Five-Year Review Report

for

Groveland Wells Nos. 1 & 2 Superfund Site

Groveland,

Essex County, Massachusetts

June 2005

PREPARED BY:

United States Environmental Protection Agency
Region 1
Boston, Massachusetts

Approved by: **Date:**

Susan Studlien 06/30/05

Susan Studlien, Director
Office of Site Remediation and Restoration
United States Environmental Protection Agency, Region 1 - New England

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LIST OF ACRONYMS AND ABBREVIATIONS

ACRONYM	DEFINITION
1,2-DCE	1,2-Dichloroethylene
1,1,1-TCA	1,1,1-Trichloroethane
ARAR	Applicable or Relevant and Appropriate Requirement
AWQC	Ambient Water Quality Criteria
bgs	below ground surface
BOH	Board of Health
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act, 42 USC §§ 9601 *et seq.*
CFR	Code of Federal Regulations
COC	Contaminant of Concern
COPC	Contaminant of Potential Concern
CWA	Clean Water Act
DEP	Massachusetts Department of Environmental Protection
DEQE	Massachusetts Department of Environmental Quality Engineering
DOT	Department of Transportation
DVE	Dual Vapor Extraction
EO	Executive Order
EPA	Environmental Protection Agency (U.S. EPA - Region 1)
ERA	Ecological Risk Assessment
ESD	Explanation of Significant Differences
EW	Extraction Well
FS	Feasibility Study
gpm	gallons per minute
GRC	Groveland Resources Corporation
GWTF	Groundwater Treatment Facility
HQ	Hazard Quotient
ICS	Institutional Controls
IGCL	Interim Groundwater Cleanup Level

ACRONYM	DEFINITION
M&E	Metcalf & Eddy
MADEP	Massachusetts Department of Environmental Protection
MCLs	Maximum Contaminant Levels
MEPA	Massachusetts Environmental Policy Act
MNA	Monitored Natural Attenuation
MOM	Management of Migration
NCP	National Contingency Plan, 40 CFR Part 300
NPL	National Priority List
O&M	Operation and Maintenance
OU1	Operable Unit 1
OU2	Operable Unit 2
PCE	Perchloroethylene (tetrachloroethylene)
ppb	parts per billion
PRP	Potentially Responsible Party
PVC	Polyvinyl Chloride
RAC	Response Action Contract
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act, 42 U.S.C. §§ 6901 *et seq.*
RfD	Reference Dose
RPD	Relative Percent Difference
RI	Remedial Investigation
ROD	Record of Decision
RSE	Remedial System Evaluation
SC	Source Control
SDWA	Safe Drinking Water Act
SF	Slope Factor
SITE	Superfund Innovative Technology Evaluation
SVE	Soil Vapor Extraction
TBC	To Be Considered
TCE	Trichloroethylene

ACRONYM	DEFINITION
TLV	Threshold Limit Value
TRV	Toxicity Reference Value
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
UV	Ultraviolet
VOCs	Volatile Organic Compounds
µg/L	micrograms per liter

EXECUTIVE SUMMARY

This five-year review report was prepared for the Groveland Wells Nos. 1 & 2 Superfund Site located mostly within the town of Groveland, Essex County, Massachusetts within the watershed of the Merrimack River. The Site consists of two operable units: a Source Control operable unit (Operable Unit 2), which is limited to the original release area and the immediately surrounding property, and a Management of Migration operable unit (Operable Unit 1), which encompasses an approximate 850-acre area where groundwater contamination has come to be located. Operable Unit 2 is commonly called the "Valley site" or "Valley/GRC site" because the contaminant release area is the former Valley Manufactured Products Company, located at 64 Washington Street. A metals and plastic parts manufacturing business was formerly located in a building on the property. The building was abandoned when the owner and operator went bankrupt. The property owner is Groveland Resources Corporation (GRC), which leased the building and surrounding property to Valley Manufactured Products. Both GRC and Valley are Potentially Responsible Parties (PRPs). Chlorinated solvents and cutting oils were released from the property on numerous occasions over the years, including surface releases and leakage from an underground storage tank located at the Valley facility. The releases were determined to have caused the contamination of the town of Groveland's public water supply wells Nos. 1 and 2, which was discovered in 1979.

In July 1985, EPA approved an initial remedial measure to provide an alternate water supply by rehabilitating Well Station No. 1 with granular activated carbon treatment to remove contamination from the groundwater. A pilot-scale demonstration of a Soil Vapor Extraction (SVE) system was also performed at the Site that removed an estimated 1,300 pounds of VOCs from unsaturated soil on the Valley property. Remedial investigations and feasibility studies were performed by the PRPs during the 1980's, supplemented by work performed by EPA when the PRP efforts were found to be insufficient for remedy selection. The PRPs began construction and operation of a groundwater extraction and treatment system under an order from the Massachusetts Department of Environmental Protection (MADEP) in 1988, and that interim system remained in operation until 2000. EPA issued a Source Control (OU2) Record of Decision (ROD) in 1988, and a Management of Migration (OU1) ROD in 1991. The PRPs installed a full-scale SVE system on the Valley property in response to the OU2 ROD. The PRPs also began a design of a groundwater treatment system for OU2, but never completed and executed it, and in 1996 EPA decided to combine the proposed OU2 groundwater treatment system with a pump and treat system being designed for OU1 by EPA. This decision was explained in EPA's 1996 Explanations of Significant Differences (ESDs) for each operable unit. Changes to the size and location of the groundwater treatment facility were also made in the ESDs to eliminate the need to construct within the 100-year floodplain, reduce the size of the facility, and take into account an observed reduction in plume size that had occurred due to natural attenuation between 1991 and 1996. The combined groundwater pump and treat system was constructed next to the Valley property on neighboring property owned by the Archdiocese of Boston, and went on line in the spring of 2000. Meanwhile, the PRPs had allowed the operation and maintenance of the SVE system to lapse, and they eventually went bankrupt and abandoned the Valley facility. With the PRPs declaring bankruptcy, the cleanup of the source area is incomplete, leaving a significant amount of soil contamination that will continue to impact groundwater. EPA is in the process of evaluating current contaminant distribution in the source area and remedial alternatives for OU2 to replace or update the SVE system using Superfund monies.

This is the first five-year review for the Site. Construction completion for the combined groundwater pump and treat system was attained on August 1, 2000, and that date serves as a trigger for this review. The requirement for conducting the five-year reviews is incorporated in Section121 (c) of CERCLA 42 § 9621

(c). Depending on the selected remedial action, the five-year review may be required by statute or conducted as a matter of EPA policy. Five-year reviews are not mandated by statute but are conducted as a matter of EPA policy for remedial actions that, upon completion, will not leave hazardous substances on site above levels that allow for unrestricted use, but that will require five or more years to complete, such as long-term groundwater pump and treat systems (USEPA, 2001). Due to the fact that hazardous substances, pollutants, or contaminants will remain at the Site above levels that allow for unlimited use and unrestricted exposure until remedial actions are completed, EPA has determined that five-year reviews are appropriate for the Site until cleanup goals are attained.

This five-year review concluded that the remedy is functioning as designed and continues to be protective of human health and the environment. However, in order for the remedy to remain protective in the long term, the operation of the groundwater treatment facility must continue until cleanup levels are attained. Institutional controls must also be implemented to prevent installation of private wells within the vicinity of the plume, and prevent disturbance of source area soil near and under the Valley Building until soil cleanup goals are attained. Institutional controls are currently being completed by EPA and MADEP.

Five-Year Review Summary Form

SITE IDENTIFICATION

Site name *(from WasteLAN)*: Groveland Wells Nos. 1 & 2

EPA ID *(from WasteLAN)*: MAD980732317

Region: I	**State:** MA	**City/County:** Groveland/Essex

SITE STATUS

NPL status: ☒ Final ☐ Deleted ☐ Other (specify) _____

Remediation status (choose all that apply): ☐ Under Construction ☒ Operating ☐ Complete

Multiple OUs?* ☒ YES ☐ NO	**Construction completion date:** _8 / _01 / _2000_

Has site been put into reuse? ☐ YES ☒ NO

REVIEW STATUS

Lead agency: ☒EPA ☐ State ☐ Tribe ☐ Other Federal Agency _____

Author name: Rick Leighton

Author title: Remedial Project Manager	**Author affiliation:** EPA Region I

Review period:** 1/31/2005 to 6/30/2005

Date(s) of site inspection: 2/9/2005

Type of review:

☒ Post-SARA ☐ Pre-SARA ☐ NPL-Removal only
☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead
☐ Regional Discretion

Review number: ☒ 1 (first) ☐ 2 (second) ☐ 3 (third) ☐ Other (specify) _____

Triggering action:

☐ Actual RA Onsite Construction at OU #___ ☐ Actual RA Start at OU#____
☒ Construction Completion ☐ Previous Five-Year Review Report
☐ Other (specify) _____

Triggering action date *(from WasteLAN)*: 8 /1/2000

Due date *(five years after triggering action date)*: 8 /1/2005

* ["OU" refers to operable unit.]
** [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

Five-Year Review Summary Form, cont'd.

Issues:

(1) Groundwater at the Site contains concentrations of VOCs above cleanup levels. The groundwater is currently being extracted and treated. Future protectiveness is dependent upon continued groundwater treatment facility operation until contaminant concentrations no longer exceed the cleanup levels.
(2) Subsurface soil contamination remains in the Source Area at levels that exceed the OU2 ROD cleanup levels, representing a continuing source of VOC contamination to groundwater, and may pose a potential future direct contact risk. Because the area is not currently occupied and soil contamination is at depth or located below structures and pavement, the remedy remains protective with respect to direct contact soil exposures. However, should the Site be developed for active use in the future, the soils currently at depth should be managed properly to prevent future direct contact exposures until soil remediation is completed.
(3) Institutional controls are needed to prevent exposures until soil and groundwater cleanup levels are attained. The final implementation of comprehensive institutional controls has not been realized.

Recommendations and Follow-up Actions:

(1) Continue operating Groundwater Treatment Facility and groundwater monitoring.
(2) Evaluate potential Source Area contaminant reduction measures.
(3) Complete the review and implementation of comprehensive institutional controls. This activity is currently being completed by the EPA and the State.

Protectiveness Statement(s):

OU1: The OU1 remedy is considered protective in the short term; however in order for the remedy to be protective in the long term, follow-up actions need to be taken. For continued protection, the groundwater treatment plant must remain operable and undisturbed. Groundwater within the Site vicinity should not be used for any purpose, due to its contamination and to the negative impact pumping could have on the effectiveness of the extraction and treatment system. It is important to complete the implementation of comprehensive institutional controls to maintain a complete level of protectiveness for future activities in and around the Site.
OU2: The OU2 remedy is considered protective in the short term; however in order for the remedy to be protective in the long term, follow-up actions need to be taken. Residual subsurface soil contamination is present within the Source Area of the Valley site. Because the Valley site is not currently occupied and soil contamination is at depth or located below structures or pavement, the remedy remains protective with respect to direct contact soil exposures. However, should the Site be developed for active use in the future, the soils currently at depth should be managed properly to prevent future direct contact exposures until soil remediation is completed.
Comprehensive Protectiveness Statement: The remedy is considered protective in the short term; however in order for the remedy to be protective in the long term, follow-up actions need to be taken. Long-term protectiveness will be achieved once the pump and treat system reaches cleanup levels in the groundwater. Institutional controls need to be established to prevent exposure to contaminants until groundwater cleanup standards are achieved. Institutional controls are also needed to prevent potential exposure to subsurface soil contamination. In the interim, exposure pathways that could result in unacceptable risks are being controlled.

SECTION 1.0
INTRODUCTION

This five-year review report is for the remedial actions conducted and on-going at the Groveland Wells Nos. 1 & 2 Superfund Site (the Site) [Figures 1 and 2]. The purpose of this five-year review is to determine whether the remedies for the Site are protective of human health and the environment. The methods, findings, and conclusions of this review are documented in this five-year review report. In addition, five-year review reports identify issues found during the review, if any, and present recommendations to address them.

EPA Region I has conducted this five-year review pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP). Section 121(c) of CERCLA 42 USC § 9621(c) states:

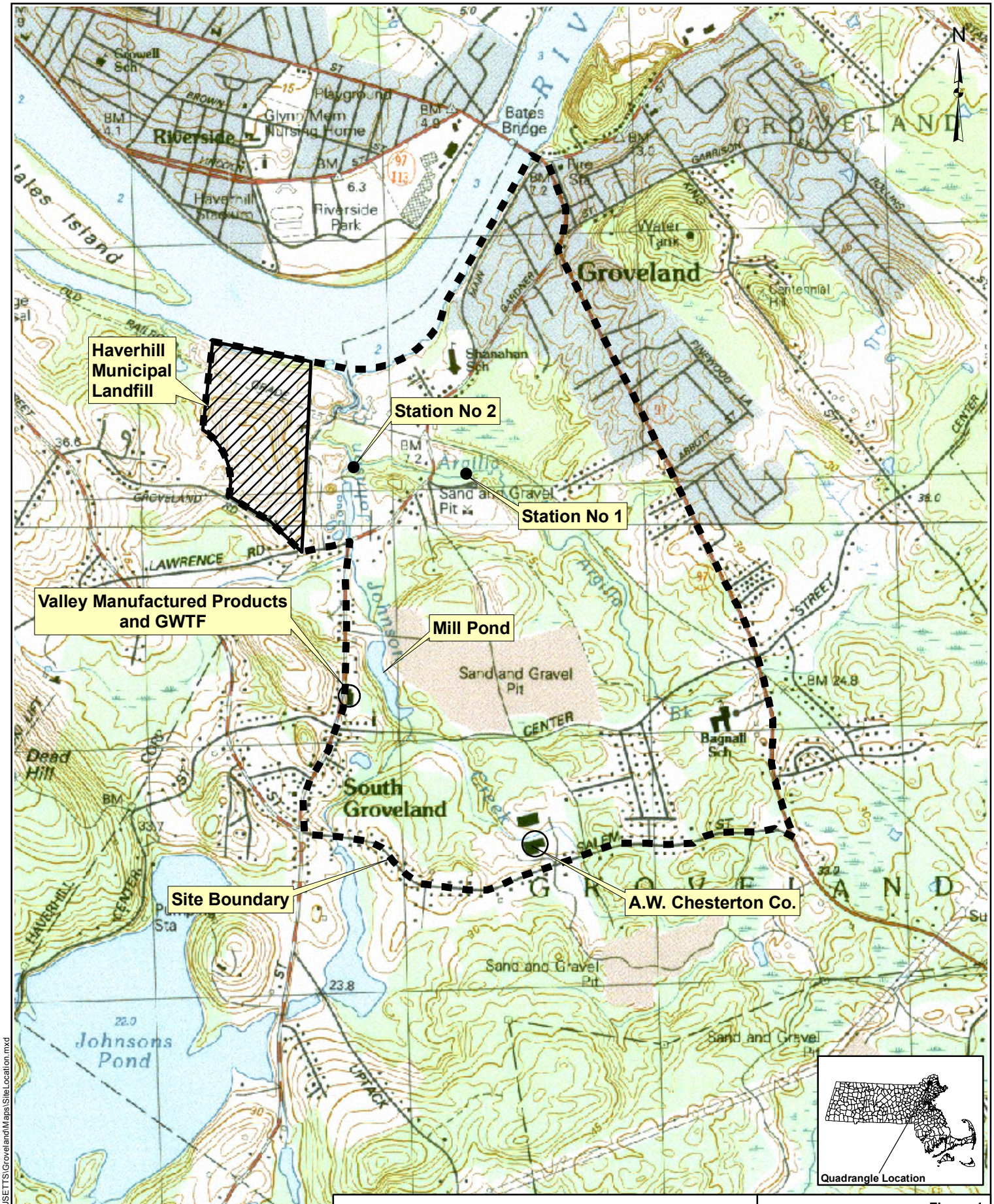
> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgement of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

The Agency interpreted this requirement further in the NCP; 40 CFR §300.430(f)(4)(ii) states:

> *If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

The Groveland Wells Nos. 1 & 2 Superfund Site consists of two operable units: a Source Control (SC) operable unit (Operable Unit 2), which is limited to the original release area and the immediately surrounding property, and a Management of Migration (MOM) operable unit (Operable Unit 1), which encompasses an approximate 850-acre area where groundwater contamination has come to be located. Operable Unit 2 is commonly called the “Valley site” or the “Valley/GRC site” because the contaminant release area is the former Valley Manufactured Products Company, located at 64 Washington Street on property owned by Groveland Resources Corporation (GRC). Valley and GRC are the Potentially Responsible Parties (PRPs) for the Site.

This is the first five-year review for the Site. Upon completion of remedial actions, it is anticipated that contaminants will no longer remain at the Site above levels that allow for unlimited use and unrestricted exposure. However, for remedial actions that will require five years or more to complete, such as long-term groundwater pump and treat actions, five-year reviews are conducted as a matter of EPA policy until cleanup levels are achieved (USEPA, 2001). The trigger for this policy review is the date of construction completion for the groundwater pump and treat system on August 1, 2000.


Haverhill Municipal Landfill
Station No 2
Station No 1
Valley Manufactured Products and GWTF
Mill Pond
Site Boundary
A.W. Chesterton Co.
Groveland
South Groveland
Riverside
Bates Bridge
Haverhill Stadium
Riverside Park
Glynn Mem Nursing Home
Water Tank
Centennial Hill
Shanahan Sch
Sand and Gravel Pit
Sandland Gravel Pit
Bagnall Sch
Dead Hill
Johnsons Pond
Quadrangle Location
N
Source: MassGIS
Commonwealth of Massachusetts
Executive Office of Environmental Affairs
0 125 250 500 750 1,000
Feet
METCALF & EDDY | AECOM
Figure 1.
SITE LOCATION
GROVELAND WELLS NOS 1&2
SUPERFUND SITE
Groveland, Massachusetts
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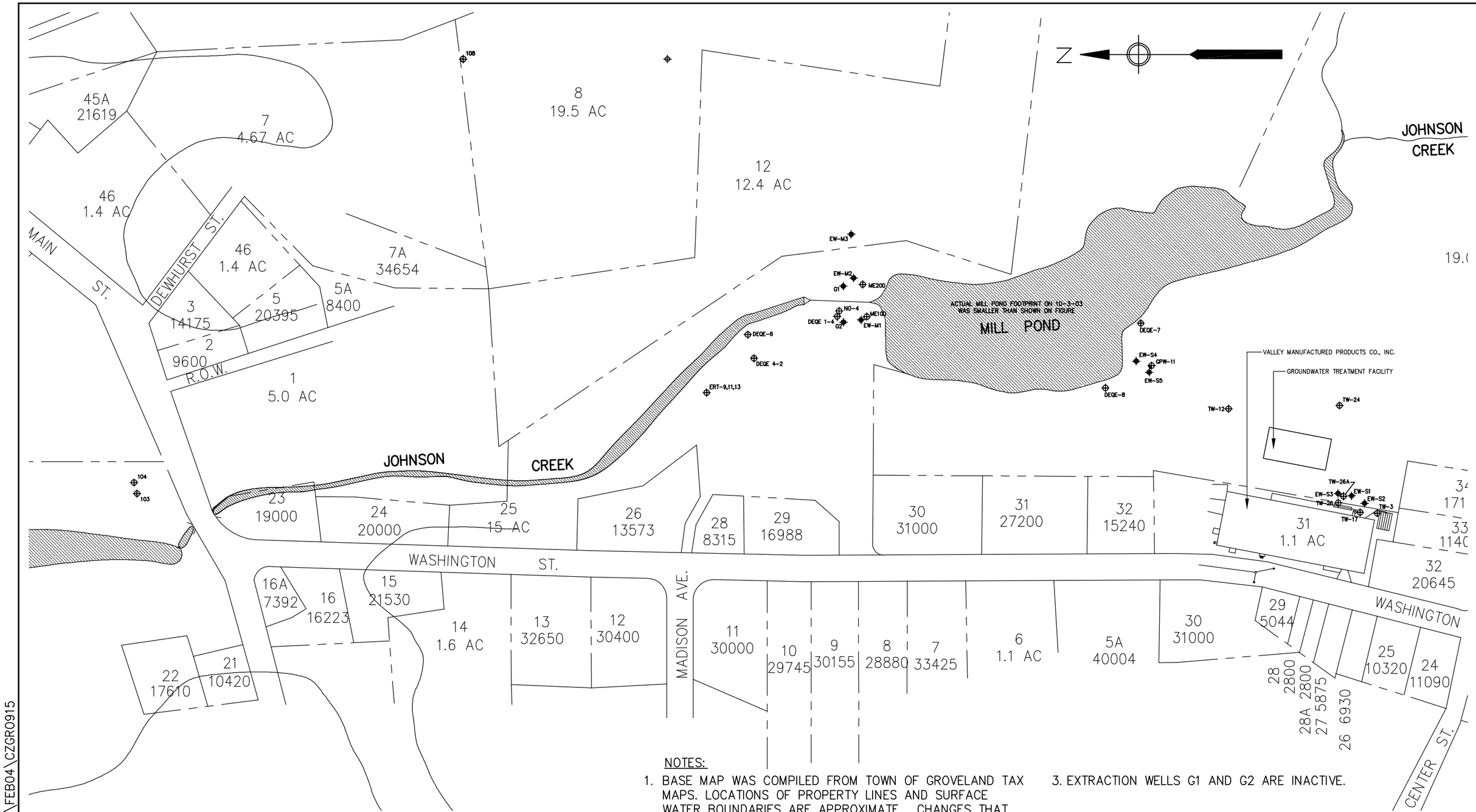


NOTES:

1. BASE MAP WAS COMPILED FROM TOWN OF GROVELAND TAX MAPS. LOCATIONS OF PROPERTY LINES AND SURFACE WATER BOUNDARIES ARE APPROXIMATE. CHANGES THAT MAY HAVE OCCURRED SINCE 1994 ARE NOT INCLUDED.
2. EXTRACTION WELLS WERE NOT SAMPLED BUT ARE SHOWN FOR INFORMATION.
3. EXTRACTION WELLS G1 AND G2 ARE INACTIVE.

LEGEND

- DEQE-10 — MONITORING WELL
- GPW-04 — GROUNDWATER PROBE WELL
- G-1 — EXISTING EXTRACTION WELL

1" = 175' SCALE (0, 175, 350, 525 FEET)

Metcalf & Eddy

GROVELAND WELLS SUPERFUND SITE
GROVELAND, MASSACHUSETTS

FIGURE 2
SITE PLAN AND WELL LOCATIONS

SCALE: 1"=175'	5/25/05	CZGRO915.DWG	4609MOM

ANSI B - 11-20-01 P:\4609MOM\C\FEB04\CZGRO915

SECTION 2.0
SITE CHRONOLOGY

The chronology of the Site, including all significant site events and dates is included in Table 1. Additional events and details are provided in Section 3.0, Background.

