DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)

Current Human Exposures Under Control

Facility Name: Ferroxcube (Philips Components)
Facility Address: 1033 Kings Highway, Saugerties, NY 12477
Facility EPA ID #: NYD000233510

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination? **(Note: This determination addresses contaminated media regulated under New York State's Inactive Hazardous Waste Disposal Site Remedial Program.)**

   X If yes - check here and continue with #2 below.

   _____ If no - re-evaluate existing data, or

   _____ if data are not available skip to #6 and check the "IN" status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved) to track changes in the quality of the environment. The two EI developed to date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	Yes	No	?	Rationale / Key Contaminants
Groundwater	x			chlorinated solvents (see below)
Air (indoors)[2]		x		
Surface Soil (e.g., <2 ft)		x		
Surface Water		x		
Sediment		x		
Subsurf. Soil (e.g., >2 ft)		x		
Air (outdoors)		x		

_____ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

X If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

_____ If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale and Reference(s):

The Ferroxcube plant, currently owned by Philips Components, has been manufacturing electronic components since 1961. Halogenated solvents have been used in the production operations. In 1982, the Ulster County Department of Health (UCDH), as part of a regional groundwater quality assessment, identified the presence of halogenated hydrocarbons in four nearby residential wells (Cunningham, Cole, Andreassen, and Knicely) above drinking water standards. As a result, a site investigation was performed and on-site contamination of groundwater and surface soil was detected.

Ferroxcube purchased the Knicely well (K-well) in the mid-1980s and has abandoned its use. The Miles house, built in 1984, has exhibited contamination of its well water since 1985. Drinking water in the four impacted wells has been monitored monthly since 1982. The maximum concentration detected in the residential wells was 2,000 ppb total VOCs in 1988 in the Miles well. The Miles house, too, was purchased by Philips in 1999 and its well has been abandoned.

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[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

[2] Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

As reported in the 1992 RI/FS report (Groundwater Technology 1992), the principal contaminants detected in groundwater are: 1,1,1-trichloroethane (TCA), trichloroethylene (TCE), 1,1-dichloroethane (DCE), tetrachloroethane (PCE), and Freon 113. The applicable groundwater standard or guidance value for each of these compounds is 5 ppb or 100 ppb total VOCs. Concentrations of total VOCs detected on-site have been as high as 134,000 ppb, detected in monitoring well OW-3 in 1986. By 1992, the concentration in OW-3 had fallen to around 45,000 ppb. The RI revealed that the heaviest contamination in groundwater is localized around OW-3 and at the bedrock-overburden interface.

A soil gas survey conducted in 1992 suggests that the original source of the contamination may have been an old storage shed, but that the bulk of the contamination has migrated deeper into the aquifer and to the north. The maximum concentration of total VOCs detected in soil samples collected was 7 ppm under the former shed, therefore soil contamination is not a concern.

3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential **Human Receptors** (Under Current Conditions)

"Contaminated" Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food[3]
Groundwater	no	no	no	no			no
~~Air (indoors)~~	____	____	____				
~~Soil (surface; <2 ft)~~	____	____	____	____	____	____	____
~~Surface Water~~	____	____			____	____	____
~~Sediment~~	____	____			____	____	____
~~Soil (subsurface, >2 ft)~~				____			____
~~Air (outdoors)~~	____	____	____	____	____		

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not "contaminated" as identified in #2 above.

2. enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

X If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

[3] Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish)

_____ If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

_____ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

Engineered systems are in place which prevent a complete groundwater exposure pathway from occurring. In the mid-1980s, Ferroxcube installed individual water treatment systems consisting of a carbon filter and ultraviolet destruction unit at the four affected residential water supply wells (Cunningham, Cole, Andreassen, and Miles). Based on the 1992 RI/FS report for the site, a ROD was issued in 1993 which addressed sources of on-site groundwater contamination and residual soil contamination. The goal of the remediation was to clean up groundwater to meet, within five years, New York State drinking water standards. The remedial system designed for the site was developed to meet the following objectives:

- remove adsorbed ad vapor-phase VOCs from the soils above and below the water table
- provide hydraulic control of overburden groundwater to prevent migration of VOCs from the target area
- create no adverse impacts
- protect human health during construction and operation
- reduce groundwater concentrations of VOCs as specified in the ROD

The remedy includes periodic sampling and analysis of groundwater and drinking water to monitor the effectiveness of the remedial action. The ROD included a table of theoretical concentrations or groundwater quality objectives to compare against annual data from the Miles well as a measure of the remedial action's effectiveness. Annual targets for PCE and total VOCs at the Miles well are presented in the ROD.

