STATEMENT OF BASIS/FINAL DECISION AND RESPONSE TO COMMENTS SUMMARY

REGION II
ID# 0034

General Electric Company

Waterford, NY
(signed January 25, 1993)

Facility/Unit Type: Research & Development and Manufacturer of silicone products
Contaminants: 1,2-trans-dichloroethene, trichloroethylene, vinyl chloride, benzene
Media: Ground water
Remedy: Ground water pump and treat with two packed column air strippers.

FACILITY DESCRIPTION

GE-Waterford is a silicone production facility located on the west bank of the Hudson River in the Town of Waterford. The facility covers 790 acres and contains 80 identified active and inactive Solid Waste Management Units (SWMUs). The SWMUs include 31 tank areas, 6 landfills, 5 surface impoundments, 3 incinerators, a wastewater treatment plant (WWTP), two old drum storage areas, container accumulation storage areas, process sewers, and miscellaneous units. Twelve units are regulated under RCRA. These units are 3 landfills (1, 3, and 6), 5 surface impoundments, 3 incinerators, and one drum storage area. Currently, the only operating units are landfill 6, the 3 incinerators, and the drum storage area.

On May 26, 1989, EPA issued a RCRA permit to General Electric Company (GE) pursuant to HSWA. The permit required GE to conduct site wide corrective action measures to address groundwater contamination at the facility.

Ground water at the facility flows through layers of glacial till and bedrock toward the east of the Hudson River. The geology of Landfill 1 includes a complex sequence of glacial and lacustrine deposits. The primary aquifer is limited to glacial deposits overlying a shale bedrock with a thin, discontinuous veneer of till. The glacial deposits consist of interlayered sand and silts, and clay. The bedrock hydraulic conductivity is less than 0.00001 cm/sec, which indicates that the top of the bedrock is the bottom of the uppermost aquifer.

To prevent groundwater migration off-site from landfills 2 and 4 located in the vicinity of landfill 1, GE installed a pump and treat system consisting of 47 recovery wells and 6 recharge wells and a physical source control system to maintain an inward hydraulic gradient. This recovery system for landfills 2 and 4 has been in operation since 1988 as an interim corrective measure.

Past hydrological information and groundwater data for Landfills 1 and 3 revealed the presence of hazardous constituents. On December 5, 1990, GE submitted a CMS report to remediate Landfill 1. Due to the relatively small concentrations of groundwater contaminants detected in Landfill 3, the corrective action for landfill 3 has been limited to a groundwater monitoring program. The Corrective Measures Study (CMS) report to remediate Landfill 1 was conditionally approved by EPA on July 22, 1991. GE is required to submit to EPA a 90 day start-up analysis report on the expanded capture zone and final report after 6 months of operation.

EXPOSURE PATHWAYS

Releases from the landfills, non-RCRA landfills, and other manufacturing areas have resulted

CONTAMINATION DETECTED AND CLEANUP GOALS

Media Goal	Estimated Volume	Contaminant	Maximum Concentration	Action Level***	Cleanup* Goal	Point of Compliance
ground water	Not given	1,2 -Trans-Dichloroethene	35,900 ppb	3500	3500	MW-410
		Vinyl Chloride	2,389 ppb	2.0	2.0	MW-422
		Dichloromethane	2,010 ppb	5.0	5.0	MW-410
		Methylene Chloride	1,370 ppb	4.7	4.7	MW-410
		Trichloroethylene	902 ppb	5.0	5.0	MW-410
		Acetone	723 ppb	3500	3500	MW-414
		Toluene	275 ppb	5.0	5.0	MW-410
		Benzene	103 ppb	5.0	ND**	MW-410
		Ethylbenzene	97 ppb	5.0	5.0	MW-414
		1,1,1-Trichloroethane	78.3 ppb	5.0	5.0	MW-410
		Chlorobenzene	19.2 ppb	5.0	5.0	MW-264
		Tetrachloroethylene	18.9 ppb	5.0	5.0	MW-410

* The total concentration of all organic constituents, excluding pesticides, herbicides, vinyl chloride, and trihalomethanes, shall not exceed 100.0 ug/l.

** Non detectable - The concentration shall not be at or above the method detection limit established by Method 8020.

*** Action levels and cleanup goals are in parts per billion (ppb)

in widespread ground water contamination. The hazardous waste constituents present in the ground water have most likely migrated in the direction of the ground water flow towards the Hudson River. There is also the potential for surface water contamination from other areas of the facility that are currently under remediation. Air releases would be limited to the operations of the WWTP and soil excavations.

SELECTED REMEDY

The selected corrective measure for Landfill 1 is to pump and treat the ground water. The corrective measure will involve 2 recovery wells and appurtenances necessary to convey and record the amount of groundwater discharged into GE's Landfill 6 leachate collection system. In addition, 16 monitoring wells were installed to evaluate the influence of the recovery wells on the aquifer. The extracted ground water will be treated in two air stripping columns. The ground water will be discharged to the WWTP by means of piping connected to the Landfill 6 leachate collection system. GE has been issued a NPDES permit for the construction and operation of the WWTP and the discharge of the treated ground water to the Hudson River.

The estimated capital and O& M costs for the recovery system for landfill 1 and the site-wide groundwater cleanup are provided below:

Recovery System for Landfill 1
- Capital costs $400,000
- O&M costs per year $30,000 (for 10 years)

Groundwater cleanup
- Capital costs $20 million
- O&M costs per year 3.5 million (for 20 years)

INNOVATIVE TECHNOLOGIES CONSIDERED

None.

PUBLIC PARTICIPATION

The corrective measure was jointly public noticed by EPA and NYSDEC. The public comment period extended from October 9, 1992 through November 25, 1992. EPA received one set of written comments from GE that resulted in minor changes to the original proposed corrective measure. The modifications dealt with specifying the location at the facility where post-closure care must be performed and when the treatment start-up analysis report must be submitted. The permit modification was issued on January 15, 1993.

NEXT STEPS

Evaluate the recovery efficiency of the two recovery wells and take water-level measurements using the existing monitoring wells for capture zone analysis.

KEY WORDS
ground water, ingestion, organics, pesticides, vinyl chloride, trihalomethanes, air stripping

CONTACT
Wilfredo Palomino
U. S. Environmental Protection Agency
26 Federal Plaza
New York, NY 10278
(212) 264-9631