TABLE 1. CHRONOLOGY OF SITE EVENTS

DATE	EVENT
May 1963	GRC leases property at 64 Washington Street in Groveland to house a metal products manufacturing plant
May 1963	GRC begins operation of metal products manufacturing
1965	Groveland municipal well Station No. 1 is put into operation
November 1966	GRC purchases property at 64 Washington Street in Groveland
1973	Groveland municipal well Station No. 2 is put into operation
May 1979	Trichloroethylene detected in Station No. 1; well is shut down
August 1979	Valley Manufactured Products acquires GRC's manufacturing operations
September 1979	Trichloroethylene detected in Station No. 2 Groveland municipal well Station No. 3 is put into operation
October 1979	Station No. 2 permanently shut down
December 1982	Groveland Wells Site placed on the National Priorities List
1985	MOM Remedial Investigation for the Groveland Wells Site completed by ERT for EPA
August 1986	MOM Feasibility Study for the Groveland Wells Site completed by ERT for EPA
1986	MADEP amendment to 1984 consent order requiring Valley/GRC to construct a groundwater interceptor treatment unit north of Mill Pond
1987	Installation of activated carbon treatment system and reactivation of Station No. 1
September 1987	EPA issues consent order to Valley and GRC to conduct a Supplemental RI
Late 1987- Early 1988	Pilot study of soil vapor vacuum extraction system at Valley site
April 1988	Installation of Mill Pond Groundwater Extraction/Treatment System by Valley/GRC
July 1988	Final Phase I Supplemental Remedial Investigation Report completed by Lally Associates for Valley/GRC
August 1988	Supplemental Feasibility Study for the Valley site completed by Camp, Dresser and McKee and Roy F. Weston for EPA
September 1988	Source Control (OU2) Record of Decision for the Valley site signed

TABLE 1 (Continued). CHRONOLOGY OF SITE EVENTS

DATE	EVENT
February 1991	Supplemental MOM Remedial Investigation Report completed by NUS Corporation for EPA
July 1991	Supplemental MOM Feasibility Study completed by NUS Corporation for EPA
September 1991	Management of Migration (OU1) Record of Decision is signed
March 1992	EPA issues Administrative Order to Valley/GRC to remediate soil and groundwater at the Valley Site (i.e., the Source Control Operable Unit, OU2)
May 1992	EPA issues Administrative Order to Valley/GRC to remediate groundwater contamination that had migrated beyond the Valley Site (i.e., the part of the plume defined as the MOM Operable Unit, OU1)
June 1992	Valley/GRC informs EPA that they cannot comply with the Administrative Order to remediate the MOM Operable Unit
August 1992	EPA issues a Notice of Failure to Comply to Valley/GRC, for failure to initiate work to remediate the MOM Operable Unit
August 1992	EPA approves the SVE and groundwater treatment system design for the Valley Site, submitted by Lally Associates for Valley/GRC
October 1992	Valley/GRC informs EPA that they cannot continue to comply with the Administrative Order for remediation of the SC Operable Unit
November 1992	EPA issues a Notice of Failure to Comply to Valley/GRC for failure to continue remedial work at the SC Operable Unit
December 1992	EPA visits Valley Site and learns that the SVE system had in fact been constructed and was in operation
January 1993	EPA issues a Second Notice of Failure to Comply to Valley/GRC for failure to submit monthly progress reports on the SVE system
May 1994	Activated carbon treatment system at Station No. 1 is taken off line by the town, with approval from MADEP, because TCE contamination had not been detected in the influent water since 1989.
June 1994	Valley/GRC begins routine submission of monthly progress reports to EPA
Spring 1994	Metcalf & Eddy installs an extraction well and conducts hydrogeological tests at the Valley Site for EPA
January 1995	EPA approves Metcalf & Eddy's 100% design for the MOM Operable Unit groundwater extraction and treatment system
Spring 1995	Budget constraints cause EPA to put construction of the MOM facility on hold

TABLE 1 (Continued). CHRONOLOGY OF SITE EVENTS

DATE	EVENT
March 1996	EPA conducts sampling of 22 monitoring wells and determines that the plume has decreased in extent
August 1996	EPA issues Explanations of Significant Differences for both the Source Control and MOM Operable Units, modifying the remedies to treat groundwater from both operable units in a combined facility
September 1996	Metcalf & Eddy submits a 100% design for the combined facility to EPA
April 1997	EPA approves final design
December 1997	EPA receives funding for remedial action
May 1998	Metcalf & Eddy, under contract to EPA, sends bid documents to qualified bidders
October 1998	Metcalf & Eddy awards remedial action subcontract to Roy F. Weston
April 1999	Mobilization and site clearing begin
April 2000	Groundwater Extraction and Treatment System is determined to be substantially complete. New system starts up and Mill Pond system is shut down.
May 2000	Routine operation and maintenance of groundwater extraction and treatment system begins
July/August 2000	All construction punchlist items are completed and final inspection is conducted
September 2000	Operational and Functional Completion Report and certification are submitted by Metcalf & Eddy to EPA
March 2001	Operational and Functional Completion Report and certification are submitted to EPA, revised to address MADEP comments
April 2002	SVE system is shut down and abandoned by PRPs
September 2002	A Remedial System Evaluation (RSE) report is completed for the GWTF
April 2004	EPA initiates source area re-evaluation
June 2005	First five-year review is completed
April 2030	Groundwater cleanup goals are projected to be met

SECTION 3.0
BACKGROUND

3.1 PHYSICAL CHARACTERISTICS AND LAND AND RESOURCE USE

The Groveland Wells Nos. 1 and 2 Superfund Site ("the Site") is located in Groveland, Essex County, Massachusetts within the Johnson Creek drainage basin. Johnson Creek is a tributary to the Merrimack River. The site contains nearly 850 acres, mostly located in the southwestern part of the Town of Groveland ("the Town") (USEPA, 2004a).

The Site is bounded to the west by Washington Street and the former Haverhill Municipal Landfill, to the south by Salem Street, to the east by School Street, and to the north by the Merrimack River (Figure 1). The Haverhill Municipal Landfill originally was part of the Groveland Wells Site but it has since been separately listed on the National Priorities List and is no longer part of the Site.

Land uses within the Site boundaries include numerous private residences, some industries and small businesses, and religious and community institutions. The Archdiocese of Boston (Saint Patrick's Church) abuts the Valley property to the south and east. The Groveland Department of Public Works is in the central area of the Site, along with a sand and gravel operation. The Valley Manufactured Products Company is located to the south on the western border of the site.

There are several small creeks and brooks flowing through the Site. Johnson Creek originates south of the Site and flows in a northerly direction to Mill Pond, located approximately 450 feet east of the Valley property. Argilla Brook, located to the east of Mill Pond, flows northwest through the Site and discharges to Johnson Creek. Brindle Brook is a small tributary to Johnson Creek that flows northwestward through the southeast corner of the Site area, eventually joining with Johnson Creek near Center Street. There are limited wetland areas at the Site, located mostly next to Mill Pond, Argilla Brook, Johnson Creek, Brindle Brook, and isolated areas east of Johnson Creek. A portion of the Site lies within the 100-year floodplain delineated by the Federal Emergency Management Agency (FEMA).

One of the town's current municipal water supply wells, Station No. 1, and a former municipal supply well (Station No. 2) are located within the Site boundaries. The Site encompasses the approximate limits of the stratified drift aquifer that serves as the source of water for the current and former municipal supply wells. Groundwater generally flows to the north through the Site toward the Merrimack River. Monitoring well and extraction well locations are shown on Figure 2.

3.2 HISTORY OF CONTAMINATION

Valley Manufactured Products Company was located in the southwestern corner of the Site, where metal and plastic parts were manufactured from 1963 until 2001. The original building, in which the Valley Manufactured Products Company was housed, was constructed on the property around 1900 and, prior to 1963, housed agricultural and textile operations (ERT, 1985). In 1963, Groveland Resources Corporation (GRC) leased the property and began on-site manufacturing of screw machine products. Connected to the original building, reportedly on the southern end, was a 400 square-foot wooden shed that was used to store virgin trichloroethene (TCE), "Solvosol" (an unspecified solvent), and cutting oils. Waste cutting oils and solvents were also stored in the wooden shed. The exact location of the shed has not been verified. GRC reportedly purchased the property in 1966. Valley Manufacturing acquired GRC's on-site operations

in August 1979; however, GRC retained property ownership (RFW, 1988).

On-site processes included machining, degreasing, and finishing of metal parts. The machining process used cutting oils and lubricants. After machining, metal parts were cleaned (degreased) in a hydrocarbon solvent vapor degreaser and then spun dry. TCE was used in the vapor degreasing operation from 1963 to 1979. Methylene chloride was used from 1979 to 1983. Solvosol and other solvents were also used. In 1984, Valley discontinued the use of solvents and replaced them with detergent degreasers (RFW, 1988).

If parts required additional cleaning, they were then immersed in either an alkaline cleaning solution (containing caustic soda) or an acid solution ("Brite Dip" process, containing nitric acid). Once cleaned, the parts were rinsed and excess rinse water was discharged to a Brite Dip subsurface disposal system (RFW, 1988). Several subsurface disposal systems were used on the property. Approximate locations for these subsurface disposal systems are provided on Figure 3. The systems are further described below:

1. The Brite Dip disposal system included a distribution box and leaching field located near the southeastern corner of the building. This system accepted rinse waters from degreasing operations and wastes from the Brite Dip process. A floor drain in the former acid-dip room and another floor drain in a material storage area were also connected to this system. The Brite Dip process was reportedly used until 1984 (RFW, 1988).

2. A drainage system for the loading dock consisted of a floor drain within the loading dock, an oil/water separator, and leaching field. The oil/water separator and leaching field are located along the eastern portion of the building. This system may have received storm water runoff, oil from lathes, and TCE-contaminated oil. The following contaminants were detected in a sample collected from the loading dock floor drain: 1,1,1-trichloroethane, 1,1-dichloroethane, methylene chloride (570 ppb), and trans-1,2-dichloroethene (190 ppb). Concentrations of vinyl chloride, 1,1-dichloroethene, 1,1-dichloroethane, tetrachloroethene, methylene chloride (330 ppb), trans,-1,2-dichloroethene (4,800 ppb) and TCE (44,000 ppb) were detected in samples collected from the oil/water separator manhole. The floor drain in the truck loading dock was later sealed and replaced with a drainage trough located on the southwestern side of the building. The drainage trough, located just west of the entrance to the loading dock area, accepted storm water runoff and was connected to the oil/water separator system.

3. A domestic sanitary wastewater disposal system, consisting of a septic tank and leaching field, is located under the parking lot area on the northeastern portion of the property. Although the leaching field is likely in the vicinity of the septic tank, the exact location of the leaching field is not known.

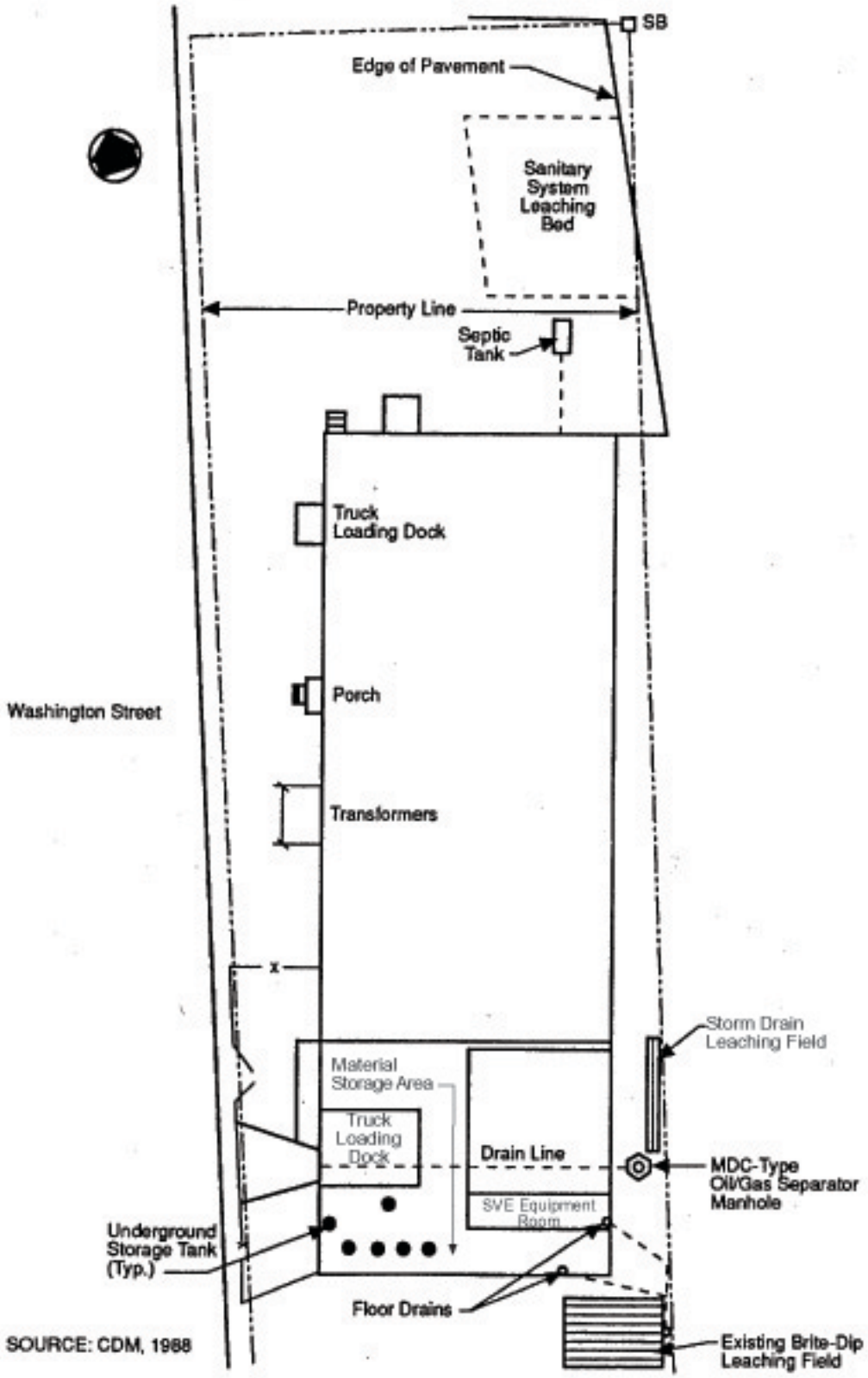


FIGURE 3.
VALLEY PROPERTY, GROVELAND WELLS NOS. 1 & 2
SUPERFUND SITE, GROVELAND, MA

4. Historically, a combination storm water and cooling water collection system discharged to a 12-inch reinforced concrete drain pipe extending from the Town of Groveland drainage system in Washington Street, easterly across the northernmost portion of the Valley Manufacturing parking lot. The drain line discharged to a drainage swale located on the abutting Boston Archdiocese property, which extended easterly from the drain line to Mill Pond. Storm water accumulating on the buildings' roof were collected and discharged via a 4-inch drain line to a drain manhole located beneath the assembly room. Cooling water from an air compressor located in the basement of the facility and condensate water from the plants' air conditioning system were also discharged to the assembly room drain manhole. Storm water and cooling waters discharged from the assembly room manhole via a 12-inch drain pipe extending from the drain manhole to the 12-inch drain line crossing the site. Storm water collected by catchbasins located along Washington Street and by the existing roof drainage system were eventually discharged to Mill Pond via the drainage swale (RFW, 1988).

In 1972 and 1973, GRC reportedly installed six underground storage tanks (USTs) for storage of cutting oils, solvents, and mineral spirits at the southern portion of the existing building. A concrete slab was constructed over the USTs. The USTs ranged from 700 gallons to 3,000 gallons. Some of the USTs contained cutting oil; the 700-gallon UST reportedly contained TCE. Cutting oils were pumped from the USTs into distribution piping running throughout the machining areas of the facility. Recovered oils were re-circulated through the system. Waste oils were reportedly disposed off-site. During October 1983, pressure testing of the USTs was conducted. The USTs exhibited some initial pressure loss that was attributed to leakage occurring at the couplings on the tank vent lines. From 1972 to 1979, 55-gallon drums of waste cutting oils were stored on the concrete slab. In September 1979, Valley constructed a shed roof over the concrete slab area (Lally, 1985). This area is known as the material storage area, but has also been referred to as "the shed area".

According to the September 1987 Consent Order entered into by Valley Manufacturing and GRC, the major contaminant released was TCE. In 1973, 500 gallons of TCE were reportedly released in the soil underneath the concrete slab from a UST. A total of 3,000 gallons is estimated to have been discharged to the environment from several surface and subsurface sources, including the loading dock drainage system, the Brite-Dip disposal system, and the UST, and by routine operations practices (RFW, 1988). These releases migrated to groundwater beneath the Valley property and eventually contaminated the aquifer that supplied the town of Groveland's drinking water. In June and October 1979, two Town drinking water supply wells, Groveland Well Station Nos. 1 and 2 (Figure 1), were determined to be impacted with TCE. The wells were taken off-line and the Town imposed water rationing. The Town subsequently developed another drinking water supply well, Station No. 3 (USEPA, 2004a).

Based on the sampling that led to the Consent Order, the solvent vapor degreasing and Brite-Dip systems were eliminated. The rinse water tanks, cleaner holding tanks, and wastewater treatment system were disassembled and removed. Incoming water supply lines to the system were cut and the existing floor drain was plugged. The subsurface disposal system, consisting of the distribution box and leaching field (the Brite Dip disposal system), was left in place (Lally, 1985).

3.3 INITIAL RESPONSE

In June and October 1979, two Town drinking water supply wells, Groveland Well Nos. 1 and 2, were determined to be impacted with TCE. The wells were taken off-line and the Town imposed water

rationing. In 1982, EPA determined that the contamination in the wells constituted a threat to public health and to the environment. EPA placed the site on the National Priorities List in December, 1982.

In 1983, EPA and the Massachusetts Department of Environmental Protection (MADEP, formerly known as the Department of Environmental Quality Engineering or DEQE) conducted inspections and sampling of the subsurface disposal systems on the Valley property and found elevated concentrations of TCE and some metals. DEQE and Valley entered into a consent agreement in 1983 that was intended to bring plant discharges into compliance with state and federal regulations, and changes to the subsurface disposal systems were implemented by Valley as a result. DEQE and Valley entered into a second consent agreement in March 1984 for the performance of a remedial investigation/feasibility study (RI/FS) and remedial action. EPA also issued an administrative order to Valley in March 1984 to conduct a remedial investigation. Valley had an RI/FS prepared, but EPA determined that it was inadequate and did not provide sufficient information to serve as the basis for selection of a Source Control or Management of Migration remedy. A supplemental RI was performed by Valley's consultant in 1988, after substantial development and negotiation of a detailed work plan with EPA. EPA contractors oversaw the supplemental RI and also prepared an endangerment assessment (Alliance, 1987) and an endangerment assessment amendment (CDM, 1988). A supplemental FS was also prepared by an EPA contractor (RFW, 1988).

In July 1985, EPA approved an initial remedial measure to rehabilitate Groveland Well Station No. 1 by using granular activated carbon treatment to remove VOCs from the groundwater. In 1987, EPA completed installation of the treatment system. Station No. 1 is used as a supplemental supply to Station No. 3, while Station No. 2 was permanently shut down by the town.

In December 1986, the Valley site was nominated for a demonstration of the Terra-Vac, Inc. Soil Vapor Vacuum Extraction system under the EPA Superfund Innovative Technology Evaluation (SITE) program. The demonstration was conducted over 56 days in 1988 and removed an estimated 1300 pounds of VOCs from the unsaturated soil at the Valley site.

On September 30, 1988, EPA issued a Record of Decision (ROD) for the Source Control Operable Unit ("Source Control ROD") at the Site. The Source Control Operable Unit is also known as Operable Unit 2 (OU2) but is more commonly identified as the Source Control Operable Unit in Site documents. The Source Control ROD required cleanup of the organic chemical contamination source located on the former Valley Manufacturing property. The Source Control remedy is described in Section 4.0.

Beyond the work required as part of the Source Control Operable Unit, the Massachusetts Department of Environmental Protection required the PRPs to construct and operate a groundwater extraction and air stripping treatment system to intercept and treat the VOC plume at Mill Pond. The system began operation in April 1988 and consisted of two extraction wells, G1 and G2, and an air stripping unit installed at the north end of Mill Pond. Treated water was discharged to Johnson Creek immediately downstream of the pond. The average flow from the system ranged from 31 gallons per minute (gpm) to 75 gpm. The system was operated until 2000 when it was replaced by a groundwater extraction and treatment system constructed by EPA for the Management of Migration (MOM) Operable Unit (OU1, see Section 4.0).

After issuing the Source Control ROD, EPA commissioned the preparation of a Supplemental Management of Migration Remedial Investigation and Feasibility Study (NUS, 1991a and 1991b). EPA completed the supplemental studies for the MOM Operable Unit in 1991. These studies, together with the earlier studies, were aimed at determining the nature and extent of contamination that had migrated off

the Valley property and evaluating alternatives for remediating the contamination. The results of the supplemental MOM investigations revealed that an extensive groundwater plume, containing principally TCE and 1,2-dichloroethene ("1,2-DCE"), was migrating toward the Merrimack River with the highest contaminant concentrations found near the former Valley Manufacturing property and the adjacent property owned by the Boston Archdiocese (USEPA, 2004a).

EPA issued the Management of Migration (OU1) Record of Decision on September 30, 1991. The MOM ROD required groundwater extraction and treatment of contaminated water extending beyond the Valley property throughout the rest of the Site, with discharge of the treated water to Johnson Creek. The MOM remedial actions were intended to supplement and not replace the remedial actions required by the Source Control ROD. The MOM remedy is described in Section 4.0.

3.4 BASIS FOR TAKING ACTION AT THE SITE

The following summarizes the contaminants detected at the Site, as identified in the Remedial Investigations and during subsequent investigations and summarized in the Records of Decision.

3.4.1 Source Control Operable Unit (OU2, Valley Site)

Soil. Based on information submitted by Valley/GRC in response to an EPA request for information in 1985, it is believed that no less than 3000 gallons of waste oil and solvent were historically released on the Valley site. Five to seven hundred gallons of TCE came from a storage tank leak, and the balance from indiscriminate disposal (USEPA, 1988). Surface soil at the Valley site was not found to be contaminated, but subsurface soil was found to be contaminated with VOCs, primarily TCE and methylene chloride, with lower concentrations of other chlorinated solvents such as 1,1,1-trichloroethane, perchloroethylene (PCE), and 1,2-trans-dichloroethene. TCE is the primary contaminant of concern in soil at the Valley site. The highest levels of subsurface soil contamination were found in the southernmost portion of the Valley site within 10 feet of the solvent storage tank. Analysis of subsurface soil gas samples collected from an area under the Valley building detected total VOC concentrations as high as 1300 ppm, indicating that additional subsurface soil contamination was likely to be present under the portion of the building that was constructed in 1974. Additional discussion of the subsurface soil contamination is presented in Section 6.

Groundwater. VOCs (primarily TCE) were detected in groundwater on the Valley property. Concentrations as high as 150,000 µg/L of TCE and 7900 µg/L of 1,2-DCE were reported in samples collected from wells bordering the Valley property. Similarly high concentrations of TCE and other chlorinated solvents were detected in groundwater under the portion of the Valley property known as the Material Storage Area, which was constructed in 1980. Both spent and unused cutting oils and solvents had been stored in drums and underground tanks in this area. Inorganic analytes were also detected in groundwater under the Material Storage Area slab: arsenic at 230 µg/L, chromium at 70 µg/L, copper at 1100 µg/L, and lead at 130 µg/L. A free oil phase was also observed in some groundwater samples.

Summary of Risks. An Endangerment Assessment (Alliance, 1987) and an Endangerment Assessment Amendment (CDM, 1988) were performed for Operable Unit 2 to evaluate potential human health risks from exposure to contaminants from the Valley site. Fourteen contaminants of potential concern (COPCs) were selected for evaluation which included eight VOCs and six inorganics. The receptor populations used for evaluation purposes were the employees at the Valley site exposed to contaminated soil, residents in close proximity to the Valley site using impacted groundwater for household uses, and local

residents exposed to surface water and sediment in impacted ponds and streams. The greatest potential risk was attributed to the ingestion of contaminated groundwater, and TCE and arsenic were the two contaminants that contributed most to the carcinogenic risk estimates in the range of 10^{-2} to 10^{-3}, which exceed the EPA target risk range of 10^{-6} to 10^{-4}. Non-carcinogenic hazard estimates (hazard indices) also exceeded the EPA target of one for some contaminants of concern, and MCLs were exceeded for a number of contaminants. Risks and hazards associated with current and future potential exposure to contaminated soil at the Valley site and surface water and sediment in ponds and streams did not exceed EPA's risk management criteria for carcinogenic and noncarcinogenic effects. Surface water concentrations in site-related brooks and ponds were also not expected to result in toxic effects to aquatic organisms.

3.4.2 Management of Migration Operable Unit (OU1)

Soil. Contaminated soil requiring remediation was limited to the soils addressed by the Source Control Operable Unit.

Sediment and Surface Water. The remedial investigations determined that sediment and surface water contamination was low level and sporadic. Detections of VOCs in surface water were below Ambient Water Quality Criteria and the low level, sporadic contamination in sediment was determined by EPA to present minimal risk to human health and the environment (USEPA, 1991).

Groundwater. The remedial investigations revealed that a large groundwater contaminant plume of primarily TCE and 1,2-DCE extended from the Valley property approximately 3,900 feet northward, along the path of Johnson Creek, downgradient past Station No. 2. The plume width in 1991 was approximately 350 feet across in the Valley/Mill Pond area and roughly 1,000 feet wide where it encompassed Station No. 2. The contamination resulted in the need to provide Granular Activated Carbon treatment for water from Groveland Well Station No. 1, and Station No. 2 was completely shut down. Concentrations as high as 50,000 µg/L TCE were reported near the Valley property, while concentrations farther from Valley were generally less than 100 µg/L but above the MCL of 5 µg/L. Several inorganics were also detected in groundwater at concentrations exceeding MCLs, but it was also noted that concentrations of some inorganics in samples from wells upgradient of the Site also exceeded MCLs.