Since 1994, an active soil and groundwater remediation system has been in place at the site consisting of three components: soil vapor extraction, air sparging, and groundwater collection and treatment. The groundwater pumping system originally consisted of seven recovery wells, however, only two of the recovery wells (OW-3 and OW-10) continue to operate. The air sparge/SVE system was shut down in April 1998 after meeting performance objectives specified in the ROD. In early 1999, Ferroxcube acquired the Miles property and abandoned use of its well. The remaining three residential water treatment systems continue to operate. All four wells are monitored on a monthly basis by the UCDH and show a downward trend in VOC concentrations, however, the Miles well is not meeting the remedial objectives outlined in the ROD (see Table 1).

4. Can the exposures from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**[4] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

   ____ If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

   ____ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

   ____ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

   Rationale and Reference(s): _____

5. Can the "significant" exposures (identified in #4) be shown to be within acceptable limits?

   ____ If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

   ____ If no (there are current exposures that can be reasonably expected to be "unacceptable")- continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

   ____ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code

   Rationale and Reference(s): _____

[4] If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

_X_ YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the Ferroxcube (Philips Components) Site, located at 1033 Kings Highway in Saugerties, NY 12477 under current and reasonably expected conditions. This determination will be re-evaluated when the State becomes aware of significant changes at the facility.

____ NO - "Current Human Exposures" are NOT "Under Control."

____ IN - More information is needed to make a determination.

Completed by _____ Date _____
Eric Hausamann
Environmental Engineer 2

Supervisor _____ Date _____
James Harrington
Environmental Engineer 3
New York State Department of
Environmental Conservation

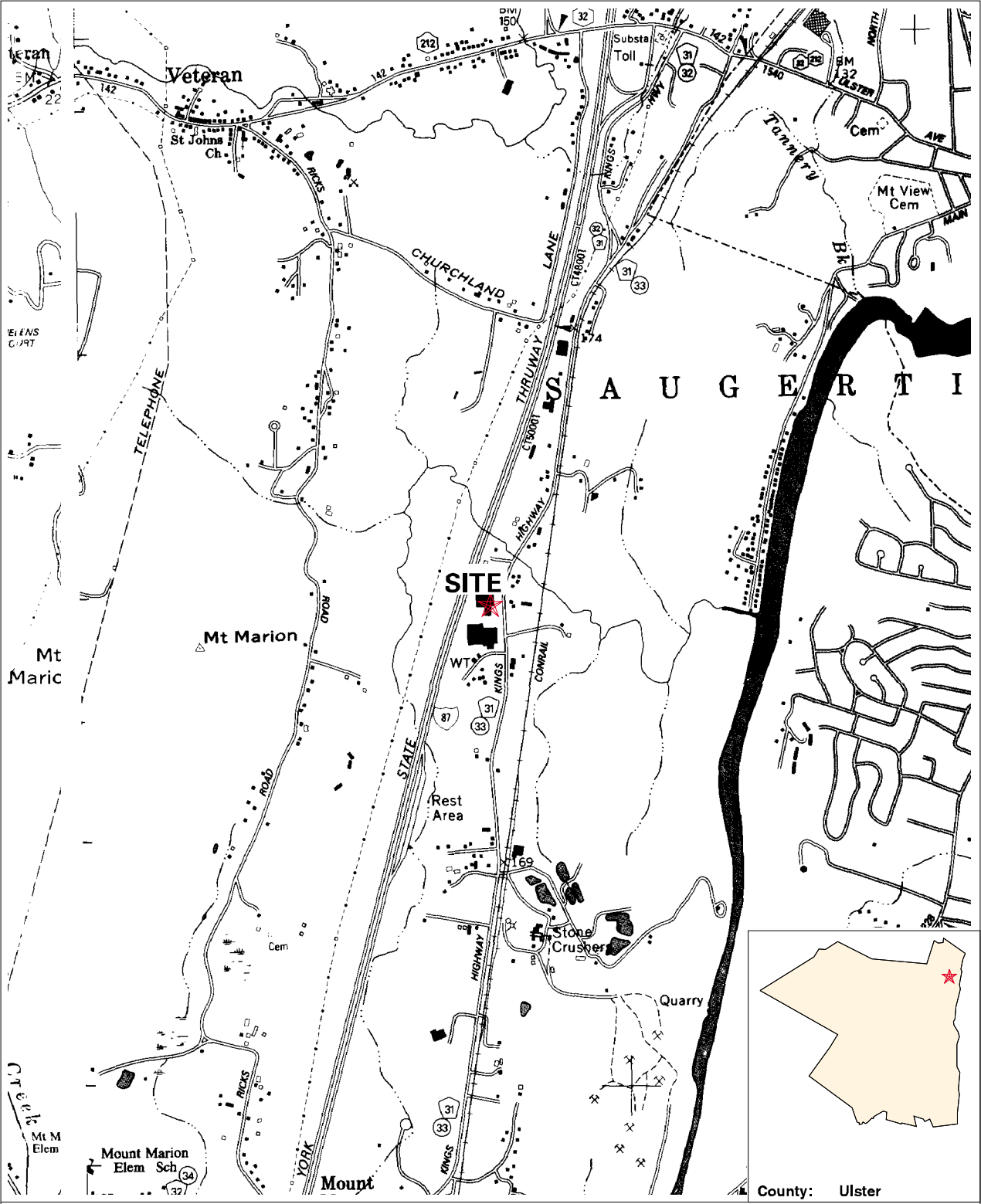
Locations where References may be found:

