | | 5,259 /day | |
| pH (SU) | 6.5 - 8.5 | 8.2 | | 7.4 | | 8.1 | |
| Iron, Total | Monitor | < 0.05000 mg/l | < 0.002159 lbs/day | < 0.05000 mg/l | < 0.001928 lbs/day | < 0.05000 mg/l | < 0.002194 lbs/day |
| 1,1-Dichloroethane | 0.01 mg/l | < 0.00059 mg/l | < 0.000025 lbs/day | < 0.00059 mg/l | < 0.000023 lbs/day | < 0.00059 mg/l | < 0.000026 lbs/day |
| 1,1-Dichloroethylene | 0.01 mg/l | < 0.00085 mg/l | < 0.000037 lbs/day | < 0.00085 mg/l | < 0.000033 lbs/day | < 0.00085 mg/l | < 0.000037 lbs/day |
| cis-1,2-Dichloroethylene | 0.01 mg/l | < 0.00057 mg/l | < 0.000025 lbs/day | < 0.00057 mg/l | < 0.000022 lbs/day | < 0.00057 mg/l | < 0.000025 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 | < 0.000015 lbs/day |
| Trans-1,2-dichloroethylene | 0.01 mg/l | < 0.00059 mg/l | < 0.000025 lbs/day | < 0.00059 mg/l | < 0.000023 lbs/day | < 0.00059 mg/l | < 0.000026 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 | < 0.000017 lbs/day |
| Trichloroethylene | 0.01 mg/l | < 0.00060 mg/l | < 0.000026 lbs/day | < 0.00060 mg/l | < 0.000023 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 | < 0.000016 lbs/day | < 0.00036 mg/l | < 0.000014 lbs/day | < 0.00036 mg/l | < 0.000016 lbs/day |

**Notes:**
Discharge limits per June 2, 2014 NYSDEC guidance letter renewal
NA - Not available
NS - Not sampled

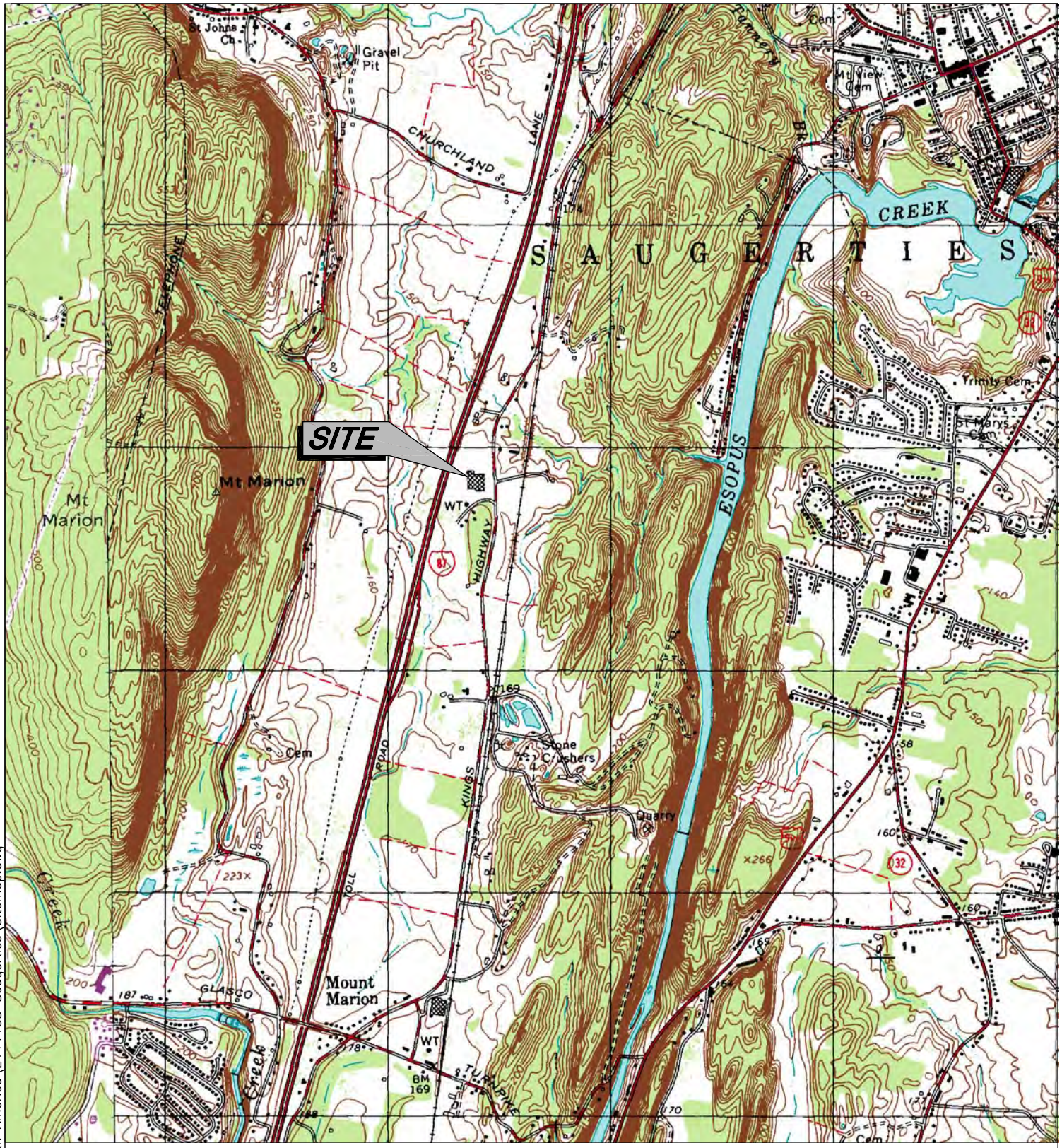
## Table 1
## Groundwater Treatment System Discharge Summary