Summary of Risks. A baseline public health and ecological risk assessment was also conducted as part of the supplemental MOM remedial investigation (NUS Corporation, 1991). Twenty-six contaminants of potential concern (COPCs) were selected for evaluation in the MOM risk assessment (USEPA, 1991: see Table 2 for list of COPCs). Receptor populations of interest included residents who may use contaminated groundwater for household uses and recreational site users who may fish, swim, and wade in impacted surface water bodies. Risks and hazards associated with exposure to groundwater were evaluated for four areas of the plume and exceeded EPA risk management criteria for all areas due to the presence of VOCs and inorganics. It was determined that contaminated groundwater represented a possible future threat if Station No.1 were to increase its pumping rate, or if additional drinking water wells were placed into the aquifer. However, risk and hazard estimates for the surface water, sediment, and fish tissue exposure pathways did not exceed EPA risk management criteria. Risks to the ecological community of the Johnson Creek watershed from site contaminants were also considered minimal.

The above conclusions regarding Site contamination and risks to human health and the environment for each Operable Unit formed the basis of the selected remedies (past and present) as outlined in the RODs. See Section 4.0 for additional details.

TABLE 2. CONTAMINANTS OF POTENTIAL CONCERN, GROVELAND WELLS NOS. 1 & 2 SUPERFUND SITE, GROVELAND, MASSACHUSETTS

Organic COPCs	Inorganic COPCs
Trichloroethylene	Antimony
1, 2-Dichloroethylene	Arsenic
Tetrachloroethylene (perchloroethylene)	Barium
Toluene	Beryllium
Methylene Chloride	Cadmium
1,1-Dichloroethane	Chromium
1,1,1-Trichloroethane	Lead
Benzene	Manganese
Acetone	Mercury
1,1-Dichloroethene	Nickel
Chlorobenzene	Selenium
Vinyl Chloride	Silver
	Vanadium
	Zinc

SECTION 4.0
REMEDIAL ACTIONS

4.1 REMEDY SELECTION

EPA issued two RODs for the Site, defining two Operable Units and describing selected remedial alternatives. The first ROD, issued in September 1988, was for the Source Control Operable Unit (OU2) and required cleanup of the organic chemical contamination source located on the former Valley Manufacturing property. The second ROD, issued in September 1991, was for the Management of Migration Operable Unit (OU1) and required remediation of the groundwater plume that had migrated off the Valley property and affected Groveland Well Stations No. 1 and No. 2. The following sections summarize the selected remedies for Operable Units 1 and 2.

4.1.1 Operable Unit 1 - Management of Migration

The remedial action objectives for OU1 groundwater were:

- To prevent ingestion of groundwater contamination in excess of relevant and appropriate drinking water standards or, in their absence, an excess cancer risk level of 10^{-6} for each carcinogenic compound. Also, to prevent ingestion of groundwater contaminated in excess of a total excess cancer risk level for all carcinogenic compounds of 10^{-4} to 10^{-6}.

- To prevent ingestion of groundwater contaminated in excess of relevant and appropriate drinking water standards for each non-carcinogenic compound and a total Hazard Index greater than unity for non-carcinogenic compounds having the same target endpoint of toxicity.

- To restore the groundwater aquifer to relevant and appropriate drinking water standards or, in their absence, the more stringent of an excess cancer risk of 10^{-6} for each carcinogenic compound or a hazard quotient of unity for each non-carcinogenic compound. Also, restore the aquifer to the more stringent of (1) a total cumulative excess cancer risk of 10^{-4} to 10^{-6} and/or (2) a total cumulative hazard index not to exceed an acceptable range for non-carcinogenic compounds having the same target endpoint of toxicity.

The selected remedial action for OU1 included the following components:

- Establishment of Interim Groundwater Cleanup Levels (IGCL) for contaminants of concern identified in the risk assessment as posing unacceptable risk to public health or the environment

- Installation of a groundwater extraction system

- Construction of treatment units to remove inorganics, and treatment units to destroy organic contaminants via ultraviolet (UV) oxidation technology

- Extraction and treatment of contaminated groundwater

- Discharge of treated groundwater to Johnson Creek

- Establishment of institutional controls to prohibit use of groundwater in the contaminated area until cleanup levels have been achieved

- When groundwater ARARs have been attained (in an estimated 30 years), performance of a risk assessment to determine whether the remedial action is protective. Remedial actions shall continue until protectiveness concentrations of residual contamination have been achieved or until the remedy is otherwise deemed protective. These protective residual levels shall constitute the final cleanup levels and shall be considered performance standards for remedial action.

Interim Groundwater Cleanup Levels were established at concentrations equivalent to federal Safe Drinking Water Act MCLs for those contaminants for which a federal MCL existed. Massachusetts MCLs (MMCL) were used for contaminants for which a MMCL existed but there was no federal MCL. For vanadium, there is no MCL or MMCL so a hazard-based cleanup level was calculated. For lead, an EPA Superfund policy level of 0.015 mg/L (equivalent to the SDWA action level for lead) was selected. These levels were identified in the ROD as interim groundwater cleanup levels, because the cumulative risk that could be caused by these contaminants at these levels could potentially exceed EPA's goals for remedial action. The last component of the remedial action, to conduct a risk assessment when groundwater ARARs have been attained, was included in the ROD to take this possibility into account and allow for establishment of final cleanup levels.

4.1.2 Operable Unit 2 - Source Control

The remedial objectives for OU2 were:

- Prevent ingestion of groundwater contaminated in excess of relevant and appropriate drinking water standards or, in their absence, an excess cancer risk level of 10^{-6}, for each carcinogenic compound. Also, to prevent ingestion of groundwater contaminated in excess of a total excess cancer risk level for all carcinogenic compounds of 10^{-4} to 10^{-7}

- Prevent ingestion of groundwater contaminated in excess of relevant and appropriate drinking water standards for each noncarcinogenic compound and a total hazard index greater than unity for all non-carcinogenic compounds

- Prevent migration of contaminants in soils and groundwater that would result in groundwater contamination in excess of relevant and appropriate drinking water standards and surface water contamination in excess of relevant and appropriate Ambient Water Quality Criteria for the protection of aquatic life

- Remediate inorganic contamination to the extent that such remediation is incidental to organics remediation, and to evaluate attainment of the applicable or relevant and appropriate requirements of federal and state environmental regulations.

The major components of the selected remedy for OU2 included:

- Installation, operation, and maintenance of a Soil Vapor Vacuum Extraction system to clean all areas of subsurface soil contamination;
- Installation, operation, and maintenance of a groundwater recovery/re-circulation system;
- Installation, operation, and maintenance of a groundwater treatment system to treat contaminated groundwater from the recovery/re-circulation system;
- Implementation of Institutional Controls.

4.1.3 Explanations of Significant Differences

In November 1996, EPA issued an Explanation of Significant Differences (ESD) for each operable unit. The purpose of the ESDs was to document the rationale for changes in the OU1 and OU2 remedies that EPA determined were necessary and significantly different from the remedies as described in the respective RODs. The changes were precipitated by additional sampling and investigative work performed by EPA and its contractors between 1994 and 1996. During 1994, a pumping well was drilled on the Valley site and an aquifer yield test was performed to support the planned design of a groundwater extraction and treatment system for the Source Control Operable Unit. The test determined that the maximum amount of water likely to be available for extraction from beneath the Valley property in the contaminated zone was 3 to 6 gallons per minute, much lower than the 30 gpm anticipated in the ROD, and too low to justify the construction and operation of a separate groundwater treatment system for the Source Control Operable Unit. It was decided by EPA that groundwater would still be extracted from this area, but that it would be treated in a combined groundwater treatment plant that would also treat extracted groundwater from the MOM Operable Unit. The requirement for a groundwater treatment plant for the Source Control Operable Unit was eliminated.

In March 1996, EPA conducted sampling of 22 groundwater monitoring wells located throughout the groundwater contaminant plume area. Seven of the 22 wells were located north of Main Street. Six out of these seven wells, which had previously showed exceedances in the MCL for TCE when they were sampled in 1990, were found to have TCE concentrations below the MCL in 1996. Wells closer to Mill Pond and the Valley site were still contaminated above MCLs in 1996. These data led EPA to conclude that the portion of the groundwater contaminant plume north of Main Street was attenuating naturally, but that groundwater extraction and treatment as specified in the Management of Migration ROD was still appropriate for the portions of the plume on the Valley site and near Mill Pond. Hence, an ESD was prepared to modify the extraction system to eliminate wells north of Main Street, and to re-locate the treatment plant from its originally planned location near former Station No. 2, to property abutting the Valley site that is owned by the Archdiocese of Boston. These changes allowed for a smaller groundwater treatment plant, and also avoided the problems that would have been associated with the formerly planned location, namely construction within the 100-year floodplain of Johnson Creek. Also, the revised location was much closer to the extraction wells proposed for the Source Control Operable Unit, making a combined treatment facility more economical.

The proposed remedy changes were presented to the public in a public information meeting held on August 13, 1996 and were documented in the ESDs for each operable unit, both issued on November 15, 1996.

4.2 REMEDY IMPLEMENTATION

This section presents summaries of the remedial actions conducted or being conducted at the site in accordance with the ROD objectives mentioned in Section 4.1.

4.2.1 OU1 Remedy Implementation

The groundwater remedy at the Site, as described in RODs and subsequently modified by the 1996 ESDs, is ongoing. A combined groundwater treatment facility (GWTF) and extraction/discharge system for groundwater from both operable units were completed in 2000 and remain in operation, with modifications.

The three main components of the groundwater remedy are extraction, on-site treatment, and discharge to surface water.

Groundwater Extraction. The groundwater extraction system consists of a network of 10 extraction wells located as shown in Figure 2. Two extraction wells (G-1 and G-2) have been shut down since the system was started in 2000, because ongoing monitoring had shown that they were no longer effective due to reduced contaminant concentrations in the vicinity of the wells. The pumping rates of the wells as initially designed are presented below:

Well	Design Extraction Rate (gpm)
Source Area Wells	
EW-S1	2
EW-S2	2
EW-S3	2
South of Mill Pond	
EW-S4	5
EW-S5	2
North of Mill Pond	
EW-M1	35
EW-M2	35
EW-M3	2
G-1	20
G-2	20

Double-walled underground pipelines with leak detection transport the extracted groundwater from the wells to the Groundwater Treatment Facility for treatment.

Groundwater Treatment. The GWTF is located behind the Valley building on property owned by the Archdiocese of Boston. All unit operations are contained in the same building including:

- Pretreatment consisting of equalization, clarification, and filtration to remove suspended solids (grit and precipitated metals, primarily iron)
- Ultraviolet oxidation with hydrogen peroxide as oxidant, to destroy organic contaminants
- Catalytic activated carbon adsorption for destruction of residual hydrogen peroxide, to prevent effluent toxicity
- Suspended solids thickening and storage for later off-site disposal as non-hazardous solid waste
- Vapor phase carbon adsorption for treating off-gases from various tanks.

Monitoring points throughout the system allow for in-line instruments to measure flow and indicator parameters, and allow for the collection of samples for off-site laboratory analyses. An on-line gas chromatograph automatically monitors the plant effluent for TCE and other VOCs of concern every several hours. In the event that the discharge limit is exceeded, the monitoring system automatically shuts the plant down. The GWTF operation is currently staffed 8 hours a day, 5 days per week. Groundwater is treated to meet the discharge limits established by EPA for discharge to Mill Pond.

Groundwater Discharge System. Treated water from the GWTF is discharged through an underground pipeline that emerges at an outfall constructed on the western shore of Mill Pond. The discharge is sampled quarterly with analysis for VOCs, metals, and toxicity, to evaluate compliance with discharge limits (see Section 6).

4.2.2 OU2 Remedy Implementation

The selected remedy for OU2, as modified by the 1996 ESD, consisted of a Soil Vapor Vacuum Extraction system for removal of VOCs from unsaturated soils beneath the Valley/GRC property. In addition to the Source Control RI/FS, the ROD utilized information resulting from a pilot study of the SVE technology conducted in late 1987 - early 1988. During this study, approximately 1,300 pounds of VOCs were removed from unsaturated soils beneath the Valley/GRC property.

Pursuant to a Second Amended Administrative Order issued by EPA on March 11, 1992, contractors for Valley/GRC designed a full scale SVE system and a groundwater extraction, treatment and reinjection system to be installed on the property (Lally, 1992). The design was approved by EPA in August 1992, but in October of that year Valley/GRC informed EPA that they would no longer be able to comply with the Administrative Order. In November EPA issued a Notice of Failure to Comply with the Administrative Order.

During a site visit to Valley/GRC in December 1992, EPA learned that all of the SVE system wells and vapor probes had been installed in accordance with the approved design and that the system was operating 24 hours a day. In January 1993, EPA issued a Second Notice of Failure to Comply with the Administrative Order for failure to submit monthly progress reports concerning the SVE system's

performance to date in terms of sampling, monitoring, and performance data; the amount of contaminants removed; and estimates of contaminants remaining in the soil. In June of 1994, Valley/GRC began routine submission of monthly reports to EPA.

Due to Valley/GRC's failure to comply with the Administrative Order regarding remediation of groundwater contamination at the Source Control and MOM Operable Units, EPA decided to undertake these remedial design/remedial action activities. The remedial designs of separate groundwater extraction and treatment systems for the Source Control Operable Unit and the MOM Operable Unit were begun. During remedial design work for the Source Control Operable Unit, on-site hydrogeological studies were conducted in the spring of 1994 in an effort to evaluate probable maximum groundwater extraction rates in the vicinity of the proposed extraction system. An extraction well was installed on the Valley/GRC property and a step test was carried out. The results indicated that the maximum yields from the aquifer beneath the Valley/GRC property, with and without reinjection, would be on the order of 6 gpm and 3 gpm, respectively. Due to this low estimated yield, it was determined that construction of a separate groundwater treatment facility at the Source Control Operable Unit would not be cost effective, when compared to the alternative of piping this water to the treatment facility to be constructed for remediation of groundwater from the MOM Operable Unit. As a result, EPA decided to pursue a combined remedy for groundwater from both operable units that involved extraction and treatment in a combined facility, utilizing the technology of UV oxidation to destroy the VOCs. EPA issued an Explanation of Significant Differences in 1996 (see Section 4.1.3) to explain the changes in the remedy for groundwater at the Source Control Operable Unit.

4.3 OPERATION AND MAINTENANCE

4.3.1 Operation and Maintenance of the GWTF (OU1)

The majority of O&M activities at the site include the operations of the GWTF (OU1), conducted under the fund-lead RAC contract. O&M activities include the operation and maintenance of the GWTF, including the groundwater extraction wells, and monitoring well sampling and analyses. Operating the GWTF currently requires a full-time staff of one on-site person to operate the facility eight hours per day to conduct routine operation and maintenance, including equipment inspections, minor repairs, and monitoring of the process and data (chemical analyses, flows, vessel levels and pressures). Additional support personnel assist the full-time operator with periodic mechanical and non-routine maintenance, extraction well pipeline cleaning, and extraction well monitoring. Periodic monitoring activities include sample collection from plant monitoring points, monitoring wells, and extraction wells.

More specifically, operating the GWTF includes the addition of treatment chemicals such as hydrogen peroxide, used for ferrous iron oxidation and as an oxidant in the UV system, change out of filter media and activated carbon, operation of the UV oxidation system, collecting samples from the process for laboratory analyses, grounds and building maintenance, and disposal of residuals (sludge).

Typical maintenance items include gear lubrication, seal replacement, and pipe cleaning. Other O&M activities include maintaining site security, such as fence repair and change of locks on buildings, and general site maintenance such as mowing and snow removal as needed.

The O&M of the site is documented in a monthly report. Elements of the monthly report include a summary of overall facility performance; facility operations logs, which include monitoring information for the extraction wells, process control summary information (UV reactor amperage and voltage, flow rates, average pH, turbidity, iron concentrations, and temperature), chemical feed information, treatment process

information, on-line analyzer data and operational parameters; maintenance performed; and a summary of analytical data for the process. Measuring and meeting discharge criteria is key in determining the facility's performance.

Comprehensive site-wide semi-annual groundwater sampling is reported separately in semi-annual data evaluation reports, which also include extraction system performance evaluations (discussed further in Section 6.0).

Problems associated with the O&M of the site include both non-routine events and typical mechanical and process issues that are addressed as needed. In the past 5 years, the most significant issues have included repairs needed due to several lightning strikes in the vicinity of the extraction wells and modifications to provide better surge protection; replacement of the peroxide destruction unit due to defects in the internal coating and distribution system (replaced under warranty); partial replacement of leaking stainless steel piping with PVC; repairs to the pneumatic extraction well pumping systems installed in the retrofitted monitoring wells (now extraction wells EW-M3 and EW-S4); and problems with paint adhesion on the inside of the clarifier (repainted under warranty).

Since startup, several cost saving measures have been taken, including decreasing the number of UV lamps in operation and disposing of the sludge as a nonhazardous liquid, which is less costly than disposing of dewatered sludge due to a high level of labor required to operate the filter press. In 2003, when the number of UV lamps in operation was first decreased, a $19,000 savings was realized over the original O&M contract amount. $30,900 was saved in 2004, and in 2005, there will be an annual savings of $31,800 over the original O&M contract value. To date, a savings of $14,000 was realized through the change in sludge disposal methods. Other changes which have helped reduce O&M costs include decreased groundwater monitoring frequency.

In addition, in May 2002, a Remedial System Evaluation (RSE) was conducted by EPA Headquarters to look at possible cost saving measures. A final report, which presents the recommendations, was released in September 2002. Some of the recommendations, such as modifications to the extraction system and re-evaluation of the Source Area, have been or are currently being implemented. Other recommendations are under consideration by EPA Region I and MADEP.

Contaminant removal rates for VOCs have exceeded 99% removal. GWTF effluent concentrations have consistently been either nondetect or well below the discharge criteria for these compounds. Through January 2005, approximately 250,000,000 gallons of contaminated groundwater have been treated and approximately 900 lbs. of contaminants have been removed (approximately 860 lbs of TCE and approximately 40 lbs of 1,2-DCE).

A summary of historic GWTF O&M costs are listed below:

Fiscal Year	Costs of O&M*
2000	$385,000**
2001	$590,000
2002	$740,000
2003	$750,000
2004	$649,000
*The costs shown include all work conducted at the site, plus groundwater monitoring, reporting, and oversight. The GWTF was operated under the original facility construction contract during 2000 and 2001; any facility repairs were made under warranty during this time frame. A new O&M contractor came online in 2002. **Eight months of operation.	

Future improvements to GWTF operation and maintenance are currently being assessed by the EPA RAC contractor and O&M subcontractor. These include modifications to the extraction system, including removing extraction well EW-M2 from operation, since the contaminant concentrations in groundwater from this well have been less than the cleanup levels for two years, and moving its pump to EW-S4, to increase flow from this well. The O&M operator has also suggested replacing all steel and stainless steel piping with PVC to decrease maintenance and address pipe joint leaks.

4.3.2 Operation of the SVE System (OU2)

The OU2 SVE system began operation in late 1992 and was operated 24 hours per day, with periodic shutdowns, by Valley/GRC until early Spring of 2002, at which time the system was permanently shut down as the result of Valley/GRC's pending bankruptcy.

The mechanical portions of the SVE system, located in a southern section of the facility immediately adjacent to the Material Storage Area, operated largely unattended. Routine maintenance, process monitoring, and any mechanical repairs were performed as necessary. In 1993, in response to a Notice of Failure to Comply with the Administrative Order from EPA, Valley/GRC began submitting monthly O&M reports, which included a brief description of system performance and operational issues for the month along with system operational and monitoring data (days online, well-head vapor VOC concentrations and pounds of VOCs removed, and flow rates). System operation, which was unattended but included monthly maintenance and monitoring, generally involved routine maintenance, process monitoring, and any necessary mechanical repairs. A Notice of Violation was issued by EPA to the PRPs in December 2002, following system shutdown and discontinuance of the monthly reports.

While they were still performing O&M, Valley/GRC made several improvements to the SVE system. In 1995, in accordance with the Administrative Order, Valley/GRC conducted soil sampling to a depth of 12 feet at four locations beneath the building and adjoining Material Storage Area to identify areas where the

SVE system was not operating as efficiently as possible. To improve operation, modifications were proposed to lower the water table in the Material Storage Area using a combination of hot air injection and dual-vacuum extraction (DVE). DVE would simultaneously remove soil gas and groundwater, thereby lowering the water table and exposing more soil for remediation. EPA approved the modifications, and the changes were made to the system.

SECTION 5.0
PROGRESS SINCE LAST FIVE-YEAR REVIEW

This section is not applicable because this is the first five-year review for the Site.

SECTION 6.0
FIVE-YEAR REVIEW PROCESS

This section describes the activities performed during the five-year review process and provides a summary of findings.

6.1 COMMUNITY NOTIFICATION AND INVOLVEMENT

Since initiation of construction and over the past five years, notifications to the public have included three fact sheets and one open-house at the GWTF.

A fact sheet was issued in 1999 announcing the initiation of the construction of the GWTF.

On May 26, 2000, a fact sheet was distributed to update the public on the status of the site and the startup of the GWTF. Following the release of the fact sheet, an invitation to attend an Open House at the GWTF was distributed to local residents and announced in local newspapers. The Open House was held on June 10, 2000, during which EPA and its representatives gave tours of the facility and explained the operation of the facility to the community.

Prior to conducting the soil investigation during the summer of 2004, a fact sheet was released to update the public on the details of the investigation and provide an update on the status of the groundwater remediation.

A public notice notifying the residents and interested parties of the pending Five Year review was placed in **The Daily News of Newburyport** on March 10, 2005.

6.2 DOCUMENT REVIEW

This five-year review consisted of a review of relevant documents for the Site. See Attachment 1 for a list of documents that were reviewed.

6.3 DATA REVIEW

6.3.1 Treatment Plant Effluent Monitoring

The influent and effluent from the groundwater treatment plant are monitored on a monthly basis to confirm that effluent discharge limits are not exceeded and to observe contaminant removal efficiencies. In addition, effluent samples are analyzed for VOCs onsite by an automatic online analyzer every several hours. Since startup of the facility in April 2000, the effluent contained no detectable concentrations of VOCs in greater than 90% of the monthly sampling events. The highest concentration of TCE, the primary site contaminant, in the plant effluent was 3.6 µg/l. There have been no exceedances of the VOC discharge limits.

Since startup of the facility, there have been several minor exceedences of metals discharge limits. Specifically, the effluent discharge limit of 0.75 µg/l for arsenic was exceeded on three occasions in the past five years (0.79 µg/l in September 2002, 0.79 µg/l in June 2003, and 0.96 µg/l in August 2003); the effluent discharge limit of 1.3 µg/l for lead was exceeded three times (an estimated (J) value of 1.8 µg/l in July 2001, 1.5 µg/l in January 2003, and 1.6 µg/l in March 2004); and the effluent discharge limit of 0.273 µg/l for mercury was exceeded once (0.35 µg/l in November 2002). To determine whether the

exceedances were significantly different from the discharge limits, the relative percent difference (RPD) was calculated. For aqueous samples, anything within 30% RPD is considered to be comparable. In all cases but one, the values were found to be comparable. The one exceedance found to be significantly different from the discharge limit was for lead, estimated at 1.8 µg/l in July 2001. There was no obvious reason for the exceedance. In all cases, whether or not the exceedance was found to be significant, the treatment plant operator reviewed operations to assess possible reasons and remedies for the exceedances.

In addition, due to laboratory limitations, the laboratory detection limit for arsenic samples collected through February 2002 was greater than the discharge limit of 0.75 µg/l. In March 2002, a new method, capable of achieving a detection limit of less than 0.5 µg/l was identified. Effluent data from March 2002 through the most recent data show that plant effluent meets the discharge limit for arsenic.