New York State Department of Environmental Conservation
Region 3 Office
21 South Putt Corners Rd.
New Paltz, New York 12561

Contact telephone and e-mail numbers

Ram Pergadia
(914) 256-3146
rrpergad@gw.dec.state.ny.us

FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.



Site Location Map

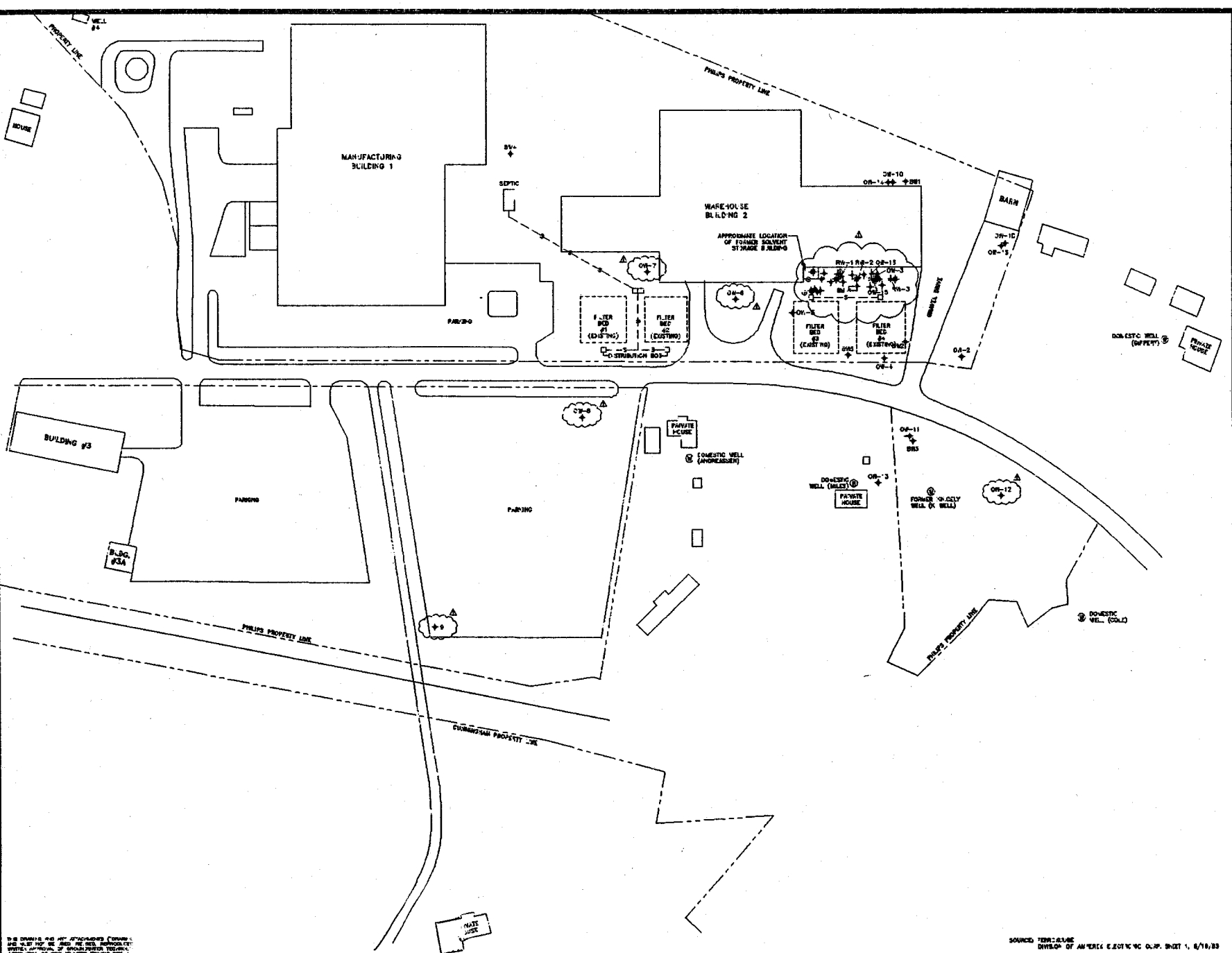
356011 Ferroxcube

NYSDOT Planimetric Quadrangle(s):
SAUGERTIES, WOODSTOCK

N

0 500 1000 1500 2000
FEET

Scale 1:24,000



NO.	DATE	BY	REVISION
1	11/28/94	MPS	AS-BUILT DETAILS ABANDONED WELLS NEW SPARGE/VENT/ RECOVERY WELLS

SIGNATURE	DATE
REVIEW ENGR:	