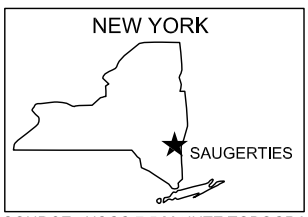
| Parameter | Discharge Limit | July | | August | | September | |
|---|---|---|---|---|---|---|---|
| | | Monitoring Results | Mass Loading (estimated max) | Monitoring Results | Mass Loading (estimated max) | Monitoring Results | Mass Loading (estimated max) |
| Total Flow (gallons/day) - Averaged | 14,400 /day | 5,144 /day | | 6,322 /day | | 5,881 /day | |
| pH (SU) | 6.5 - 8.5 | 8.1 | | 8.3 | | 5.9 | |
| Iron, Total | Monitor | < 0.05000 mg/l | < 0.002147 lbs/day | < 0.05000 mg/l | < 0.002638 lbs/day | < 0.05000 mg/l | < 0.002454 lbs/day |
| 1,1-Dichloroethane | 0.01 mg/l | < 0.00059 mg/l | < 0.000025 lbs/day | < 0.00059 mg/l | < 0.000031 lbs/day | < 0.00059 mg/l | < 0.000029 lbs/day |
| 1,1-Dichloroethylene | 0.01 mg/l | < 0.00085 mg/l | < 0.000036 lbs/day | < 0.00085 mg/l | < 0.000045 lbs/day | < 0.00085 mg/l | < 0.000042 lbs/day |
| cis-1,2-Dichloroethylene | 0.01 mg/l | < 0.00057 mg/l | < 0.000024 lbs/day | < 0.00057 mg/l | < 0.000030 lbs/day | < 0.00057 mg/l | < 0.000028 lbs/day |
| Tetrachloroethylene | 0.002 mg/l | < 0.00034 mg/l | < 0.000015 lbs/day | < 0.00034 mg/l | < 0.000018 lbs/day | < 0.00034 mg/l | < 0.000017 lbs/day |
| Trans-1,2-dichloroethylene | 0.01 mg/l | < 0.00059 mg/l | < 0.000025 lbs/day | < 0.00059 mg/l | < 0.000031 lbs/day | < 0.00059 mg/l | < 0.000029 lbs/day |
| 1,1,1-Trichloroethane | 0.01 mg/l | < 0.00039 mg/l | < 0.000017 lbs/day | < 0.00039 mg/l | < 0.000021 lbs/day | < 0.00039 mg/l | < 0.000019 lbs/day |
| Trichloroethylene | 0.01 mg/l | < 0.00060 mg/l | < 0.000026 lbs/day | < 0.00060 mg/l | < 0.000032 lbs/day | < 0.00060 mg/l | < 0.000029 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 | < 0.000019 lbs/day | < 0.00036 mg/l | < 0.000018 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 | 5,866 /day | | 5,436 /day | | 5,517 /day | |
| pH (SU) | 6.5 - 8.5 | 8.1 | | 7.5 | | 7.6 | |
| Iron, Total | Monitor | < 0.05000 mg/l | < 0.002448 lbs/day | < 0.05000 mg/l | < 0.002268 lbs/day | < 0.05000 mg/l | < 0.002302 lbs/day |
| 1,1-Dichloroethane | 0.01 mg/l | < 0.00059 mg/l | < 0.000029 lbs/day | < 0.00059 mg/l | < 0.000027 lbs/day | < 0.00059 mg/l | < 0.000027 lbs/day |
| 1,1-Dichloroethylene | 0.01 mg/l | < 0.00085 mg/l | < 0.000042 lbs/day | < 0.00085 mg/l | < 0.000039 lbs/day | < 0.00085 mg/l | < 0.000039 lbs/day |
| cis-1,2-Dichloroethylene | 0.01 mg/l | < 0.00057 mg/l | < 0.000028 lbs/day | < 0.00057 mg/l | < 0.000026 lbs/day | < 0.00057 mg/l | < 0.000026 lbs/day |
| Tetrachloroethylene | 0.002 mg/l | < 0.00034 mg/l | < 0.000017 lbs/day | < 0.00034 mg/l | < 0.000015 lbs/day | < 0.00034 mg/l | < 0.000016 lbs/day |
| Trans-1,2-dichloroethylene | 0.01 mg/l | < 0.00059 mg/l | < 0.000029 lbs/day | < 0.00059 mg/l | < 0.000027 lbs/day | < 0.00059 mg/l | < 0.000027 lbs/day |
| 1,1,1-Trichloroethane | 0.01 mg/l | < 0.00039 mg/l | < 0.000019 lbs/day | < 0.00039 mg/l | < 0.000018 lbs/day | < 0.00039 mg/l | < 0.000018 lbs/day |
| Trichloroethylene | 0.01 mg/l | < 0.00060 mg/l | < 0.000029 lbs/day | < 0.00060 mg/l | < 0.000027 lbs/day | < 0.00060 mg/l | < 0.000028 lbs/day |
| 1,1,2-Trichloro-1,2,2 Trifluoroethane | 0.01 mg/l | < 0.00036 mg/l | < 0.000018 lbs/day | < 0.00036 mg/l | < 0.000016 lbs/day | < 0.00036 mg/l | < 0.000017 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)

0 500 1000 2000

SCALE: FEET
1"=2000'

north

AECOM

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

SITE LOCATION MAP

FIGURE
1

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# Appendix A

## NYSDEC June 2, 2014 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.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 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) 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 | |
| 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 | |
| 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.