Since the effluent from the GWTF is discharged to surface water, it is tested for acute and chronic toxicity on a quarterly basis. Toxicity testing includes 48-hour whole effluent screening tests with *Ceriodaphnia dubia* and juvenile fathead minnow *(Pimephales promelas*). One hundred percent survival has been observed consistently for the fathead minnow. On several occasions, survival was less than 100% for *Ceriodaphnia dubia*. Treatment system operations were assessed to try to determine a reason, however, no correlation between operations and the results could be determined. Results are included in Attachment 2, along with GWTF extraction well, influent and effluent data.

6.3.2 Groundwater Monitoring

Summary. Groundwater extraction wells at the site are sampled on a quarterly basis for VOCs and metals, and monitoring wells are sampled semi-annually (twice per year) for VOCs utilizing EPA's RAC contract. Several rounds of groundwater monitoring for metals was conducted prior to construction of the GWTF, but analysis for metals was discontinued when data showed that metals concentrations were below primary drinking water standards. Extraction well data for VOCs and metals from May 2000 through January 2005 are presented in Attachment 2. Groundwater monitoring data for the primary site contaminants, TCE and 1,2-DCE from 1998, prior to startup, through October 2004 are presented in Table 3. Analytical results for all VOCs detected in the most recent comprehensive sampling round, conducted in October 2004, are presented in Table 4. Concentrations that exceed MCLs are presented in bold font. Until 2001, groundwater monitoring for VOCs in the source area was also conducted by the PRPs on an annual basis, however, this monitoring was discontinued when the PRPs filed for bankruptcy.

VOCs. In the most recent comprehensive sampling round (see Table 4) conducted as part of the groundwater remedy long-term remedial action, TCE concentrations exceeded the interim groundwater cleanup level (IGCL) at seven of the 21 locations sampled, in the areas South of Main Street, at monitoring well ERT-9; and in the Source Area, at wells TW-3, TW-12, TW-17, TW-24, TW-26, and TW-26A. The IGCL for cis-1,2-DCE was exceeded at monitoring well TW-17, in the Source Area. Monitoring well locations are shown on Figure 2.

Additional Source Area sampling conducted during the summer of 2004 to determine the current distribution of contamination remaining in this area indicated that high levels of groundwater contamination remain beneath and immediately adjacent to the Valley Manufacturing building. TCE in groundwater samples collected from a total of 16 monitoring wells, soil vapor extraction wells, or borings exceeded the MCL.

TABLE 3. TRICHLOROETHENE AND CIS-1,2-DICHLOROETHENE CONCENTRATIONS DETECTED IN GROUNDWATER - (µg/L)
COMPARISON OF SPRING 1998 THROUGH FALL 2004

Analyte		Trichloroethene															cis-1,2-Dichloroethene [3]													
WELL/ZONE		4/98	7/98	10/98	4/99	10/99	4/00	10/00	4/01	10/01	3/02	10/02	3/03	10/03	3/04	10/04	4/98	7/98	10/98	4/99	10/99	4/00	10/00	4/01	10/01	3/02	10/02	3/03	10/03	3/04	10/04
Interim Cleanup Level		5															70													
North of Main St.																														
103	BR	3	NS	3 [3]	3 [3]	3 [3]	3 [3]	4	3 [3]	3	NS	4.6 [1]	1.7 J [1]	2.2 [1]	2.4 [1]	3.1	11	NS	10 [3]	16 [3]	8 [3]	7 [3]	8	13 [3]	9	NS	22 [1]	9.4 [1]	13 [1]	20 [1]	25
104	DO	6	NS	4	3	3	3	3	2	1	NS	1.7	NS	0.74	NS	0.84 [1]	22	NS	17	15	20	15	17	16	16	NS	18 D	NS	12	NS	12 [1]
South of Main St.																														
108	BR	3	NS	3	2	2	2	2	2	0.5 U	NS	1.8	NS	1.4	NS	1.6	0.6 J	NS	0.6 J	0.5 J	0.5 J	0.4 J	0.5 J	0.4 J	0.5 U	NS	0.48 J	NS	1.6	NS	0.46 J
DEQE-6	DO	**320**	**480 J**	**240**	**300**	**470**	**490**	**150**	**39**	**7 J**	**6**	**6.9**	3.9 J	3.1	NS	1.5	63 J	**180**	68	**84**	**110**	**160**	30	4 J	0.7 J	0.5	0.33 J	0.23 J	1.0	NS	0.50 U
ERT-9	BR	**110 J**	**100 J**	**180**	**130**	**250 D**	**360**	**69**	**35**	**17**	**41**	**13 !**	**13 J**	**5.0**	**8.6**	**6.6**	18 J	33	42	58	50	**76**	29	28	16	47	24	22	9.7	22	19
ERT-11	SO	0.6 J	NS	2	0.5 J	1	0.6 J	1	0.4 J	0.5 U	NS	0.19 J	NS	0.37 J	NS	0.29 J	1 U	NS	10	1 U	3	1 U	1 U	1 U	0.5 U	NS	0.052 J	NS	0.50 U	NS	0.50 U
ERT-13	DO	**170**	**89 J**	**140**	**150**	**180**	**120**	**150**	**96**	**30**	**11**	**8 J!**	**7.2 J**	3.5	2.4	2.6	56 J	27	20	30	25	23	19	14	5 J	1 J	10 U	1.1 J	1.0	0.87	1.0
Groveland Highway Dept.																														
DEQE-1-4	BR	NS	**2,000 J**	**700 D**	**1,900**	**900 B**	**1,600**	**100**	**21**	4 J	NS	3.9	NS	2.2	0.44 J	0.79	NS	62	66	**70 J**	43 J	**220**	35	20	3 J	NS	1.7	NS	2.6	0.16 J	0.25 J
DEQE-4-2	DO	**100**	**110 J** [3]	**190**	**36** [3]	**130** [3]	**190** [3]	**71**	**30**	**10**	**14**	**11**	**6.4 J**	3.6	3.1	4.2	13 J	18	20	7 J [3]	16 [3]	26 [3]	7 J	4 J	2 J	2	6.3	1.8	2.5	1.4	1.9
ME-10D	DO	NS	NS	NS	NS	**1,800 B**	**65**	**470 B**	**140**	**110**	**36**	**20**	*10 U*	*10 U*	2.8	2.6	NS	NS	NS	NS	**240 J**	**110**	**180**	**170**	26	18	3 J	10 U	10 U	1.7	0.85
ME-20D	DO	NS	NS	NS	NS	**160 B**	10 U	**18**	3	2 D	0.7	1.9	NS	0.50 U	NS	0.50 U	NS	NS	NS	NS	**110**	1 J	13	**84**	39 D	4	1.3	NS	0.50 U	NS	0.50 U
No. 4	DO	NS	**34 J**	**390**	**470**	**310**	**950**	4 J	1 J	2	**NS**	1.1	NS	0.50 U	NS	0.50 U	NS	68	**390**	**230**	**340**	**130**	4 J	10 U	1	NS	0.31 J	NS	0.50 U	NS	0.50 U
South of Mill Pond																														
DEQE-7	OB	**13**	NS	**200 D**	NS	**380 B**	**390**	4 J [3]	2 J	0.3 J	NS	0.44 J !	NS	0.27 J	NS	0.50 U	2 J	NS	19	NS	6 J	50 U	10 U [3]	10 U	0.5 U	NS	0.094 J	NS	0.50 U	NS	0.50 U
DEQE-8	SO	**2,200**	NS	**4,000 D**	NS	**1,400**	**480**	**7 J**	**140**	4 J	4	2.3	1.6 J	1.4	NS	3.3	51	NS	**480 D**	NS	**81 J**	12 J	6 J	3 J	2 J	1	0.37 J	0.77	2.5	NS	0.31 J
GPW-11	SO	NS	NS	NS	NS	NS	**1,200 D**	**8 J**	**120**	**37**	**29**	**14 !**	**6.2 J**	**5.3**	0.31 J	3.9	NS	NS	NS	NS	NS	19	10 U	1 J	1 J	10 U	10 U	0.15 J	0.50 U	0.50 U	0.50 U
Source Area / Valley Mfg																														
TW-3	OB	NS	NS	NS	NS	NS	NS	NS	**630 J**	0.9 J	NS	**15 !**	NS	**29**	**35 J**	**20**	NS	NS	NS	NS	NS	NS	NS	**88 J**	10 U	NS	1 J	NS	45	21 J	24
TW-12	BR	**1,400**	NS	**2,200**	**2,800**	**550**	**870**	**100**	**97 J**	NS	NS	NS	NS	NS	NS	**17**	47 J	NS	46 J	51 J	19 J	36 J	6 J	**3 J**	NS	NS	NS	NS	NS	NS	10 U
TW-17	SO	NS	**60,000 J**	**9,800**	**880**	**8,400**	**12,000**	**150,000**	**4,100 J** [3]	**150,000**	**16,000 D**	**44000** [1]	**220,000**	**380,000**	**250,000** [1]	**130,000 D**	NS	**430**	**81 J**	**110**	**220 J**	**350**	*1,000 U*	35 J [3]	*13,000 U*	14	**130** [1]	**530 J**	**360**	**580 J** [1]	**610 E**
TW-24	BR	NS	**16,000 J**	NS	NS	**180**	**7,800**	**530 B**	**210 J**	**140**	**170**	**76**	**150**	**86**	**125**	**70**	NS	NS	NS	NS	10 J	**500 U**	7 J	4 J	3 J	3 J	1 J	2 J	2 J	3 J	2 J
TW-26	BR	NS	NS	NS	NS	**460** [3]	**270** [3]	**63** [3]	**160 J**	**84**	NS	**57**	NS	**40** [1]	**NS**	**28**	NS	NS	NS	NS	53 [3]	32 [3]	33 [3]	32 J	16	NS	13	NS	10 [1]	NS	9 J
TW-26A	OB	NS	NS	**3,700 D**	**340** [3]	**180**	**160**	**74 B**	**180 J**	**240 D**	NS	**41**	NS	**63**	**NS**	**52** [1]	NS	NS	**170 JD**	**110** [3]	**420 D**	**380**	15	**110 J**	38 D	NS	30	NS	47	NS	42 [1]

1 - For locations where a field duplicate was collected; the value reported is the average of the two detections.

3 - Based on historical results, concentrations are assumed to be predominantly attributable to the cis isomer, even if the laboratory reported total concentrations for 1,2-dichloroethene.

! - The result is at or below the validation blank action level, and is attributable to blank contamination.
B - Organics: Analyte detected in a laboratory blank.
BOLD/BOX - Detected concentration exceeds the applicable Interim Groundwater Cleanup Level.
BR - Bedrock
D - Concentration is reported from a dilution of the sample.
DO - Deep Overburden
E - Estimated; concentration exceeds instrument's calibrated range
Italics - Sample specific detection limit is above the Interim Groundwater Cleanup Level.
J - For Tier I validated data: Quantitation is estimated as it is below the sample-specific detection limits (SSDL).
- For Tier II validated data: Quantitation is approximate due to limitations identified in the data validation review.
NS - Not Sampled
OB - Overburden
SO - Shallow Overburden
U - Not detected above the SSDL. SSDLs are reported from the analysis for which all detected compounds were within calibration range.

TABLE 4. VOLATILE ORGANIC COMPOUNDS DETECTED IN GROUNDWATER (µg/L) - FALL 2004

Analyte		Trichloroethene	cis-1,2-Dichloroethene	Carbon tetrachloride	Tetrachloroethene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	MTBE	trans-1,2-DCE	Vinyl chloride
Intermim Cleanup Level [1]		5	70	5	5	200	None	None	100	2
Area / Well / Zone										
North of Main St.										
103	BR	3.1	25	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
104 [2]	DO	0.84	12	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
South of Main St.										
108	BR	1.6	0.46 J	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
DEQE-6	DO	1.5	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
ERT-9	BR	**6.6**	19	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
ERT-11	SO	0.29 J	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
ERT-13	DO	2.6	1.0	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Groveland Highway Dept.										
DEQE-1-4	BR	0.79	0.25 J	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	18
DEQE-4-2	DO	4.2	1.9	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
ME-10D	DO	2.6	0.85	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	*10 U*
ME-20D	DO	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
No. 4	DO	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
South of Mill Pond										
DEQE-7	OB	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
DEQE-8	SO	3.3	0.31 J	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
GPW-11	SO	3.9	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Source Area / Valley Mfg										
TW-3	OB	**20**	24	*10 U*	*10 U*	10 U	10 U	10 U	10 U	*10 U*
TW-12	BR	**17**	10 U	*10 U*	*10 U*	10 U	10 U	10 U	10 U	
TW-17	SO	**130,000 D**	**610 E**	**13**	**14**	42	3 J	10 U	3 J	*100 U*
TW-24	BR	**70**	2 J	*10 U*	*10 U*	10 U	10 U	48	10 U	*10 U*
TW-26	BR	**28**	9 J	*10 U*	*10 U*	10 U	10 U	10 U	10 U	*10 U*
TW-26A [2]	OB	**52**	42	*10 U*	*10 U*	10 U	10 U	10 U	10 U	*10 U*

(1) Interim groundwater cleanup level (IGCL) as specified in the Record of Decision (USEPA, 1991).
(2) A field duplicate was collected for this location; the value presented is the average of the two detections.

! - The result is at or below the validation blank action level, and is attributable to blank contamination.
B - Organics: Analyte detected in a laboratory blank.
BOLD/BOX - Detected concentration exceeds the applicable IGCL.
BR - Bedrock
D - Concentration is reported from a dilution of the sample.
DO - Deep Overburden
E - Estimated; concentration exceeds instrument's calibrated range
IGCLs - Interim Groundwater Cleanup Level
ITALICS - Detection limit is greater than the applicable IGCL.
J - For Tier I validated data: Quantitation is estimated as it is below the sample-specific detection limits (SSDL).
- For Tier II validated data: Quantitation is approximate due to limitations identified in the data validation review.
OB - Overburden
SO - Shallow Overburden
U - Not detected above the SSDL. SSDLs are reported from the analysis for which all detected compounds were within calibration range.

Figure 4 depicts the groundwater TCE contours in the source area. The TCE contours for the downgradient plume in April 2000 and October 2004 are depicted in Attachment 3.

Metals. Monitoring well samples were collected and analyzed for metals prior to GWTF startup, in 1998. Several rounds of sampling showed that metals concentrations were consistently below the MCLs, with the exception of iron, manganese, and aluminum, which exceeded their secondary MCLs in some wells. Collection of these samples was discontinued as a cost savings measure in 1999 since no primary drinking water standards were exceeded and because sufficient data had been collected for treatment system design and operation.

Data Evaluation. Semi-annual data evaluation and annual evaluations of extraction system performance, with regard to contaminated groundwater remediation and containment, have been performed. These evaluations generally involve creating contour maps ("plume maps") of TCE concentrations in the groundwater in the shallow overburden, deep overburden, and bedrock. Cross-sections showing contours of TCE along the axis of the plume and perpendicular to the plume are also prepared. Extraction system operation is evaluated to determine whether adequate plume capture is occurring and whether modifications, such is shutting down a particular well or increasing the flowrate to improve capture, is warranted, as well as the need for well rehabilitation.

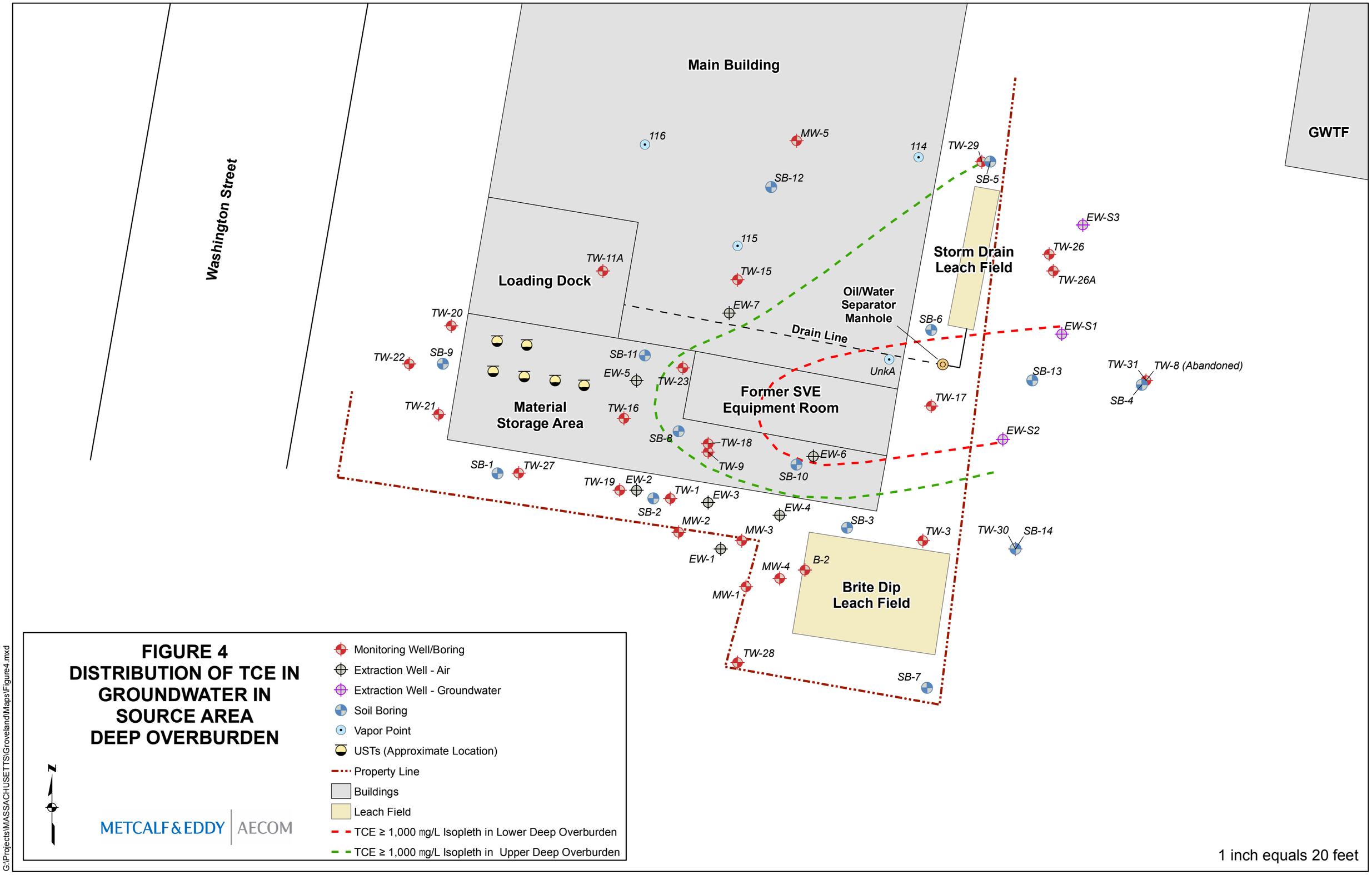
Plume maps for April 2000, just after startup of the GWTF, and October 2004, showing TCE in overburden and bedrock groundwater, are included in Attachment 3. A comparison of these maps indicates that the plume size has decreased significantly since the GWTF has been in operation.

As an example of data evaluation, the Fall 2004 groundwater data evaluation concluded the following:

- M&E sampled 21 monitoring wells for VOCs in fall 2004. TCE was detected in 18 of the wells sampled, with the 5.0 ug/L TCE IGCL exceeded at seven locations. TCE exceedences were in the area South of Main Street (ERT-9) and within the Source Area (TW-3, TW-12, TW-17, TW24, TW-26, and TW-26A). TCE concentrations have been generally declining in areas North of Main Street, South of Main Street, within the Groveland Highway Department, and South of Mill Pond. However, concentrations of TCE continue to fluctuate in the Source Area. TCE was detected at 130,000 ug/L in well TW-17, located in the vicinity of the source.

- Fourteen of the 21 wells sampled in fall 2004 contained cis-1,2-DCE. The IGCL for cis-1,2- DCE (70 ug/L) was exceeded at one location, monitoring well TW-17 in the Source Area. Concentrations of cis-1,2-DCE have been generally declining in areas South of Main Street, within the Groveland Highway Department, and South of Mill Pond. However, cis-1,2-DCE concentrations continue to fluctuate in the Source Area and North of Main Street.

FIGURE 4
DISTRIBUTION OF TCE IN GROUNDWATER IN SOURCE AREA DEEP OVERBURDEN



G:\Projects\MASSACHUSETTS\Groveland\Maps\Figure4.mxd

- Consistently high concentrations (>100,000 ug/L) of TCE in overburden monitoring well TW-17, immediately upgradient (west) of the source area extraction wells (EW-S1, EW-S2, and EW-S3), indicate that these wells are properly positioned to capture a significant part of the plume close to its source. However, without numerous additional monitoring wells, the extent of plume capture cannot be accurately defined. To the east (downgradient side) of the extraction wells, recent samples from a new shallow bedrock monitoring well (TW-31) had TCE concentrations in the range of 10 to 25 ug/L, suggesting that a significant part of the central core of the plume is being captured. To the south of the extraction wells, low concentrations of TCE in TW-3 and TW-30 suggest that highly contaminated groundwater is not bypassing the source area extraction wells on the south side and, therefore, not impacting residences to the south of the site. However, one or two additional monitoring wells would be needed to the south of TW-3 to determine whether the entire plume is being captured on the south side. On the north side, high TCE concentrations in groundwater samples from a boring north of EW-S3 suggest that additional investigations would be needed to define the northern edge of the plume and determine if part of the plume is bypassing the extraction wells on this side.

- The two extraction wells in the area southwest of Mill Pond are removing moderately contaminated groundwater from the bedrock. In October 2004, the TCE concentrations in samples from EW-S4 (deep bedrock) and EW-S5 (shallow bedrock) were 31 and 15 µg/L, respectively. These wells may also be contributing to the cleanup of the overburden aquifer in this area by at least partly preventing discharge of contaminated groundwater from the bedrock.

- The capture zone in the overburden created by the extraction wells in the area north of Mill Pond extended downgradient to between DEQE-6 and GPW-3 in October 2004. Within the portion of the capture zone that is north (formerly downgradient) of the extraction wells, concentrations of TCE in overburden monitoring wells have fallen from as much as 950 µg/L (in well No. 4 in April 2000) to <0.5 µg/L. Farther to the north and beyond the capture zone, measured concentrations of TCE in the deep overburden have fallen from up to 490 µg/L (in well DEQE-6 in April 2000) to 4.2 µg/L or less. The part of the plume that is beyond capture by the extraction system will attenuate naturally as it migrates north or discharges to surface water.

- The capture zone in the bedrock created by the extraction wells in the area north of Mill Pond is not well defined. However, since the activation of the extraction system, the declining concentrations of TCE in DEQE-1-4, extraction well EW-M3, and ERT-9 indicate that the bedrock aquifer is being remediated. Recent sampling of EW-M3 during periods of pumping and non-pumping have shown that TCE concentrations fall below detection limits when the well is pumped, but return to levels as high as 20 µg/L after several months of non-pumping. It may be warranted to adopt a schedule of pumping and non-pumping at EW-M3, to maximize contaminant removal while minimizing maintenance. It may also be warranted to install additional monitoring wells in the bedrock aquifer in the future, to determine the distribution of contaminants and to investigate the degree of connection between the bedrock and the deep overburden.

- Quarterly samples collected from extraction well EW-M2 have shown no contamination since October 2003. Samples taken from ME-20D in October 2003 and October 2004 also showed no contaminants detected. These results indicate that EW-M2 is no longer an effective well for mass removal and should be taken out of service. Without the groundwater withdrawal at EW-M2, the capture zone in this area will shrink. However, since the capture zone to the north of the extraction wells has been flushed clean, the retreat of the edge of the zone to the south will not release any contaminated water that would otherwise have been captured. The decrease in the

width of the capture zone is also not expected to result in the release of contaminated water that would otherwise have been captured, unless small quantities of contaminated groundwater that cannot be detected in the extraction well discharge seep out of the bedrock within the EW-M2 capture zone.

Conclusions. Overall, the data shows that the groundwater extraction system has been effective in containing and reducing the size of the groundwater plume.

6.3.3 Surface Water Monitoring

Surface water samples were collected from Mill Pond in the spring of 2000, prior to GWTF startup, and again during the spring of 2001, 2002, and 2003. Samples were analyzed for VOCs and metals. The purpose of the sampling was to monitor the impact of the GWTF discharge on Mill Pond. Results showed no significant difference in the level of contaminants or change in water quality in Mill Pond following startup of the GWTF or after several years of operation.