PROJECT ENGR:	
PROJECT MGR:	
CLIENT:	

GROUNDWATER TECHNOLOGY
1249 KINGS ROAD
SCHENECTADY, NY 12303 (518) 370-6681

PHILIPS COMPONENTS

1033 KINGS HIGHWAY
SAUGERTIES, NEW YORK

SITE PLAN

DESIGNED BY:	DETAILED BY:	CHECKED BY:
RAH	DEO	

DRAWING DATE: 3/5/94	ACAD FILE: 5019-Y1
PROJECT NO.: 0111C-5019	CONTRACT:
DRAWING: Y1	REVISION: 1

SOURCED FROM: HOUSE DIVISION OF AMERICAN ELECTRIC CO. DWG. SHEET 1, 6/10/83

Ferroxcube (Philips Components)

Miles Homeowner Well

Figure 3

Total VOC Data vs. Remedial Goals

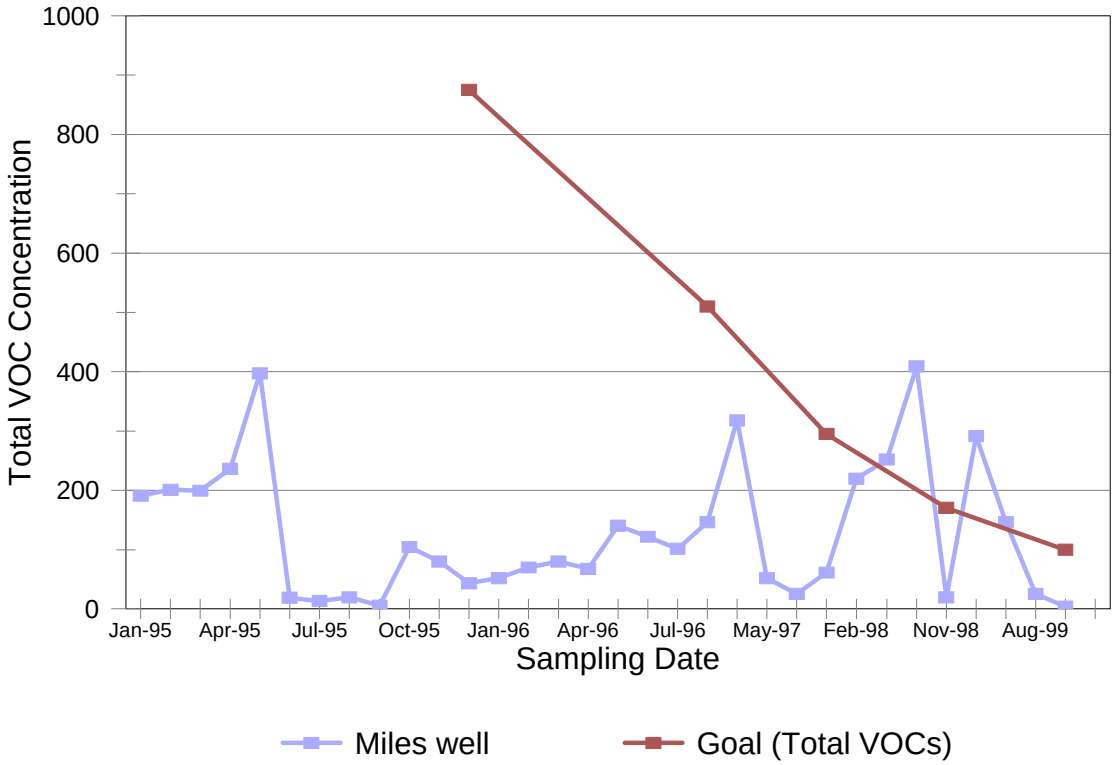


Figure 4

PCE Data vs. Remedial Goals