Surface water sampling was discontinued in 2004 because the treatment plant discharge has had no adverse effects during the first three years of operation. Surface water sampling results are presented in Table 5.

6.3.4 Source Area Soil Sampling

During the summer of 2004, soil sampling was conducted as part of a source re-evaluation to determine the current distribution of contamination remaining in the Source Area. Previously, soil sampling was last conducted in 1995 by the PRPs. The goal of the program was to define the extent of contamination remaining above and below the clay beneath and adjacent to the Valley Manufacturing building. Subsurface exploration was conducted using a Geoprobe for shallow soil and a standard drill rig for deeper soil. Due to the dense nature of the soil, the Geoprobe was unable to penetrate below 16.5 ft below ground surface. The conventional rig was unable to access the Material Storage Area due to ceiling height restrictions; therefore no samples were collected inside the Valley building or adjoining Material Storage Area below 16.5 feet. All samples were analyzed onsite for selected VOCs, including TCE; 1,1,1-TCA; carbon tetrachloride; and cis-1,2-DCE, by EPA's mobile laboratory.

Shallow TCE contamination in soil (less than 4 feet bgs) was detected at number of locations beneath the Valley building Material Storage Area, at concentrations as high as 2,850 ppb, and immediately adjacent to the Valley building at concentrations up to 1,400 ppb. This shallow contamination may be indicative of historical TCE spills east and south of the Material Storage Area.

Deeper TCE contamination in soil (greater than 4 ft bgs) was detected at depths ranging from 4 feet to 17 feet. Maximum concentrations in soil outside the Valley building found immediately adjacent and to the south of the Material Storage Area (up to 10,600 ppb). The most highly contaminated soil was found beneath the Material Storage Area, at depths ranging from approximately 6 to 8 feet below ground surface, with a maximum concentration of 52,000 ppb.

The TCE concentrations in the source area soil shown on Figure 5.

The Agency is currently evaluating potential additional sampling efforts to determine the distribution of contamination remaining at depths greater than 16.5 feet beneath the building.

TABLE 5. SURFACE WATER DATA - COMPARISON OF POST-STARTUP DATA, AMBIENT WATER QUALITY CRITERIA, and REGION 9 PRGs

ANALYTE (micrograms/liter)	M&E Post-Startup Mill Pond Outlet	M&E Post-Startup Mill Pond Outlet	M&E Post-Startup Mill Pond Outlet	Ambient Water Quality Criteria[1,2]			Risk-Based PRG[4]
				CMC	CCC	Organism Only	
	Spring-01	Spring-02	Spring-03				
Volatile Organic Compounds							
Chloromethane	1 U	0.50 U	0.50 U	--	--	--	640
Bromomethane	1 U	0.50 U	0.50 U	--	--	4,000	34.8
Vinyl chloride	1 U	0.50 U	0.50 U	--	--	2.4	0.8
Chloroethane	1 U	0.50 U	0.50 U	--	--	--	184
Methylene chloride	2 UJ	0.10 !	0.21 BJ	--	--	1,600	172
Acetone	5 UJ	4.0 !	1.1 BJ	--	--	--	22,000
Carbon disulfide	1 U	0.50 U	0.50 U	--	--	--	4,000
1,1-Dichloroethene	1 U	0.50 U	0.50 U	--	--	7,100	1,360
1,1-Dichloroethane	1 U	0.50 U	0.50 U	--	--	--	3,240
cis-1,2-Dichloroethene	1 U	0.50 U	0.50 U	--	--	--	244
trans-1,2-Dichloroethene	1 U	0.50 U	0.50 U	--	--	10,000	480
Chloroform	1 U	0.50 U	0.50 U	--	--	470	6.8
1,2-Dichloroethane	1 UJ	0.50 U	0.50 U	--	--	99	4.8
2-Butanone	5 UJ	5.0 U	5.0 U	--	--	--	28,000
Bromochloromethane	1 U	0.50 U	0.50 U	--	--	--	7.2
1,1,1-Trichloroethane	1 U	0.50 U	0.50 U	--	--	--	12,800
Carbon tetrachloride	1 U	0.50 U	0.50 U	--	--	4.4	6.8
Bromodichloromethane	1 U	0.50 U	0.50 U	--	--	46	7.2
1,2-Dichloropropane	1 U	0.50 U	0.50 U	--	--	39	6.4
cis-1,3-Dichloropropene	1 U	0.50 U	0.50 U	--	--	21	16
Trichloroethene	1 U	0.50 U	0.50 U	--	--	81	1.12
Dibromochloromethane	1 U	0.50 U	0.50 U	--	--	34	5.2
1,1,2-Trichloroethane	1 U	0.50 U	0.50 U	--	--	42	8
Benzene	1 U	0.50 U	0.50 U	--	--	71	14
trans-1,3-Dichloropropene	1 U	0.50 U	0.50 U	--	--	21	16
Bromoform	1 U	0.1 !	0.24 BJ	--	--	360	340
4-Methyl-2-pentanone	5 UJ	5.0 U	5.0 U	--	--	--	8,000
2-Hexanone	5 UJ	5.0 U	5.0 U	--	--	--	--
Tetrachloroethene	1 U	0.50 U	0.50 U	--	--	8.85	4
1,1,2,2-Tetrachloroethane	1 UJ	0.50 U	0.50 U	--	--	11	2.2
1,2-Dibromoethane	1 U	0.50 U	0.50 U	--	--	--	2.24
Toluene	1 U	0.50 U	0.50 U	--	--	15,000	2,880
Chlorobenzene	1 U	0.50 U	0.50 U	--	--	1600	440
Ethylbenzene	1 U	0.50 U	0.50 U	--	--	2,100	5,200
Styrene	1 U	0.50 U	0.50 U	--	--	--	6,400
Xylenes (total)	1 U	0.50 U	0.50 U	--	--	--	840
1,3-Dichlorobenzene	1 U	0.50 U	0.50 U	--	--	2,600	720
1,4-Dichlorobenzene	1 U	0.50 U	0.50 U	--	--	190	20
1,2-Dichlorobenzene	1 U	0.50 U	0.50 U	--	--	1,300	1,480
1,2-Dibromo-3-chloropropane	1 UJ	0.50 U	0.50 U	--	--	--	1.92
1,2,4-Trichlorobenzene	1 U	0.50 U	0.50 U	--	--	70	28.8
Inorganics							
Aluminum	58.7 B!	77.7 U	47.0	--	--	--	144,000
Antimony	1.6 U	23.4 U	0.25 U	--	--	4,300	60
Arsenic	2.1 U	1.6 U	0.65	340	150	0.14	1.8
Barium	8.7 BE	7.2 B	8.8 !	--	--	--	1,040
Beryllium	0.40 U	0.89 U	0.10 U	--	--	--	292
Cadmium	0.30 U	0.22 U	0.05 U	0.93	0.14	--	72
Calcium	10,300	14,200	13,000	--	--	--	--
Chromium [3]	2.6 B!	2.4 U	2.5 U	16	11	--	440
Cobalt	0.60 B!	3.7 U	1.0 B	--	--	--	2,920
Copper	2.0 B	3.1 U	3.2	6.4	4.6	--	6,000
Iron	234	122	191	--	--	--	44,000
Lead	0.90 U	1.8 U	0.51	27	1.1	--	15
Magnesium	2,030 B	3,250 B	2,790	--	--	--	--
Manganese	29.3	70.9 U	57.8	--	--	--	3,520
Mercury	0.10 U	0.10 U	0.10 U	1.4	0.77	0.051	44
Nickel	3.2 B!	7.0 U	2.5 U	240	27	4,600	2,920
Potassium	1,250 B	1,420 B	1,690	--	--	--	--
Selenium	2.3 U	1.9 B	0.75 U	--	5.0	11,000	720
Silver	0.70 U	2.7 U	0.15 U	0.83	--	--	720
Sodium	11,600 E	17,500	16,400	--	--	--	--
Thallium	3.5 U	3.4 U	0.10 U	--	--	0.47	9.6
Vanadium	0.60 B!	3.2 U	2.5 U	--	--	--	144
Zinc	5.3 B!	6.2 B	6.9 B	60	60	69,000	44,000

NOTES for TABLE 5

All concentrations and criteria are in units of micrograms per liter.

-- - For ambient water quality criteria, no standard available. For analytical data, not analyzed.

! - The result is at or below the validation blank action level, and is attributable to blank contamination.

B - Organics: Analyte detected in the laboratory blank.

B - Inorganics: Analyte detected at a concentration greater than the instrument detection limit and less than the contract required quantitation limit.

CCC - EPA Freshwater Criterion Continuous Concentration

CMC - EPA Freshwater Criterion Maximum Concentration

E - The reported value is estimated because of the presence of interference

J - The concentration reported is an estimated value.

U - Not detected above the sample-specific detection limit (SSDL). SSDLs are reported from the analysis for which all detected compounds were within calibration range.

Organisms Only - Human Health for Consumption of Organisms Only

1 EPA Water Quality Standards Database, March 2005

2 CMC and CCC criteria have been adjusted for hardness in accordance with the AWQC guidelines. A hardness of 45.4 mg/L, based on the M&E sample, was used to adjust criteria for cadmium, copper, lead, nickel, silver, and zinc.

3 Criteria presented are for Chromium (VI), which are lower than those for Chromium (III).

4 Region 9 tap water PRGs (ILCR = 10^{-6} and HQ =0.1) adjusted upward 40-fold to approximate surface water ingestion, dermal contact, and inhalation exposures.

Washington Street

Main Building

GWTF

Loading Dock

Drain Line

Storm Drain Leach Field

Material Storage Area

Former SVE Equipment Room

Oil/Water Separator Manhole

Brite Dip Leach Field

TW-29 340
SB-5 <5
SB-12 16
SB-6 408
SB-9 142
SB-11 2,230
SB-8 10,800
SB-10 52,000
SB-13 38
SB-4 <5
SB-1 1,400
SB-2 10,600
SB-3 484
SB-14 42
TW-28 <5
SB-7 <5

FIGURE 5
TCE CONCENTRATIONS IN SOIL

- Monitoring Well/Boring
- Soil Boring
- 142 TCE Concentration in Soil (ppb)
- Property Line
- Buildings
- Leach Field

Note: The maximum concentration (ppb) detected is presented, regardless of depth. See Table 3-2 for complete results.

N

METCALF & EDDY | AECOM

1 inch equals 20 feet

G:\Projects\MASSACHUSETTS\Groveland\Maps\Figure5.mxd

6.4 SITE INSPECTION

A site inspection of the groundwater treatment plant was performed on February 9, 2005. A completed site inspection form is included in Attachment 4. The following personnel were in attendance: Derrick Golden, EPA Remedial Project Manager (RPM); Janet Waldron, MADEP Project Manager; Bob Ricard, Groundwater Treatment Facility Operator, Nobis/Weston; and Cinthia McLane, Metcalf & Eddy.

6.5 INTERVIEWS

In accordance with the EPA guidance for five-year reviews (EPA, 2001), personnel involved with the operation and maintenance of the site were interviewed. The interviews took place on February 9, 2005. The interview forms are attached (Attachment 4). Key points of discussion are provided in applicable sections of this report.

SECTION 7.0
TECHNICAL ASSESSMENT

This section discusses the technical assessment of the remedy and provides answers to the three questions posed in the EPA guidance for five-year reviews (USEPA, 2001).

7.1 QUESTION A: IS THE REMEDY FUNCTIONING AS INTENDED BY THE DECISION DOCUMENTS?

The review of documents, ARARs, and risk assessments indicates that the remedy was constructed in accordance with the RODs and ESDs and is currently protective. However, as the SVE system ceased operation in Spring of 2002, EPA is currently assessing the need to re-start the SVE or implement some other type of measure. Notwithstanding, contaminated groundwater from this area continues to be captured by the operating groundwater extraction system and treated in the GWTF, ensuring that the remedy remains protective.

7.2 QUESTION B: ARE THE EXPOSURE ASSUMPTIONS, TOXICITY DATA, CLEANUP LEVELS, AND REMEDIAL ACTION OBJECTIVES (RAOs) USED AT THE TIME OF REMEDY SELECTION STILL VALID?

7.2.1 Review of Human Health Risk Assessments and Toxicity Factors Serving as the Basis for the Remedy

An Endangerment Assessment (Alliance, 1987) and an Endangerment Assessment Amendment (CDM, 1988) were performed for Operable Unit 2 to evaluate potential human health risks from exposure to contaminants from the Valley site. A baseline public health and ecological risk assessment was also conducted as part of the supplemental MOM remedial investigation (NUS Corporation, 1991). Employees at the Valley site exposed to contaminated soil, residents in close proximity to the Valley site using impacted groundwater for household uses, and local residents exposed to surface water, sediment, and fish tissue in impacted ponds and streams were the receptor populations evaluated.

The following exposure pathways were evaluated:

- Ingestion of groundwater used as a source of drinking water;
- Incidental and dermal contact with surface water while swimming in surface water bodies within the site;
- Dermal contact with sediments while wading in surface water bodies within the site;
- Ingestion of fish tissue captured from the Johnson Creek watershed;
- Inhalation of VOCs released by the Mill Pond extraction system by nearby residents;
- Inhalation of ambient air on-site; and
- Incidental ingestion and dermal contact with soil by workers and children at the Valley site.

The greatest potential risk was attributed to the ingestion of contaminated groundwater, with TCE and arsenic as the two contaminants that contributed most to the carcinogenic risk estimates in excess of the EPA target risk range of 10^{-6} to 10^{-4}. Non-carcinogenic hazard estimates (hazard indices) also exceeded the EPA target of one for some contaminants of concern, and MCLs were exceeded for a number of contaminants. Interim groundwater cleanup levels were established in the OU1 ROD as either federal MCLs, Massachusetts MCLs, or health-based values. Cumulative risk and hazard associated with the interim groundwater cleanup levels exceed EPA risk management criteria. Therefore, when the

groundwater cleanup levels have been attained (in an estimated 30 years), the OU1 ROD indicates that a risk assessment will be performed to determine whether the remedial action is protective.

Risks and hazards associated with exposure to contaminated ambient air at the Valley site, and surface water, sediment, and fish tissue from on-site ponds and streams, did not exceed EPA's risk management criteria for carcinogenic and noncarcinogenic effects. Sampling data indicated that the surface soils were relatively unimpacted; however, subsurface soil data were quantitatively evaluated. The soil evaluation indicated that risks and hazards did not exceed risk management criteria. Soil contaminants were noted as being of limited access due to their presence beneath structures, pavement, or at depths at which incidental human contact would not be expected (e.g., greater than four feet bgs). Even though direct contact soil risks and hazards were not estimated, soil cleanup goals were established in the OU2 ROD for VOCs leaching to groundwater and contributing to groundwater contamination above cleanup goals. A soil/water equilibrium calculation served as the basis for the soil cleanup goals.

In this five-year review report, the impact of changes in toxicity values on remedy protectiveness has been evaluated. Any changes in current or potential future exposure pathways or exposure assumptions that may impact remedy protectiveness are also noted. In addition, environmental data have been qualitatively evaluated to determine whether exposure levels existing at the Site present a risk or hazard to current human receptors.

Changes in Toxicity

For groundwater, changes in toxicity values would not affect the long-term protectiveness of the groundwater remedy because, as indicated in the OU1 ROD, a risk assessment will be performed to determine whether the remedial action is protective when the groundwater cleanup levels have been attained (in an estimated 30 years). Because groundwater contaminant levels exceed cleanup goals, institutional controls should be implemented to assure that private wells are not installed in the vicinity of the plume before groundwater cleanup is complete. The implementation of comprehensive institutional controls is on-going, and when complete, will provide long-term protectiveness for all site remedies.

Cleanup of soil was indicated based on the potential leaching of soil contaminants to groundwater rather than on direct contact risk and hazard. The primary soil COPC is TCE. Soil data collected at the Valley site in 2004 indicate detected concentrations of TCE ranging from 38 ppb to 2,850 ppb in soils less than four feet bgs with concentrations up to 52,000 ppb reported in soil up to 16.5 feet bgs. EPA currently evaluates the potential carcinogenicity of TCE using a range of oral slope factors from 0.4 $(mg/kg\text{-}day)^{-1}$ (high end of the range) to 0.02 $(mg/kg\text{-}day)^{-1}$ (low end of the range). The TCE cancer slope factor used historically to evaluate direct contact soil risk was below the low end of the current range (0.011 $(mg/kg\text{-}day)^{-1}$). Region 9 has developed preliminary remediation goals (PRGs) for residential and commercial soils based on the high end TCE slope factor. Risk-based PRGs associated with a 10^{-4} cancer risk level for residential and commercial use (USEPA, 2004b) are 5,300 ppb and 10,000 ppb, respectively, which are less than the levels reported in soils between 4 and 16.5 feet bgs at the source area. This screening-level analysis indicates that residual soil concentrations of TCE may be associated with direct contact risk above regulatory guidelines for both future residential and commercial site use. Because the Valley site is not currently occupied and contamination is at depth or located below structures or pavement, the remedy remains protective. However, should the site be developed for active use in the future, the soils currently at depth should be managed properly to prevent future direct contact exposures until soil remediation is completed. Institutional controls are in the process of being finalized for soil at the Valley site to control site soils until cleanup is completed.

Several rounds of groundwater sampling in 1998 and 1999 showed that metals concentrations were consistently below the MCLs, with the exception of iron, manganese, and aluminum, which exceeded their secondary MCLs in some wells. It should be noted that EPA recently released a Health Advisory for manganese of 300 ug/L. Once groundwater cleanup for VOCs is complete, sampling for inorganics should be performed to confirm that inorganic contaminant levels are below MCLs and applicable health-based criteria.

Changes in Exposure Pathways/Assumptions

The risk assessments performed for OU1 and OU2 comprehensively evaluated the groundwater, soil, sediment, and surface water pathways and receptors of interest at the Site, except for the recreational sediment ingestion pathway and the non-ingestion household groundwater use pathways (e.g., inhalation and dermal contact while showering). Because only trace levels of site-related VOCs were detected in sediments associated with the site and concentrations of naturally-occurring and anthropogenic compounds (inorganics and polycyclic aromatic hydrocarbons) were present at levels consistent with background conditions, the lack of quantitative evaluation of the sediment ingestion pathway does not impact the protectiveness of the remedy. The lack of quantitative evaluation of the non-ingestion household groundwater use pathways also does not impact remedy protectiveness because, as indicated in the OU1 ROD, a risk assessment will be performed to determine whether the remedial action is protective when the groundwater cleanup levels have been attained (in an estimated 30 years).

The risk assessment also did not evaluate direct contact with groundwater by workers during excavation into the water table. However, the average depth to groundwater at the site (i.e., 25 to 30 feet below ground surface) is greater than the depth of typical excavation activities. Therefore, this exposure pathway is considered incomplete at the Site.

One pathway of potential concern that was not evaluated in the previous risk evaluations was the vapor intrusion pathway. This pathway may be of concern at sites where shallow soil and groundwater contaminated with VOCs exists in close proximity to occupied buildings. Shallow soil and groundwater VOCs continue to exist at concentrations above cleanup levels at the Valley site. However, because there are currently no occupied buildings located above the groundwater VOC plume as defined by October 2004 sampling (where residual VOCs in soil are also co-located), the remedy is currently protective with respect to the vapor intrusion pathway. However, because October 2004 groundwater data at the Valley site indicate exceedances of the TCE generic screening values for the indoor air pathway (5 ug/L; USEPA, 2002) and soil VOCs are also present, the potential exists for indoor air impacts should an occupied building exist at the Valley site. Should soil and groundwater VOC contamination continue to exist coincident with future site development involving building construction, the indoor air pathway should be further evaluated to determine the potential risk to potential receptors at the Valley site. Based on October 2004 sampling, the vapor intrusion pathway is considered incomplete for other on-site areas (e.g., north and south of Main Street and south of Mill Pond).

Operation of the three groundwater extraction wells (EW-S-1 through EW-S-3) effectively captures the groundwater contaminant plume migrating from the Valley site source area and prevents current indoor air impacts at the GWTF. However, the indoor air pathway at the GWTF was quantitatively evaluated to determine whether the vapor intrusion pathway may become significant, should the source area extraction wells (EW-S-1 through EW-S-3) be shut down for maintenance or for other reasons and the groundwater contaminant plume was allowed to migrate beneath the downgradient GWTF. Tables in Attachment 5

document the methods and assumptions used in the evaluation. Only TCE, 1,2-dichloroethene, and 1,1,1-trichloroethane were detected in the most recent sampling of these wells conducted in January 2005. The maximum concentrations detected in the three groundwater extraction wells were modeled to estimate indoor air concentrations, using assumptions specific to the GWTF building (building dimensions, ventilation rate, depth to groundwater, and building construction details). Based on the modeled indoor air concentrations, the risk and hazard associated with worker inhalation exposures did not exceed the EPA risk management criteria.

Soil cleanup levels were developed in the Source Control ROD to be protective of the potential leaching of organic compounds to groundwater based on 1988 default soil/water equilibrium partitioning assumptions. To determine whether the ROD soil cleanup levels remain protective of both direct contact and potential leaching to groundwater based on 2005 assumptions, the ROD soil cleanup levels have been compared to Region 9 residential PRGs (USEPA, 2004b) and to generic Soil Screening Levels (USEPA, 2002b), protective of contaminant migration to groundwater (using the EPA recommended dilution attenuation factor of 20). Based on this comparison provided in the table below, the ROD cleanup levels are noted as being overly protective of both direct contact and leaching to groundwater. Therefore, a re-evaluation of the soil cleanup levels using site-specific soil characteristics (e.g., total organic carbon data) is recommended in the event that additional source control actions are selected. Should the cleanup levels be adjusted upward significantly based on site-specific soil characteristics, a risk-based evaluation should be performed to confirm that the remedy remains protective with respect to direct contact exposures associated with potential future site reuse.

Compound	ROD Cleanup Level for Soil[(1)] (ug/kg)	Region 9 Risk-Based Preliminary Remediation Goal for Residential Soil/Soil Screening Level [(2)] (ug/kg)
Trichloroethylene	6.3	53/60
Vinyl Chloride	1.14	79/10
Methylene Chloride	0.44	9,100/20
Tetrachloroethylene	18.2	480/60
1,1-Dichloroethylene	4.6	120,000/60
trans-1,2-Dichloroethylene	41.3	69,000/700
Toluene	6000	520,000/12,000
1,1,1-Trichloroethane	302	1,200,000/2,000

(1) Maximum Soil Concentration when in equilibrium with the groundwater target level (USEPA, 1988, Table VI-3).
(2) Risk-based values provided, for a residential future use scenario, are based on a target cancer risk of 10^{-6} and a target noncancer hazard of 1. Soil Screening Levels (SSLs) are based on a dilution attenuation factor of 20.

Evaluation of Recent Sampling Data

As discussed in Section 6.3.2, COCs in select monitoring wells continue to exceed interim cleanup levels. Continued exceedances of interim cleanup levels indicate that completion of the drinking water ingestion pathway would present a risk to residents using groundwater as a source of household water. Since untreated groundwater from the Site is not currently used by area residents as a source of potable water, the drinking water exposure pathway is incomplete. However, until groundwater concentrations meet interim cleanup levels (MCLs), institutional controls should be implemented at the Site to ensure that no private wells are installed at or near the Site.

Surface water samples were collected from Mill Pond in the spring of 2000, prior to GWTF startup, and again during the spring of 2001, 2002, and 2003. An additional round of surface water sampling was conducted in January 2002 after a GWTF operational modification was made. Surface water sampling was discontinued in 2004. Surface water samples were analyzed for VOCs and metals and the sampling results are presented in Table 5. Surface water sampling results were compared to AWQCs for the human consumption of fish and to Region 9 tap water risk-based PRGs, adjusted for applicability for the recreational wading/swimming scenario. Based on this comparison, the surface water sampling results indicate that contaminant levels are below a level of concern for human recreational exposures, except for arsenic. The maximum detected surface water arsenic concentration (5.7 ug/L) exceeds both the AWQC (0.14 ug/L) and the adjusted PRG (1.8 ug/L). Because these screening values are based on a 10^{-6} target cancer risk level, the minor degree of the arsenic exceedance would not affect the protectiveness of the remedy.

Summary and Conclusions

Changes in toxicity values and exposure pathways that served as the basis for the cleanup levels, as contained in the ROD, have been re-evaluated to determine whether any of the noted changes impact the protectiveness of the remedy. In addition, environmental data have been qualitatively evaluated to determine whether exposure levels existing at the Site present a risk to current human receptors.

Continued exceedances of MCLs indicate that completion of the drinking water ingestion pathway would present a risk to human receptors. Since untreated groundwater from the Site is not currently used by area residents as a source of potable water, the drinking water exposure pathway is incomplete. Until groundwater concentrations meet MCLs, institutional controls should be implemented at the Site to ensure that no private wells are installed at or near the Site. Once groundwater cleanup for VOCs is complete, sampling for inorganics should be performed to confirm that inorganic contaminant levels continue to be below MCLs and applicable health-based criteria. As indicated in the OU1 ROD, a risk assessment will be performed to determine whether the remedial action is protective when the interim groundwater cleanup levels have been attained (in an estimated 30 years).

The Source Control ROD soil cleanup levels are noted as being overly protective of both direct contact and leaching to groundwater. Therefore, a re-evaluation of the soil cleanup levels using site-specific soil characteristics (e.g., total organic carbon data) is recommended before a source control action is selected. Should the cleanup levels be adjusted upward significantly based on site-specific soil characteristics, a risk-based evaluation should be performed to confirm that the remedy remains protective with respect to direct contact exposures associated with potential future site reuse.

October 2004 groundwater data at the Valley site indicate exceedances of the TCE generic screening

values for the vapor intrusion pathway (5 µg/L; USEPA, 2002a) in areas where soil VOCs are also present. No currently occupied building exist in this area and the GWTF staff are not at risk due to exposure should the extraction wells be shut down, as demonstrated by a quantitative evaluation of this exposure point. However, the potential exists for indoor air impacts should an occupied building exist in the future above the VOC plume at the Valley site. Therefore, the indoor air pathway should be further evaluated to determine the potential risk to receptors at the Valley site should soil and groundwater VOC contamination continue to exist coincident with future site development involving building construction. Based on October 2004 sampling, the vapor intrusion pathway is considered incomplete for other on-site areas (e.g., north and south of Main Street and south of Mill Pond).

Because the Valley site is not currently occupied and soil contamination is at depth or located below structures or pavement, the remedy remains protective with respect to direct contact soil exposures. However, should the site be developed for active use in the future, the soils currently at depth should be managed properly to prevent future direct contact exposures until soil remediation is completed. Comprehensive institutional controls are in the process of being finalized for the Site to ensure long-term remedy protectiveness for all site remedies.

The surface water sampling results indicate that contaminant levels present as a result of the discharge of treated groundwater to Mill Pond are below a level of concern for human recreational exposures.

7.2.2 Review of Ecological Risk Assessments and Toxicity Factors Serving as the Basis for the Remedy

Ecological risk assessments were conducted as part of both the 1987 Endangerment Assessment and the 1991 Supplemental MOM remedial investigation report. The risk evaluations focused on the presence of contamination in surface water and the resulting effects on aquatic organisms. Surface water sampling results demonstrated concentrations of organic and inorganic contaminants above natural background levels. Therefore, resident aquatic organisms in the stream system and those using the streams for spawning were evaluated. The evaluation concluded that risks to the ecological community of the Johnson Creek watershed from site contaminants were considered minimal.

Treated water from the GWTF is discharged from the plant through an underground pipeline that emerges at an outfall constructed on the western shore of Mill Pond. The discharge is sampled quarterly with analysis for VOCs, metals, and toxicity, to evaluate compliance with discharge limits, established for the protection of aquatic life.

Since startup of the facility, there have been several minor exceedences of metals discharge limits. Specifically, the effluent discharge limit of 0.75 µg/l for arsenic was exceeded on three occasions in the past five years (0.79 µg/l in September 2002, 0.79 µg/l in June 2003, and 0.96 µg/l in August 2003); the effluent discharge limit of 1.3 µg/l for lead was exceeded three times (an estimated (J) value of 1.8 µg/l in July 2001, 1.5 µg/l in January 2003, and 1.6 µg/l in March 2004); and the effluent discharge limit of 0.273 µg/l for mercury was exceeded once (0.35 µg/l in November 2002). The slight exceedances of the discharge limits for arsenic and mercury would not result in a significant impact to aquatic organisms in Mill Pond because the discharge limits are set below the AWQCs. The freshwater AWQCs for arsenic and mercury are 150 µg/L and 0.77 µg/L, respectively (USEPA, 2005). The lead discharge limit exceedances also exceed the freshwater AWQC for lead (1.1 ug/L adjusted for site-specific hardness). However, a comparison of measured surface water concentrations to AWQCs demonstrates that there are no exceedances of AWQCs in Mill Pond which receives the treated discharge water. Therefore, the

remedy remains protective with respect to the environment.

7.2.3 ARARs Review

Review of Applicable or Relevant and Appropriate Requirements was performed to check the impact on the remedy due to changes in standards that were identified as ARARs in the RODs, newly promulgated standards for contaminants of concern, and TBCs (to be considered) that may affect the protectiveness of the remedy. The tables in Attachment 6 provide an evaluation of ARARs for each operable unit using the regulations and requirement synopses listed in the RODs as a basis. Note that no location-specific ARARs were identified in the ROD for OU2 (Source Control) but there were location-specific ARARs for OU1 (Management of Migration) related to the proposed location of the treatment facility. The numerical standards applicable or relevant and appropriate to Site groundwater are summarized in Table 1 of Attachment 6 for the contaminants of concern identified in the RODs. The ARARs evaluation also includes a determination of whether each regulation cited in the RODs is currently ARAR or TBC and whether the requirements have been met. The listed ARARs that remain applicable or relevant and appropriate to the site have been or are currently being complied with. Changes in numeric standards and ARARs that resulted from remedy changes or changes in regulatory interpretations are summarized below.

Changes in Numeric Standards. The MCL for arsenic in groundwater is changing from 50 µg/l to 10 µg/l, effective in January 2006. Arsenic was identified as a contaminant of concern in the RODs, but reported detections above MCLs that were observed during the remedial investigations (1991 and earlier) are now considered likely to have been from particulate matter entrained within the groundwater samples because of the sampling method. Groundwater monitoring performed more recently using EPA's low-flow groundwater sampling protocol has not revealed any MCL exceedances for arsenic in samples from monitoring wells. During the October 1998 monitoring round, arsenic was not detected in samples from any wells at a reporting limit of 5.4 µg/l. Routine groundwater monitoring for inorganics was discontinued by EPA after the October 1998 monitoring round. However, the groundwater treatment plant extraction wells, plant influent, and plant effluent are routinely monitored for inorganics and the treatment system is capable of removing arsenic to the surface water discharge limit of 0.75 µg/l. Once groundwater cleanup for VOCs is complete, sampling for inorganics throughout the Site will be performed to confirm that inorganic contaminant levels continue to be below MCLs and applicable health-based criteria. A comparison of inorganic concentrations with concentrations in samples from background wells (that is, wells located upgradient of the Site) may also be needed. As indicated in the OU1 ROD, a risk assessment will be performed to determine whether the remedial action is protective when the interim groundwater cleanup levels have been attained (in an estimated 30 years). Interim cleanup levels would likely be revised at that time, based on the results of the risk assessment and the numeric standards in effect at that time.

Changes in ARARs, Source Control Operable Unit. Certain regulations that were identified as applicable or relevant and appropriate in the 1988 ROD are no longer considered ARAR because of changes in the remedy that occurred post-ROD. For example, Massachusetts Groundwater Quality Standards that are used to establish limits for discharge to groundwaters are not ARAR because the GWTF discharge is to surface water rather than groundwater, as was originally contemplated in the ROD. Regulations and guidances related to worker protection (e.g., OSHA, Threshold Limit Values) are no longer considered ARAR for CERCLA response actions but these regulations and guidances were complied with during construction and are complied with at the GWTF. Proposed regulations for UST removals that were cited in the 1988 ROD are now promulgated regulations that would be applicable to

the removal of any USTs that may remain at the Valley site, should they exist and contain product.

Changes in ARARs, Management of Migration Operable Unit. Certain regulations that were identified as applicable or relevant and appropriate in the 1991 ROD are no longer considered ARAR because of changes in the remedy that occurred post-ROD. Massachusetts Groundwater Quality Standards applicable to discharges to groundwater are no longer considered ARAR because the remedy does not include discharges to groundwater (the GWTF discharge is to surface water). Regulations regarding wetlands and floodplains are no longer ARAR because the re-location of the GWTF from alongside Johnson Creek, to the Archdiocese property, avoided the need to construct near wetlands and in the 100-year floodplain of Johnson Creek.

7.3 QUESTION C: HAS ANY OTHER INFORMATION COME TO LIGHT THAT COULD CALL INTO QUESTION THE PROTECTIVENESS OF THE REMEDY?

The SVE system ceased operation in 2002. Soil sampling conducted by EPA in 2004 indicated that subsurface soil contamination remains in the Source Area at levels that exceed the OU2 ROD cleanup levels, representing a continuing source of VOC contamination to groundwater. The residual soil contamination may pose a potential future direct contact risk, should the future site development involve building construction. EPA is currently assessing the need to re-start the SVE or implement some other type of measure. Notwithstanding, contaminated groundwater from this area continues to be captured by the operating groundwater extraction system and treated in the GWTF, ensuring that the remedy remains protective. There is no other information that calls into question the protectiveness of the remedy.

7.4 TECHNICAL ASSESSMENT SUMMARY

According to the data reviewed, the site inspection, and the interviews, the groundwater remedy is functioning as intended by the RODs, as modified by the ESD documents. The source control SVE system ceased operation in 2002. Subsurface soil in this area remains at levels that exceed the OU2 ROD cleanup levels, representing a continuing source of VOC contamination to groundwater, and may pose a potential future direct contact risk. EPA is currently assessing the need to re-start the SVE system or implement some other type of measure. However, groundwater from this area is captured by the groundwater extraction system and treated in the GWTF, ensuring that the remedy remains protective. There have been no changes in the physical conditions of the Site that would affect the protectiveness of the remedy. Most of the ARARs identified in the RODs remain applicable or relevant and appropriate and either have been met or are being met.

SECTION 8.0
ISSUES

Based on the activities conducted during this five-year review, the issues identified in the following table have been noted.

TABLE 6. ISSUES

Issues	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
Groundwater at the site contains concentrations of VOCs above interim groundwater cleanup levels.	N	Y*
Subsurface soil contamination remains in the Source Area at levels that exceed the OU2 ROD cleanup levels, potentially representing a continuing source of VOC contamination to groundwater, and also posing a potential future direct contact risk.	N	Y**
The final implementation of comprehensive institutional controls for soil and groundwater has not been realized.	N	Y**

*Future protectiveness is dependent upon continued GWTF operation until contaminant concentrations no longer exceed the cleanup levels.

** Groundwater institutional controls are needed until groundwater cleanup levels are attained, at which point the controls could be lifted. Because the Valley site is not currently occupied and soil contamination is at depth or located below structures or pavement, the remedy remains protective with respect to direct contact soil exposures. However, should the Site be developed for active use in the future, the soils currently at depth should be managed properly to prevent future direct contact exposures until soil remediation is completed.

SECTION 9.0
RECOMMENDATIONS AND FOLLOW-UP ACTIONS

In response to the issues noted above, it is recommended that the actions listed in the following table be taken:

TABLE 7. RECOMMENDATIONS AND FOLLOW-UP ACTIONS

Issue	Recommendations and Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness	
					Current	Future
Groundwater at the site contains concentrations of VOCs above interim groundwater cleanup levels.	Continue operation of GWTF	EPA	EPA	2010	N	Y*
Subsurface soil contamination remains in the Source Area at levels that exceed the OU2 ROD cleanup levels, potentially representing a continuing source of VOC contamination to groundwater, and also posing a potential future direct contact risk.	Evaluate potential source area contaminant reduction measures	EPA	EPA	2006	N	Y**
The final implementation of comprehensive institutional controls for soil and groundwater has not been realized.	Complete the review and implementation of comprehensive institutional controls. This activity is currently being completed by the EPA and the State.	EPA	EPA	2006	N	Y**

*Future protectiveness is dependent upon continued GWTF operation until contaminant concentrations no longer exceed the cleanup levels.

** Groundwater institutional controls are needed until groundwater cleanup levels are attained, at which point the controls could be lifted. Because the Valley site is not currently occupied and soil contamination is at depth or located below structures or pavement, the remedy remains protective with respect to direct contact soil exposures. However, should the Site be developed for active use in the future, the soils currently at depth should be managed properly to prevent future direct contact exposures until soil remediation is completed.

SECTION 10.0
PROTECTIVENESS STATEMENTS

OU1

The OU1 remedy is considered protective in the short term; however in order for the remedy to be protective in the long term, follow-up actions need to be taken. For continued protection, the groundwater treatment plant must remain operable and undisturbed. Groundwater within the Site vicinity should not be used for any purpose, due to its contamination and to the negative impact pumping could have on the effectiveness of the extraction and treatment system. It is important to complete the implementation of comprehensive institutional controls to maintain a complete level of protectiveness for future activities in and around the Site.

OU2

The OU2 remedy is considered protective in the short term; however in order for the remedy to be protective in the long term, follow-up actions need to be taken. Residual subsurface soil contamination is present within the Source Area of the Valley site. Because the Valley site is not currently occupied and soil contamination is at depth or located below structures or pavement, the remedy remains protective with respect to direct contact soil exposures. However, should the Site be developed for active use in the future, the soils currently at depth should be managed properly to prevent future direct contact exposures until soil remediation is completed.

Comprehensive Protectiveness Statement

The remedy is considered protective in the short term; however in order for the remedy to be protective in the long term, follow-up actions need to be taken. Long-term protectiveness will be achieved once the pump and treat system reaches cleanup levels in the groundwater. Institutional controls need to be established to prevent exposure to contaminants until groundwater cleanup standards are achieved. Institutional controls are also needed to prevent potential exposure to subsurface soil contamination. In the interim, exposure pathways that could result in unacceptable risks are being controlled.

SECTION 11.0
NEXT REVIEW

Five-year reviews are done every five years at sites where contaminant levels remain at concentrations that prevent unlimited, unrestricted use of the Site. Since remedial actions have not been completed for all operable units, and since it is not likely that groundwater contamination will have been reduced to cleanup levels within the next five years, a follow-up five-year review will be required. When a five-year review is conducted at a time other than when it is due, the next five-year review is due within five years of the time when it was originally required (USEPA, 2001). Each five-year review is to cover all operable units, whether or not remediation at that unit is complete (USEPA, 2001). The next five-year review for the Groveland Wells Nos. 1 & 2 Site should be conducted in 2009.

ATTACHMENT 1
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ATTACHMENT 2
ANALYTICAL RESULTS
GROUNDWATER EXTRACTION AND TREATMENT SYSTEM

TOXICITY TEST RESULTS

Dates:		5 June 00 7 June 00		Discharge Limits
Parameter[a]		Fathead Minnow	Cerio-daphnia	
LC50		100%	>100%	100%
C-NOEC Survival		100%	100%	41%
C-NOEC Growth		100%	100%	

Note: Toxicity parameters are expressed as a percent of effluent in the samples.

Sample Dates:	9 October 00 11 October 00		Discharge Limits
Parameter	Fathead Minnow	Cerio-	
LC50[a]	100%	>100%	100%
C-NOEC[b] Survival	100%	100%	41%
C-NOEC[b] Growth	100%	100%	

Notes: Toxicity results are expressed as the percent of effluent.

[a] Median Lethal Concentration

[b] Chronic No Observed Effect Concentration

Sample Dates:	8 January 01 10 January 01		Discharge Limits
Parameter	Fathead Minnow	Cerio-	
LC50[a]	100%	>100%	100%
C-NOEC[b] Survival	100%	100%	41%
C-NOEC[b] Growth	100%	100%	

Notes: Toxicity results are expressed as the percent of effluent.

[a] Median Lethal Concentration

[b] Chronic No Observed Effect Concentration

Sample Dates:	15 April 01 18 April 01		Discharge Limits
Parameter	Fathead Minnow	Cerio-	
LC50[a]	100%	>100%	100%
C-NOEC[b] Survival	100%	100%	41%
C-NOEC[b] Growth	100%	100%	

Notes: Toxicity results are expressed as the percent of effluent.

[a] Median Lethal Concentration

[b] Chronic No Observed Effect Concentration

Sample Dates:	23 July 01 25 July 01		Discharge Limits
Parameter	Fathead Minnow	Cerio-	
LC50[a]	100%	>100%	100%
C-NOEC[b] Survival	100%	100%	41%
C-NOEC[b] Growth	100%	100%	

Notes: Toxicity results are expressed as the percent of effluent.

[a] Median Lethal Concentration

[b] Chronic No Observed Effect Concentration

Sample Dates:	28 October 01		Discharge Limits
Parameter	Fathead Minnow	Cerio-	
LC50[a]	100%	>100%	100%
C-NOEC[b] Survival	100%	100%	41%
C-NOEC[b] Growth	100%	100%	

Notes: Toxicity results are expressed as the percent of effluent.

[a] Median Lethal Concentration

[b] Chronic No Observed Effect Concentration

Sample Dates:	14 January 02		Discharge Limits
Parameter	Fathead Minnow	Cerio-	
LC50[a]	>100%	>100%	100%
C-NOEC[b] Survival	100%	100%	41%
C-NOEC[b] Growth/Reproduction[c]	100%	100%	

Notes: Toxicity results are expressed as the percent of effluent.

[a] Median Lethal Concentration

[b] Chronic No Observed Effect Concentration

[c] Growth test is conducted for fathead minnow. Reproduction test is conducted for ceriodaphnia.

Sample Dates:	02 April 02		Discharge Limits
Parameter	Fathead Minnow	Cerio-	
LC50[a]	>100%	>100%	100%
C-NOEC[b] Survival	100%	100%	41%
C-NOEC[b] Growth/Reproduction[c]	100%	100%	

Notes: Toxicity results are expressed as the percent of effluent.

[a] Median Lethal Concentration

[b] Chronic No Observed Effect Concentration

[c] Growth test is conducted for fathead minnow. Reproduction test is conducted for ceriodaphnia.

Sample Dates:	8 July 02		Discharge Limits
Parameter	Fathead Minnow	Cerio-	
LC50[a]	>100%	>100%	100%
C-NOEC[b] Survival	100%	100%	41%
C-NOEC[b] Growth/Reproduction[c]	100%	100%	

Notes: Toxicity results are expressed as the percent of effluent.

[a] Median Lethal Concentration

[b] Chronic No Observed Effect Concentration

[c] Growth test is conducted for fathead minnow. Reproduction test is conducted for ceriodaphnia.

Sample Dates:	14 October 02		Discharge Limits
Parameter	Fathead Minnow	Cerio-	
LC50[a]	>100%	>100%	100%
C-NOEC[b] Survival	100%	100%	41%
C-NOEC[b] Growth/Reproduction[c]	100%	100%	

Notes: Toxicity results are expressed as the percent of effluent.

[a] Median Lethal Concentration

[b] Chronic No Observed Effect Concentration

[c] Growth test is conducted for fathead minnow. Reproduction test is conducted for ceriodaphnia.

Sample Dates:	10 December 02		Discharge Limits
Parameter	Fathead Minnow	Cerio-	
LC50[a]	>100%	>100%	100%
C-NOEC[b] Survival	100%	75%	41%
C-NOEC[b] Growth/Reproduction[c]	100%	75%	

Notes: Toxicity results are expressed as the percent of effluent.

[a] Median Lethal Concentration

[b] Chronic No Observed Effect Concentration

[c] Growth test is conducted for fathead minnow. Reproduction test is conducted for ceriodaphnia.

Sample Dates:	27 January 03		Discharge Limits
Parameter	Fathead Minnow	Cerio-	
LC50[a]	>100%	89.8%	100%
C-NOEC[b] Survival	100%	75%	41%
C-NOEC[b] Growth/Reproduction[c]	100%	75%	

Notes: Toxicity results are expressed as the percent of effluent.

[a] Median Lethal Concentration

[b] Chronic No Observed Effect Concentration

[c] Growth test is conducted for fathead minnow. Reproduction test is conducted for ceriodaphnia.

Sample Dates:	21 April 03		Discharge Limits
Parameter	Fathead Minnow	Cerio-	
LC50[a]	>100%	92.1%	100%
C-NOEC[b] Survival	100%	75%	41%
C-NOEC[b] Growth/Reproduction[c]	100%	75%	

Notes: Toxicity results are expressed as the percent of effluent.

[a] Median Lethal Concentration

[b] Chronic No Observed Effect Concentration

[c] Growth test is conducted for fathead minnow. Reproduction test is conducted for ceriodaphnia.

Sample Dates:	7 July 03		Discharge Limits
Parameter	Fathead Minnow	Cerio-	
LC50[a]	>100%	>100%	100%
C-NOEC[b] Survival	100%	75%	41%
C-NOEC[b] Growth/Reproduction[c]	100%	75%	

Notes: Toxicity results are expressed as the percent of effluent.

[a] Median Lethal Concentration

[b] Chronic No Observed Effect Concentration

[c] Growth test is conducted for fathead minnow. Reproduction test is conducted for ceriodaphnia.

Sample Dates:	20 October 03		Discharge Limits
Parameter	Fathead Minnow	Cerio-	
LC50[a]	>100%	89.8%	100%
C-NOEC[b] Survival	100%	75%	41%
C-NOEC[b] Growth/Reproduction[c]	100%	75%	

Notes: Toxicity results are expressed as the percent of effluent.

[a] Median Lethal Concentration

[b] Chronic No Observed Effect Concentration

[c] Growth test is conducted for fathead minnow. Reproduction test is conducted for ceriodaphnia.

Sample Dates:	14 January 02		Discharge Limits
Parameter	Fathead Minnow	Cerio-	
LC50[a]	>100%	>100%	100%
C-NOEC[b] Survival	100%	100%	41%
C-NOEC[b] Growth	100%	100%	

Notes: Toxicity results are expressed as the percent of effluent.

[a] Median Lethal Concentration

[b] Chronic No Observed Effect Concentration

Sample Dates:	02 April 02		Discharge Limits
Parameter	Fathead Minnow	Cerio-	
LC50[a]	>100%	>100%	100%
C-NOEC[b] Survival	100%	100%	41%
C-NOEC[b] Growth	100%	100%	

Notes: Toxicity results are expressed as the percent of effluent.

[a] Median Lethal Concentration

[b] Chronic No Observed Effect Concentration

Sample Dates:	8 July 02		Discharge Limits
Parameter	Fathead Minnow	Cerio-	
LC50[a]	>100%	>100%	100%
C-NOEC[b] Survival	100%	100%	41%
C-NOEC[b] Growth	100%	100%	

Notes: Toxicity results are expressed as the percent of effluent.

[a] Median Lethal Concentration

[b] Chronic No Observed Effect Concentration

Sample Dates:	14 October 02		Discharge Limits
Parameter	Fathead Minnow	Cerio-	
LC50[a]	>100%	>100%	100%
C-NOEC[b] Survival	100%	100%	41%
C-NOEC[b] Growth/Reproduction[c]	100%	100%	

Notes: Toxicity results are expressed as the percent of effluent.

[a] Median Lethal Concentration

[b] Chronic No Observed Effect Concentration

[c] Growth test is conducted for fathead minnow. Reproduction test is conducted for ceriodaphnia.

Sample Dates:	10 December 02		Discharge Limits
Parameter	Fathead Minnow	Cerio-	
LC50[a]	>100%	>100%	100%
C-NOEC[b] Survival	100%	75%	41%
C-NOEC[b] Growth/Reproduction[c]	100%	75%	

Notes: Toxicity results are expressed as the percent of effluent.

[a] Median Lethal Concentration

[b] Chronic No Observed Effect Concentration

[c] Growth test is conducted for fathead minnow. Reproduction test is conducted for ceriodaphnia.

Sample Dates:	27 January 03		Discharge Limits
Parameter	Fathead Minnow	Cerio-	
LC50[a]	>100%	89.8%	100%
C-NOEC[b] Survival	100%	75%	41%
C-NOEC[b] Growth/Reproduction[c]	100%	75%	

Notes: Toxicity results are expressed as the percent of effluent.

[a] Median Lethal Concentration

[b] Chronic No Observed Effect Concentration

[c] Growth test is conducted for fathead minnow. Reproduction test is conducted for ceriodaphnia.

Sample Dates:	21 April 03		Discharge Limits
Parameter	Fathead Minnow	Cerio-	
LC50[a]	>100%	92.1%	100%
C-NOEC[b] Survival	100%	75%	41%
C-NOEC[b] Growth/Reproduction[c]	100%	75%	

Notes: Toxicity results are expressed as the percent of effluent.

[a] Median Lethal Concentration

[b] Chronic No Observed Effect Concentration

[c] Growth test is conducted for fathead minnow. Reproduction test is conducted for ceriodaphnia.

Sample Dates:	7 July 03		Discharge Limits
Parameter	Fathead Minnow	Cerio-	
LC50[a]	>100%	>100%	100%
C-NOEC[b] Survival	100%	75%	41%
C-NOEC[b] Growth/Reproduction[c]	100%	75%	

Notes: Toxicity results are expressed as the percent of effluent.

[a] Median Lethal Concentration

[b] Chronic No Observed Effect Concentration

[c] Growth test is conducted for fathead minnow. Reproduction test is conducted for ceriodaphnia.

Sample Dates:	20 October 03		Discharge Limits
Parameter	Fathead Minnow	Cerio-	
LC50[a]	>100%	89.8%	100%
C-NOEC[b] Survival	100%	75%	41%
C-NOEC[b] Growth/Reproduction[c]	100%	75%	

Notes: Toxicity results are expressed as the percent of effluent.

[a] Median Lethal Concentration

[b] Chronic No Observed Effect Concentration

[c] Growth test is conducted for fathead minnow. Reproduction test is conducted for ceriodaphnia.

Sample Dates:	13 January 04		Discharge Limits
Parameter	Fathead Minnow	Cerio-	
LC50[a]	>100%	73.4%	100%
C-NOEC[b] Survival	100%	75%	41%
C-NOEC[b] Growth/Reproduction[c]	100%	50%	

Notes: Toxicity results are expressed as the percent of effluent.

[a] Median Lethal Concentration

[b] Chronic No Observed Effect Concentration

[c] Growth test is conducted for fathead minnow. Reproduction test is conducted for ceriodaphnia.

Sample Dates:	20 April 2004		Discharge Limits
Parameter	Fathead Minnow	Cerio-	
LC50[a]	>100%	88.0%	100%
C-NOEC[b] Survival	not determined	75%	41%
C-NOEC[b] Growth/Reproduction[c]	not determined	75%	

Notes: Toxicity results are expressed as the percent of effluent.

[a] Median Lethal Concentration

[b] Chronic No Observed Effect Concentration

[c] Growth test is conducted for fathead minnow. Reproduction test is conducted for ceriodaphnia.

Sample Dates:	12 July 04		Discharge Limits
Parameter	Fathead Minnow	Cerio-	
LC50[a]	>100%	>100%	100%
C-NOEC[b] Survival	100%	100%	41%
C-NOEC[b] Growth/Reproduction[c]	100%	100%	

Notes: Toxicity results are expressed as the percent of effluent.

[a] Median Lethal Concentration

[b] Chronic No Observed Effect Concentration

[c] Growth test is conducted for fathead minnow. Reproduction test is conducted for ceriodaphnia.

Sample Dates:	11 October 2004		Discharge Limits
Parameter	Fathead Minnow	Cerio-	
LC50[a]	>100%	>100%	100%
C-NOEC[b] Survival	100%	100%	41%
C-NOEC[b] Growth/Reproduction[c]	100%	100%	

Notes: Toxicity results are expressed as the percent of effluent.

[a] Median Lethal Concentration

[b] Chronic No Observed Effect Concentration

[c] Growth test is conducted for fathead minnow. Reproduction test is conducted for ceriodaphnia.

RESULTS FOR VOCs AND METALS

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			1-May-00		25-May-00		7-Jun-00	
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	Plant Influent[2]	Plant Effluent	Plant Influent[2]	Plant Effluent	EW-S1	EW-S2
Sample ID:				S2-050100	S9-050100	S2-052500	S9-052500	EWS1-060700	EWS2-060700
Parameter									
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	1	0.5 U	1	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	Not Listed	17.2	7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Acetone	Not Listed	Not Listed	--	2 U	2 U	2 U	2 U	2 U	2 U
2-Butanone	Not Listed	Not Listed	--	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Methylene Chloride	Not Listed	8,600	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethene (total)	Not Listed	172	--	42	0.5 U	42	0.5 U	150	130
1,1-Dichloroethane	Not Listed	Not Listed	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,1-Trichloroethane	Not Listed	500	5	0.5 U	0.5 U	0.5 U	0.5 U	7	3
Benzene	Not Listed	381	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	Not Listed	434	5	890	0.5 U	900	0.5 U	20,000	12,000
Toluene	Not Listed	2,500	1000	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon Tetrachloride	Not Listed	Not Listed	5	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,1,2-Trichloroethane	Not Listed	Not Listed	5	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Tetrachloroethene	Not Listed	47.7	5	0.5 U	0.5 U	0.5 U	0.5 U	2	0.5 U
Chlorobenzene	Not Listed	112,600	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Metals (µg/L)									
Silver	0.9	Not Listed	100	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Arsenic	Not Listed	0.75	10	5.4	2.0 U	2.8	2.0 U	2.0 U	2.0 U
Barium	Not Listed	5,400	2000	13	11	10.0 U	10 U	24	49
Beryllium	Not Listed	10	4	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Cadmium	2.3	2	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chromium (total)	41	27	100	10.0 U	10.0 U	10.0 U	10.0 U	10 U	10 U
Iron	Not Listed	Not Listed	300 *	2,000	50 U	1,100	50 U	630 U[4]	59 U[4]
Mercury	Not Listed	0.273	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Manganese	Not Listed	Not Listed	50 *	790	850	710.0	720	100	180
Nickel	355	39	100	10.0 U	10.0 U	10.0 U	10.0 U	10 U	10 U
Lead	34	1.3	15	2.0 U	2.0 U	2.0 UJ[3]	2.0 UJ[3]	2 UJ[3]	5.6 J[3]
Antimony	Not Listed	23,000	6	20 U	20 U	20.0 U	20 U	20 U	20 U
Selenium	Not Listed	12	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Vanadium	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Zinc	Not Listed	Not Listed	5,000 *	160	210	120.0	140	140	430

Notes.
1. Secondary MCLs denoted with *
2. Plant Influent sampled at Influent Equalization Tank effluent line (T-1 Effluent)

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			7-Jun-00 (continued)					
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	EW-S3	EW-S4	EW-S5	EW-M1	EW-M2	EW-M3
Sample ID:				EWS3-060700	EWS4-060700	EWS5-060700	EWM1-060700	EWM2-060700	EWM3-060700
Parameter									
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	0.5 U	0.5 U	0.5 U	4	0.5 U	0.5 U
1,1-Dichloroethene	Not Listed	17.2	7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Acetone	Not Listed	Not Listed	--	2 U	2 U	2 U	2 U	2 U[5]	2 U
2-Butanone	Not Listed	Not Listed	--	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Methylene Chloride	Not Listed	8,600	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethene (total)	Not Listed	172	--	140	59	36	140	20	23
1,1-Dichloroethane	Not Listed	Not Listed	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,1-Trichloroethane	Not Listed	500	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Benzene	Not Listed	381	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	Not Listed	434	5	2,500	1,900	4,200	520	79	530
Toluene	Not Listed	2,500	1000	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon Tetrachloride	Not Listed	Not Listed	5	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,1,2-Trichloroethane	Not Listed	Not Listed	5	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Tetrachloroethene	Not Listed	47.7	5	0.7	0.5 U	0.6	0.5 U	0.5 U	0.5 U
Chlorobenzene	Not Listed	112,600	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Metals (µg/L)									
Silver	0.9	Not Listed	100	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Arsenic	Not Listed	0.75	10	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Barium	Not Listed	5,400	2000	10 U	10 U	10 U	11	10 U	16
Beryllium	Not Listed	10	4	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Cadmium	2.3	2	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chromium (total)	41	27	100	10 U	10 U	10 U	10 U	10 U	10 U
Iron	Not Listed	Not Listed	300 *	2,100 U[4]	54 U[4]	630 U[4]	1,200 U[4]	800 U[4]	50 U[4]
Mercury	Not Listed	0.273	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Manganese	Not Listed	Not Listed	50 *	11	5.0 U	5 U	760	1,200	5 U
Nickel	355	39	100	10 U	10 U	10 U	10 U	10 U	10 U
Lead	34	1.3	15	2 UJ[3]	2.5 J[3]	2 UJ[3]	2 UJ[3]	22 J[3]	13 J[3]
Antimony	Not Listed	23,000	6	20 U	20 U	20 U	20 U	20 U	20 U
Selenium	Not Listed	12	50	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Vanadium	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Zinc	Not Listed	Not Listed	5,000 *	340	310	110	64	130	56

Notes.
1. Secondary MCLs denoted with *
2. Plant Influent sampled at Influent Equalization Tank effluent line (T-

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			7-Jun-00 (continued)				6-Jul-00	
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	G1	G2	Plant Influent[2]	Plant Effluent	Plant Influent[2]	Plant Effluent
Sample ID:				G1-060700	G2-060700	S2-060700	S9-060700	S2-070600	S9-070600
Parameter									
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	0.5 U	1	1	0.5 U	1	0.5 U
1,1-Dichloroethene	Not Listed	17.2	7	0.5 U	0.5 U	0.5 U	0.5 U	2 U	0.5 U
Acetone	Not Listed	Not Listed	--	2 U	2 U	2 U[5]	4 U[5]	10 U	4 U[5]
2-Butanone	Not Listed	Not Listed	--	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Methylene Chloride	Not Listed	8,600	5	0.5 U	0.5 U	0.5 U	0.5 U	2 U	0.5 U
1,2-Dichloroethene (total)	Not Listed	172	--	33	11	62	0.5 U	67	0.5 U
1,1-Dichloroethane	Not Listed	Not Listed	--	0.5 U	0.5 U	0.5 U	0.5 U	2 U	0.5 U
1,1,1-Trichloroethane	Not Listed	500	5	0.5 U	0.5 U	0.5 U	0.5 U	2 U	0.5 U
Benzene	Not Listed	381	5	0.5 U	0.5 U	0.5 U	0.5 U	2 U	0.5 U
Trichloroethene	Not Listed	434	5	40	10	940	0.5 U	1,000	0.5 U
Toluene	Not Listed	2,500	1000	0.5 U	0.5 U	0.5 U	0.5 U	2 U	0.5 U
Carbon Tetrachloride	Not Listed	Not Listed	5	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,1,2-Trichloroethane	Not Listed	Not Listed	5	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Tetrachloroethene	Not Listed	47.7	5	0.5 U	0.5 U	0.5 U	0.5 U	2 U	0.5 U
Chlorobenzene	Not Listed	112,600	100	0.5 U	0.5 U	0.5 U	0.5 U	2 U	0.5 U
Metals (µg/L)									
Silver	0.9	Not Listed	100	5.0 U	5.0 U	5.0 U	5.0 U	0.6 U	0.6 U
Arsenic	Not Listed	0.75	10	15	12	4.4	2.0 U	6.0 U[9]J[8]	1.3 UJ[8]
Barium	Not Listed	5,400	2000	10 U	14	11.0	10	11.6	10.2
Beryllium	Not Listed	10	4	4.0 U	4.0 U	4.0 U	4.0 U	0.5 U	0.5 U
Cadmium	2.3	2	5	0.5 U	0.5 U	0.50 U	0.50 U	0.20 U	0.20 U
Chromium (total)	41	27	100	10 U	10 U	10.0 U	10.0 U	0.7 U	0.7 U
Iron	Not Listed	Not Listed	300 *	5,700 U[4]	5,800 U[4]	1,600 U[4]	86 U[4]	1,960	23.3 UJ[8]
Mercury	Not Listed	0.273	2	0.2 U	0.2 U	0.2 U	0.2 U	0.1 U	0.1 U
Manganese	Not Listed	Not Listed	50 *	710	460	780	740	793	631
Nickel	355	39	100	10 U	10 U	10.0 U	10.0 U	4.0 U[9]J[8]	1.6 U
Lead	34	1.3	15	18 J[3]	12 J[3]	10 UJ[3]	2 UJ[3]	2.2 J[10]	1.2 UJ[10]
Antimony	Not Listed	23,000	6	20 U	20 U	20.0 U	20.0 U	6.0	5.5 U
Selenium	Not Listed	12	50	5.0 U	5.0 U	5.0 U	7.0	4.1 U	4.1 U
Vanadium	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	1.5 U	1.5 U
Zinc	Not Listed	Not Listed	5,000 *	1300	300	110	130	132	174

Notes.
1. Secondary MCLs denoted with *
2. Plant Influent sampled at Influent Equalization Tank effluent line (T-

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			14-Aug-00			11-Sep-00		
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	Plant Influent[2]	Plant Influent[2]	Plant Effluent	EW-S1	EW-S2	EW-S3
Sample ID:				S2-081400-01	S2-081400-21	S9-081400	EWS1-091100	EWS2-091100	EWS3-091100
Parameter					(Duplicate)				
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	0.4 J	0.5	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	Not Listed	17.2	7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Acetone	Not Listed	Not Listed	--	2 U	2 U	2 U	2 U	2 U	2 U
2-Butanone	Not Listed	Not Listed	--	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Methylene Chloride	Not Listed	8,600	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethene (total)	Not Listed	172	--	35	37	0.5 U	83	44	41
1,1-Dichloroethane	Not Listed	Not Listed	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,1-Trichloroethane	Not Listed	500	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Benzene	Not Listed	381	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	Not Listed	434	5	420	450	0.5 U	14,000	14,000	530
Toluene	Not Listed	2,500	1000	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon Tetrachloride	Not Listed	Not Listed	5	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,1,2-Trichloroethane	Not Listed	Not Listed	5	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Tetrachloroethene	Not Listed	47.7	5	0.5 U	0.5 U	0.5 U	1	0.9	0.5
Chlorobenzene	Not Listed	112,600	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Metals (µg/L)									
Silver	0.9	Not Listed	100	0.60 U	0.60 U	0.60 U	0.60 U	0.90 U[16]	0.90 U[16]
Arsenic	Not Listed	0.75	10	8.4	8.3	1.3 U	1.5 U	1.5 U	1.5 U
Barium	Not Listed	5,400	2000	11.5	11.7	9.7	9.9 B	42.4	6.9 B
Beryllium	Not Listed	10	4	0.50 U	0.60	0.60	0.50 U	0.50 U	0.50 U
Cadmium	2.3	2	5	0.20 U	0.20 U	0.20 U	0.20 U	0.35 B	0.20 U
Chromium (total)	41	27	100	0.70 U	0.70 U	0.70 U	1.5 U[14]J[15]	1.7 U[14]J[15]	1.5 U[14]J[15]
Iron	Not Listed	Not Listed	300 *	2,170	2,490	23.3 U	74.8 J[15]	61.5 J[15]	138 J[15]
Mercury	Not Listed	0.273	2	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Manganese	Not Listed	Not Listed	50 *	972	985	788	19.5	88.3	4.8 B
Nickel	355	39	100	4.4 U[11]	4.5 U[11]	1.6 U	1.7 B	4 B	2.2 B
Lead	34	1.3	15	1.2 U	1.2 U	1.2 U	1.5 UJ[15]	5.1 U[14]J[15]	5.3 U[14]J[15]
Antimony	Not Listed	23,000	6	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
Selenium	Not Listed	12	50	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U
Vanadium	Not Listed	Not Listed	--	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
Zinc	Not Listed	Not Listed	5,000 *	61.0	62.3	87.8	223	663	524

Notes.
1. Secondary MCLs denoted with *
2. Plant Influent sampled at Influent Equalization Tank effluent line (T-

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			11-Sep-00					
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	EW-S4	EW-S5	EW-M1	EW-M2	EW-M3	G1
Sample ID:				EWS4-091100	EWS5-091100	EWM1-091100	EWM2-091100	EWM3-091100	G1-091100
Parameter									
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	0.5 U	0.5 U	2	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	Not Listed	17.2	7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Acetone	Not Listed	Not Listed	--	2 U	2 U	2 U	2 U	2 U	2 U
2-Butanone	Not Listed	Not Listed	--	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Methylene Chloride	Not Listed	8,600	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethene (total)	Not Listed	172	--	28	16	100	36	10	9
1,1-Dichloroethane	Not Listed	Not Listed	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,1-Trichloroethane	Not Listed	500	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Benzene	Not Listed	381	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	Not Listed	434	5	2,000	1,800	330	64	300	1
Toluene	Not Listed	2,500	1000	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon Tetrachloride	Not Listed	Not Listed	5	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,1,2-Trichloroethane	Not Listed	Not Listed	5	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Tetrachloroethene	Not Listed	47.7	5	0.7	0.6	0.5 U	0.5 U	0.5 U	0.5 U
Chlorobenzene	Not Listed	112,600	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Metals (µg/L)									
Silver	0.9	Not Listed	100	0.60 U	0.60 U	0.70 U[16]	0.60 U[16]	1.1 U[16]	0.60 U
Arsenic	Not Listed	0.75	10	1.5 U	1.5 U	2.2	6.9	1.5 U	18.2
Barium	Not Listed	5,400	2000	8.6 B	8.8 B	13.7	9.9 B	16.9	8.4 B
Beryllium	Not Listed	10	4	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Cadmium	2.3	2	5	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Chromium (total)	41	27	100	0.70 U	1.0 U[14]J[15]	0.70 U[14]J[15]	1.0 U[14]J[15]	1.2 U[14]J[15]	0.70 U
Iron	Not Listed	Not Listed	300 *	716 J[15]	98.7 J[15]	1,630 J[15]	1,410 J[15]	49.8 J[15]	3,390 J[15]
Mercury	Not Listed	0.273	2	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U
Manganese	Not Listed	Not Listed	50 *	6.9 B	1.4 U	1,030	1,600	4 B	527
Nickel	355	39	100	1.6 U	1.6 U	4.9 B	8.1 B	1.6 U	1.9 B
Lead	34	1.3	15	2.6 U[14]J[15]	7.8 U[14]J[15]	1.5 UJ[15]	1.5 UJ[15]	1.5 UJ[15]	2.3 U[14]J[15]
Antimony	Not Listed	23,000	6	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
Selenium	Not Listed	12	50	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U
Vanadium	Not Listed	Not Listed	--	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
Zinc	Not Listed	Not Listed	5,000 *	76.4	67.4	45.2	39.0	104	116

Notes.
1. Secondary MCLs denoted with *
2. Plant Influent sampled at Influent Equalization Tank effluent line (T-

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			11-Sep-00 (continued)				9-Oct-00	
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	G2	Plant Influent[2]	Plant Influent[2]	Plant Effluent	Plant Influent[2]	Plant Effluent
Sample ID:				G2-091100	S2-091100	S2-091100-21	S9-091100	S2-100900	S9-100900
Parameter						(Duplicate)			
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	0.6	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	Not Listed	17.2	7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Acetone	Not Listed	Not Listed	--	2 U	2 U	2 U	3	2 U	2 U
2-Butanone	Not Listed	Not Listed	--	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Methylene Chloride	Not Listed	8,600	5	0.5 U	0.5 U	0.5 U	0.5	0.5 U	0.5 U
1,2-Dichloroethene (total)	Not Listed	172	--	8	49	53	0.5 U	41	0.5 U
1,1-Dichloroethane	Not Listed	Not Listed	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,1-Trichloroethane	Not Listed	500	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Benzene	Not Listed	381	5	0.5 U	0.9	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	Not Listed	434	5	17	480	470	0.5 U	340	0.5 U
Toluene	Not Listed	2,500	1000	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon Tetrachloride	Not Listed	Not Listed	5	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,1,2-Trichloroethane	Not Listed	Not Listed	5	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Tetrachloroethene	Not Listed	47.7	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chlorobenzene	Not Listed	112,600	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Metals (µg/L)									
Silver	0.9	Not Listed	100	0.60 U[16]	0.60 U	0.60 U[16]	0.60 U	0.60 U	0.60 U
Arsenic	Not Listed	0.75	10	13.6	5.1	4.7	1.5 U	7.0	1.5 U
Barium	Not Listed	5,400	2000	12.3	11.8	11.3	11.1	13	10 U
Beryllium	Not Listed	10	4	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Cadmium	2.3	2	5	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Chromium (total)	41	27	100	0.80 U[14]J[15]	0.70 UJ[15]	0.90 U[14]J[15]	0.80 U[14]J[15]	2.2 J[17]	0.7 UJ[17]
Iron	Not Listed	Not Listed	300 *	4,490 J[15]	1,860 J[15]	1660 J[15]	23.3 UJ[15]	2,120 J[18]	41.4 J[18]
Mercury	Not Listed	0.273	2	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Manganese	Not Listed	Not Listed	50 *	532	1,100	1,090	906	1,100	580
Nickel	355	39	100	2.5 B	7.6	6.3	4.1	10 U	10 U
Lead	34	1.3	15	1.5 UJ[15]	1.5 UJ[15]	1.5 UJ[15]	1.5 U[14]J[15]	1.5 U	1.5 U
Antimony	Not Listed	23,000	6	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U	5.5 U
Selenium	Not Listed	12	50	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U
Vanadium	Not Listed	Not Listed	--	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
Zinc	Not Listed	Not Listed	5,000 *	73.0	54.8	64.0	79.7	45	6.6

Notes.
1. Secondary MCLs denoted with *
2. Plant Influent sampled at Influent Equalization Tank effluent line (T-

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			9-Nov-00		5-Dec-00			
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	Plant Influent[2]	Plant Effluent	EW-S1	EW-S2	EW-S3	EW-S4
Sample ID:				S2-110900	S9-110900	EWS1-120500	EWS2-120500	EWS3-120500	EWS4-120500
Parameter									
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	Not Listed	17.2	7	0.5 U	0.5 U	0.5 J	0.5 U	0.5 U	0.5 U
Acetone	Not Listed	Not Listed	--	2 U	3 U[5]	2 U	2 U	2 U	2 U
2-Butanone	Not Listed	Not Listed	--	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Methylene Chloride	Not Listed	8,600	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethene (total)	Not Listed	172	--	34	0.5 U	46	14	27	14
1,1-Dichloroethane	Not Listed	Not Listed	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,1-Trichloroethane	Not Listed	500	5	0.5 U	0.5 U	5	2	0.5 U	0.5 U
Benzene	Not Listed	381	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	Not Listed	434	5	340	0.5 U	18,000	8,100	260	1,000
Toluene	Not Listed	2,500	1000	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon Tetrachloride	Not Listed	Not Listed	5	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,1,2-Trichloroethane	Not Listed	Not Listed	5	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Tetrachloroethene	Not Listed	47.7	5	0.5 U	0.5 U	1	0.5 U	0.3 J	0.4 J
Chlorobenzene	Not Listed	112,600	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Metals (µg/L)									
Silver	0.9	Not Listed	100	0.60 U	0.60 U	1.7 U	1.7 U	1.7 U	1.7 U
Arsenic	Not Listed	0.75	10	4.7	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U
Barium	Not Listed	5,400	2000	11.7	9.4	9.8	47.9	8.3	10.2
Beryllium	Not Listed	10	4	0.60 U	0.60 U	0.30 U	0.30 U	0.30 U	0.30 U
Cadmium	2.3	2	5	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Chromium (total)	41	27	100	0.7 U	0.7 U	1.1 U	1.9 J	1.6 J	1.1 U
Iron	Not Listed	Not Listed	300 *	1,520	35.1 U	662 J[20]	421 J[20]	924 J[20]	179 J[20]
Mercury	Not Listed	0.273	2	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Manganese	Not Listed	Not Listed	50 *	1,050	711	17.5	141	5.5	3.8
Nickel	355	39	100	8.5 U[11]	2.9 U[11]	1.9	2.7 U	3.5	2.8
Lead	34	1.3	15	1.0 U	1.0 U	1.7 J	7.7	4.7	2.4
Antimony	Not Listed	23,000	6	5.7 U	5.7 U	2.9 U	4.9	2.9 U	2.9 U
Selenium	Not Listed	12	50	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
Vanadium	Not Listed	Not Listed	--	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Zinc	Not Listed	Not Listed	5,000 *	39.6	57.3	118 J[21]	1,250 J[21]	484 J[21]	20.6 J[21]

Notes.
1. Secondary MCLs denoted with *
2. Plant Influent sampled at Influent Equalization Tank effluent line (T-

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			5-Dec-00 (Continued)					
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	EW-S5	EW-M1	EW-M2	EW-M3	G1	G2
Sample ID:				EWS5-120500	EWM1-120500	EWM2-120500	EWM3-120500	EWG1-120500	EWG2-120500
Parameter									
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	5 U	1	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	Not Listed	17.2	7	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Acetone	Not Listed	Not Listed	--	20 U	2 U	2 U	2 U	2 U	2 U
2-Butanone	Not Listed	Not Listed	--	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Methylene Chloride	Not Listed	8,600	5	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethene (total)	Not Listed	172	--	7	70	10	20	4	4
1,1-Dichloroethane	Not Listed	Not Listed	--	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,1-Trichloroethane	Not Listed	500	5	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Benzene	Not Listed	381	5	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	Not Listed	434	5	660	230	33	140	1	8
Toluene	Not Listed	2,500	1000	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon Tetrachloride	Not Listed	Not Listed	5	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,1,2-Trichloroethane	Not Listed	Not Listed	5	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Tetrachloroethene	Not Listed	47.7	5	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chlorobenzene	Not Listed	112,600	100	5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Metals (µg/L)									
Silver	0.9	Not Listed	100	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U	1.7 U
Arsenic	Not Listed	0.75	10	1.6 U	3.0	5.4	1.6 U	17.5	12.4
Barium	Not Listed	5,400	2000	12.1	12.4	10.5	15.9	10.2	12.4
Beryllium	Not Listed	10	4	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U
Cadmium	2.3	2	5	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Chromium (total)	41	27	100	2.1 J	1.1 U	1.1 J	1.4 J	1.1 U	1.1 U
Iron	Not Listed	Not Listed	300 *	201 J[20]	2,170 J[20]	1,450 J[20]	2,370 J[20]	4,540 J[20]	5,030 J[20]
Mercury	Not Listed	0.273	2	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Manganese	Not Listed	Not Listed	50 *	1.1	996	1,420	58.2	493	616
Nickel	355	39	100	1.5	4.2	10	3.5	4.7	4.8
Lead	34	1.3	15	1.3 U	3.8	1.5	16.6	2.1	5.6
Antimony	Not Listed	23,000	6	2.9 U	2.9 U	2.9 U	2.9 U	2.9 U	2.9 U
Selenium	Not Listed	12	50	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
Vanadium	Not Listed	Not Listed	--	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
Zinc	Not Listed	Not Listed	5,000 *	18.2 J[21]	34.9 J[21]	31.5 J[21]	243 J[21]	206 J[21]	97.5 J[21]

Notes.
1. Secondary MCLs denoted with *
2. Plant Influent sampled at Influent Equalization Tank effluent line (T-

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			5-Dec-00 (Continued)			4-Jan-01		8-Feb-01
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	Plant Influent[2]	Plant Influent[2]	Plant Effluent	Plant Influent[2]	Plant Effluent	Plant Influent[2]
Sample ID:				S2-120500	S2-120500-21	S9-120500	S2-010401	S9-010401	S2-020801
Parameter					(Duplicate)				
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1-Dichloroethene	Not Listed	17.2	7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Acetone	Not Listed	Not Listed	--	2 U	2 U	2 U	6	3	2 U
2-Butanone	Not Listed	Not Listed	--	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Methylene Chloride	Not Listed	8,600	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethene (total)	Not Listed	172	--	24	23	0.5 U	27	0.5 U	29
1,1-Dichloroethane	Not Listed	Not Listed	--	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,1-Trichloroethane	Not Listed	500	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Benzene	Not Listed	381	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Trichloroethene	Not Listed	434	5	490	500	0.5 U	440	0.5 J	400
Toluene	Not Listed	2,500	1000	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Carbon Tetrachloride	Not Listed	Not Listed	5	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,1,2-Trichloroethane	Not Listed	Not Listed	5	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Tetrachloroethene	Not Listed	47.7	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chlorobenzene	Not Listed	112,600	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Metals (µg/L)									
Silver	0.9	Not Listed	100	1.7 U	1.7 U	1.7 U	1.2 U	1.2 U	0.5 U
Arsenic	Not Listed	0.75	10	1.8	6.4	1.6 U	3.3	0.26 [a]	4.1
Barium	Not Listed	5,400	2000	11.3	12	8.8	11.7	11.9	11.2
Beryllium	Not Listed	10	4	0.30 U	0.30 U	0.30 U	0.60 U	0.60 U	0.60 U
Cadmium	2.3	2	5	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.10 U
Chromium (total)	41	27	100	1.2 J	1.9 J	1.7 J	0.7 U	1 J	3.2 U
Iron	Not Listed	Not Listed	300 *	2,130 J[20]	2,180 J[20]	51.5 J[20]	1,480	67.1	2,060
Mercury	Not Listed	0.273	2	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.15 U
Manganese	Not Listed	Not Listed	50 *	940	974	517	947	894	992
Nickel	355	39	100	7.0	7.6	4.1	7.5 U[11]	4.2 U[11]	7.0 U[22]
Lead	34	1.3	15	1.3 U	1.3 U	1.3 U	1 U	1 U	0.8 UJ[10]
Antimony	Not Listed	23,000	6	2.9 U	2.9 U	2.9 U	5.7 U	5.7 U	6.6 U
Selenium	Not Listed	12	50	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	2.9 U
Vanadium	Not Listed	Not Listed	--	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1 U[22]
Zinc	Not Listed	Not Listed	5,000 *	62.4 J[21]	71.3 J[21]	47.7 J[21]	30.9	68.6	44

Notes.
1. Secondary MCLs denoted with *
2. Plant Influent sampled at Influent Equalization Tank effluent line (T-

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			8-Feb-01	12-Mar-01			10-Apr-01	
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	Plant Effluent	Plant Influent[2]	Plant Effluent	Plant Effluent	EW-S1	EW-S2
Sample ID:				S9-020801-01	S2-031201	S9-031201-01	S9-031201-21	EWS1-041001	EWS2-041001
Parameter							(Duplicate)		
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	0.5 U	0.5 U	0.5 U	0.5 U	0.3 UJ[2]	0.3 UJ[2]
1,1-Dichloroethene	Not Listed	17.2	7	0.5 U	0.5 U	0.5 U	0.5 U	0.3 UJ[2]	0.3 UJ[2]
Acetone	Not Listed	Not Listed	--	0.5 U	2 U	2 U	2 U	2 J[2]	3 J[2]
2-Butanone	Not Listed	Not Listed	--	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Methylene Chloride	Not Listed	8,600	5	0.5 U	0.5 U	0.5 U	0.5 U	0.3 UJ[2]	0.3 UJ[2]
1,2-Dichloroethene (total)	Not Listed	172	--	0.6 U	38	0.6 U	0.6 U	56	25 J[2]
1,1-Dichloroethane	Not Listed	Not Listed	--	0.5 U	0.5 U	0.5 U	0.5 U	0.3 UJ[2]	0.3 UJ[2]
1,1,1-Trichloroethane	Not Listed	500	5	0.5 U	0.5 U	0.5 U	0.5 U	0.3 UJ[2]	0.3 UJ[2]
Benzene	Not Listed	381	5	0.5 U	0.5 U	0.5 U	0.5 U	0.2 UJ[2]	0.2 UJ[2]
Trichloroethene	Not Listed	434	5	0.5 J	480	2	0.5 U	18,000	5,500
Toluene	Not Listed	2,500	1000	0.5 U	0.5 U	0.5 U	0.5 U	0.2 UJ[2]	0.2 UJ[2]
Carbon Tetrachloride	Not Listed	Not Listed	5	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,1,2-Trichloroethane	Not Listed	Not Listed	5	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Tetrachloroethene	Not Listed	47.7	5	0.5 U	0.5 U	0.5 U	0.5 U	1 J[2]	0.9 J[2]
Chlorobenzene	Not Listed	112,600	100	0.5 U	0.5 U	0.5 U	0.5 U	0.2 UJ[2]	0.2 UJ[2]
Metals (µg/L)									
Silver	0.9	Not Listed	100	0.5 U	0.5 U	0.5 U	0.8 U	0.50 U	0.50 U
Arsenic	Not Listed	0.75	10	0.9 U	4	0.9 U	0.9 U	0.90 U	0.90 U
Barium	Not Listed	5,400	2000	9.8	12.4	11.0	11.0	28.2	53.0
Beryllium	Not Listed	10	4	0.60 U	0.60 U	0.60 U	0.60 U	0.29 U	0.29 U
Cadmium	2.3	2	5	0.10 U	0.21 J[23]	0.90 J[23]	0.10 J[23]	0.095 U	0.31
Chromium (total)	41	27	100	3.2 U	3.2 J[17]	10.5 J[17]	3.2 J[17]	3.0 U	3.4 J
Iron	Not Listed	Not Listed	300 *	19.8 U	2,040	98.4 U[4]	19.8 J[20]	109	827
Mercury	Not Listed	0.273	2	0.15 U	0.15 U	0.15 U	0.15 U	0.065 U	0.065 U
Manganese	Not Listed	Not Listed	50 *	844	1030	895	907	131	224
Nickel	355	39	100	2.0 U[22]	12.3 U[22]	5.6 U[22]	7.0 U[22]	2.8 J	6.6 J
Lead	34	1.3	15	0.8 UJ[10]	0.8 UJ[10]	0.8 UJ[10]	0.8 UJ[10]	5.4	8.7
Antimony	Not Listed	23,000	6	6.6 U	6.6 U	6.6 U	6.6 U	11.1 U	11.1 U
Selenium	Not Listed	12	50	2.9 U	2.9 U	2.9 U	2.9 U	4.9 U	4.9 U
Vanadium	Not Listed	Not Listed	--	0.92 U	4.1 U	4.1 U	4.1 U	2.3 U	2.3 U
Zinc	Not Listed	Not Listed	5,000 *	36.2	28.6	36	32.9	68.3	637

Notes.
1. Secondary MCLs denoted with *
2. Plant Influent sampled at Influent Equalization Tank effluent line (T-

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			10-Apr-01 (Continued)					
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	EW-S3	EW-S4	EW-S5	EW-M1	EW-M2	EW-M3
Sample ID:				EWS3-041001	EWS4-041001	EWS5-041001	EWM1-041001	EWM2-041001	EWM3-041001
Parameter									
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	0.3 U	0.3 U	0.3 U	2	0.3 U	0.3 U
1,1-Dichloroethene	Not Listed	17.2	7	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Acetone	Not Listed	Not Listed	--	3	2	2	2 U	2 U	4
2-Butanone	Not Listed	Not Listed	--	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Methylene Chloride	Not Listed	8,600	5	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
1,2-Dichloroethene (total)	Not Listed	172	--	91	12	6	64	26	27
1,1-Dichloroethane	Not Listed	Not Listed	--	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
1,1,1-Trichloroethane	Not Listed	500	5	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Benzene	Not Listed	381	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Trichloroethene	Not Listed	434	5	760	570	410	140	14	18 J[25]
Toluene	Not Listed	2,500	1000	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Carbon Tetrachloride	Not Listed	Not Listed	5	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,1,2-Trichloroethane	Not Listed	Not Listed	5	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Tetrachloroethene	Not Listed	47.7	5	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Chlorobenzene	Not Listed	112,600	100	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Metals (µg/L)									
Silver	0.9	Not Listed	100	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Arsenic	Not Listed	0.75	10	0.90 U	0.90 U	0.90 U	4.0	7.1	0.94 J
Barium	Not Listed	5,400	2000	10.2	10.2	10.4	14.2	12.0	12.2
Beryllium	Not Listed	10	4	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
Cadmium	2.3	2	5	0.095 U	0.095 U	0.095 U	0.12 J	0.12 J	0.095 U
Chromium (total)	41	27	100	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
Iron	Not Listed	Not Listed	300 *	11,700	703	369	2,820	1,880	1,350
Mercury	Not Listed	0.273	2	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U
Manganese	Not Listed	Not Listed	50 *	10.7	4.8 J	1.6 U	1,110	1,280	1,220
Nickel	355	39	100	2.6 U	2.6 U	2.6 U	5.8 J	8.5 J	9.0 J
Lead	34	1.3	15	5.0 U	2.7	2.2	5.0 U	1.9	7.6
Antimony	Not Listed	23,000	6	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U
Selenium	Not Listed	12	50	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U
Vanadium	Not Listed	Not Listed	--	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U
Zinc	Not Listed	Not Listed	5,000 *	239	81.2	110	90.0	47.2	2,140

Notes.
1. Secondary MCLs denoted with *
2. Plant Influent sampled at Influent Equalization Tank effluent line (T-

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			10-Apr-01 (Continued)					9-May-01	
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	G1	G2	Plant Influent[2]	Plant Influent[2]	Plant Effluent	Plant Influent[2]	Plant Effluent
Sample ID:				EWG1-041001	EWG2-041001	S2-041001-01	S2-041001-21	S9-041001	S2-050901	S9-050901-01
Parameter							(Duplicate)			
Volatile Organic Compounds (µg/L)										
Vinyl Chloride	Not Listed	2,816	2	0.3 U	0.3 U	0.5	0.3 U	0.3 U	0.5 J	0.3 U
1,1-Dichloroethene	Not Listed	17.2	7	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Acetone	Not Listed	Not Listed	--	2 U	2 U	2 U	2 U	3	2 U	4 U[5]
2-Butanone	Not Listed	Not Listed	--	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Methylene Chloride	Not Listed	8,600	5	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
1,2-Dichloroethene (total)	Not Listed	172	--	39	1	34	32	0.6 U	32	0.6 U
1,1-Dichloroethane	Not Listed	Not Listed	--	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
1,1,1-Trichloroethane	Not Listed	500	5	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Benzene	Not Listed	381	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Trichloroethene	Not Listed	434	5	16	4	460	470	0.3 U	560	0.3 U
Toluene	Not Listed	2,500	1000	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Carbon Tetrachloride	Not Listed	Not Listed	5	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,1,2-Trichloroethane	Not Listed	Not Listed	5	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Tetrachloroethene	Not Listed	47.7	5	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Chlorobenzene	Not Listed	112,600	100	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Metals (µg/L)										
Silver	0.9	Not Listed	100	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Arsenic	Not Listed	0.75	10	19.3	18.1	5.6	6.7	0.90 U	3.6	0.9 U
Barium	Not Listed	5,400	2000	9.2 J	12.7	12.9	12.9	11.3	13.7	10.1
Beryllium	Not Listed	10	4	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
Cadmium	2.3	2	5	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U	0.095 U
Chromium (total)	41	27	100	6.5 J	3.0 U	3.0 U	3.0 U	3 U	7.4 J	3.0 U
Iron	Not Listed	Not Listed	300 *	7,390	5,000	2,490	2,570	43.7 UJ[20]	2,000	44 U
Mercury	Not Listed	0.273	2	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U
Manganese	Not Listed	Not Listed	50 *	510	671	981	971	745	952	629
Nickel	355	39	100	5.2 J	4.0 J	7.9 J	7.9 J	4.9 J	9.4 J	4 J
Lead	34	1.3	15	8.5	1.5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Antimony	Not Listed	23,000	6	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U
Selenium	Not Listed	12	50	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U
Vanadium	Not Listed	Not Listed	--	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U
Zinc	Not Listed	Not Listed	5,000 *	459	61.4	31.4	37.4	36.9 J[24]	57.5	35.9

Notes.
1. Secondary MCLs denoted with *
2. Plant Influent sampled at Influent Equalization Tank effluent line (T-

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			9-May-01	12-Jun-01					
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	Plant Effluent Duplicate	EW-S1	EW-S2	EW-S3	EW-S4	EW-S5	EW-M1
Sample ID:				S9-050901-21	EWS1-061201	EWS2-061201	EWS3-061201	EWS4-061201	EWS5-061201	EWM1-061201
Parameter				(Duplicate)						
Volatile Organic Compounds (µg/L)										
Vinyl Chloride	Not Listed	2,816	2	0.3 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	1
1,1-Dichloroethene	Not Listed	17.2	7	0.3 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Acetone	Not Listed	Not Listed	--	2 U	2 U	2 U	2 U	2 U	2 U	2 U
2-Butanone	Not Listed	Not Listed	--	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Methylene Chloride	Not Listed	8,600	5	0.3 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichloroethene (total)	Not Listed	172	--	0.6 U	77	54	110	14	11	53
1,1-Dichloroethane	Not Listed	Not Listed	--	0.3 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,1-Trichloroethane	Not Listed	500	5	0.3 U	6	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Benzene	Not Listed	381	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Trichloroethene	Not Listed	434	5	0.3 U	15,000	11,000	100	490	440	110
Toluene	Not Listed	2,500	1000	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Carbon Tetrachloride	Not Listed	Not Listed	5	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,1,2-Trichloroethane	Not Listed	Not Listed	5	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Tetrachloroethene	Not Listed	47.7	5	0.3 U	1	1	0.2 U	0.2 U	0.2 U	0.2 U
Chlorobenzene	Not Listed	112,600	100	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Metals (µg/L)										
Silver	0.9	Not Listed	100	0.50 U	0.50 U	0.50 U	5.90	0.50 U	0.50 U	0.50 U
Arsenic	Not Listed	0.75	10	0.90 U	0.90 U	0.90 U	0.90 U	1.00	0.90 U	4.3
Barium	Not Listed	5,400	2000	10.2	37.5	66.4	19.9	10.1	8.6 J	14.4
Beryllium	Not Listed	10	4	0.29 U	0.29 U	0.31 J	0.29 U	0.29 U	0.29 U	0.29 U
Cadmium	2.3	2	5	0.095 U	0.110 J	0.23 J	0.170 J	0.095 U	0.095 U	0.10 U
Chromium (total)	41	27	100	3 U	3.0 U	3 U	3.0 U	3.0 U	3.0 U	3.0 U
Iron	Not Listed	Not Listed	300 *	47.8 J	448 J[27]	340 J[27]	15,600 J[27]	3170 J[27]	52.9 J[27]	3,170 J[27]
Mercury	Not Listed	0.273	2	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U
Manganese	Not Listed	Not Listed	50 *	629	107	136	91.5	20.3	1.6 U	1,190
Nickel	355	39	100	6.5 J	11.6 U	11.6 U	11.6 U	12.3 J	11.6 U	11.6 U
Lead	34	1.3	15	1.0 U	5.8 J[3]	1 UJ[3]	1.1 J[3]	6.1 J[3]	52 J[3]	1.1 J[3]
Antimony	Not Listed	23,000	6	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	12.9 J	11.1 U
Selenium	Not Listed	12	50	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U
Vanadium	Not Listed	Not Listed	--	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U
Zinc	Not Listed	Not Listed	5,000 *	38	96.5	258	791	63.4	33.4 U[28]	101.0

Notes.
1. Secondary MCLs denoted with *
2. Plant Influent sampled at Influent Equalization Tank effluent line (T-

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			12-Jun-01					
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	EW-M2	EW-M3	G1	G2	Plant Influent[2]	Plant Effluent
Sample ID:				EWM2-061201	EWM3-061201	EWG1-061201	EWG2-061201	S2-061201	S9-061201
Parameter									
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-Dichloroethene	Not Listed	17.2	7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Acetone	Not Listed	Not Listed	--	2 U	2 U	2 U	2 U	2 U	2
2-Butanone	Not Listed	Not Listed	--	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Methylene Chloride	Not Listed	8,600	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichloroethene (total)	Not Listed	172	--	14	11	11	1	23	0.4 U
1,1-Dichloroethane	Not Listed	Not Listed	--	2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,1-Trichloroethane	Not Listed	500	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Benzene	Not Listed	381	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Trichloroethene	Not Listed	434	5	8	39	0.2 U	4	300	0.2 U
Toluene	Not Listed	2,500	1000	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Carbon Tetrachloride	Not Listed	Not Listed	5	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
1,1,2-Trichloroethane	Not Listed	Not Listed	5	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Tetrachloroethene	Not Listed	47.7	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Chlorobenzene	Not Listed	112,600	100	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Metals (µg/L)									
Silver	0.9	Not Listed	100	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Arsenic	Not Listed	0.75	10	2.9	0.9 U	16.3	17.5	7.4	0.90 U
Barium	Not Listed	5,400	2000	11.3	18.1	8.6 J	11.6	13.7	11.1
Beryllium	Not Listed	10	4	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
Cadmium	2.3	2	5	0.10 J	0.440	0.095 U	0.580	0.095 U	0.095 U
Chromium (total)	41	27	100	3.0 U	5.7 J	3 U	3.0 U	3.0 U	3 U
Iron	Not Listed	Not Listed	300 *	1,920 J[27]	7,500 J[27]	4,170 J[27]	6,350 J[27]	3,440 J[27]	55.3 J[27]
Mercury	Not Listed	0.273	2	0.065 U	0.065 U	0.076 J	0.065 U	0.065 U	0.065 U
Manganese	Not Listed	Not Listed	50 *	1,060	33	378	713	960	658
Nickel	355	39	100	12.8 J	24.7	11.6 U	11.6 U	11.6 U	11.6 U
Lead	34	1.3	15	1 UJ[3]	36.1 J[3]	2.2 J[3]	13.1 J[3]	1 UJ[3]	1.0 UJ[3]
Antimony	Not Listed	23,000	6	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U
Selenium	Not Listed	12	50	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U
Vanadium	Not Listed	Not Listed	--	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U
Zinc	Not Listed	Not Listed	5,000 *	34 U[28]	1,510	73.1	56.2	73.4	30.5 U[28]

Notes.
1. Secondary MCLs denoted with *
2. Plant Influent sampled at Influent Equalization Tank effluent line (T-

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			11-Jul-01		6-Aug-01	6-Aug-01		19-Sep-01
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	Plant Influent[2]	Plant Effluent	Plant Influent[2]	Plant Influent[2]	Plant Effluent	EW-S1
Sample ID:				S2-071101	S9-071101	S2-080601-01	S2-080601-21	S9-080601	EWS1-091901
Parameter							(Duplicate)		
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	0..2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1-Dichloroethene	Not Listed	17.2	7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Acetone	Not Listed	Not Listed	--	2 U	2 U	2 U	2 U	2 U	2 U
2-Butanone	Not Listed	Not Listed	--	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Methylene Chloride	Not Listed	8,600	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichloroethene (total)	Not Listed	172	--	20	0.4 U	18	18	0.4 U	48
1,1-Dichloroethane	Not Listed	Not Listed	--	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,1-Trichloroethane	Not Listed	500	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Benzene	Not Listed	381	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Trichloroethene	Not Listed	434	5	250	0.2 U	250	260	0.2 U	12000
Toluene	Not Listed	2,500	1000	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Carbon Tetrachloride	Not Listed	Not Listed	5	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	0.8 J[33]
1,1,2-Trichloroethane	Not Listed	Not Listed	5	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	1
Tetrachloroethene	Not Listed	47.7	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	1
Chlorobenzene	Not Listed	112,600	100	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Metals (µg/L)									
Silver	0.9	Not Listed	100	0.50 U	0.50 U	0.50 U	0.50 U	Not Analyzed	0.50 U
Arsenic	Not Listed	0.75	10	4.1	0.90 U	4.6	4.8	0.90 U	0.90 U
Barium	Not Listed	5,400	2000	14.3 U[30]	10.5 U[30]	14.0	13.4	9.7 B	13.0
Beryllium	Not Listed	10	4	0.29 U	0.29 U	3.0 U	0.29 U	0.29 U	0.29 U
Cadmium	2.3	2	5	0.095 U	0.095 U	0.095 J[23]	0.095 J[23]	0.095 J[23]	0.095 UJ[23]
Chromium (total)	41	27	100	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
Iron	Not Listed	Not Listed	300 *	2,500	43.7 U	2,010	2,030	43.7 U	43.7 U
Mercury	Not Listed	0.273	2	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U
Manganese	Not Listed	Not Listed	50 *	906	611	895	889	523	25.8
Nickel	355	39	100	6.0 B	2.6 U	8.4 B	8.6 B	4.1 B	2.6 U
Lead	34	1.3	15	1 J[3]	**1.8** J[3]	1.0 U	1.0 U	1.0 U	5.9
Antimony	Not Listed	23,000	6	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U
Selenium	Not Listed	12	50	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U
Vanadium	Not Listed	Not Listed	--	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U
Zinc	Not Listed	Not Listed	5,000 *	0.0146	0.0385	27.6 J[32]	21.2 J[32]	34.5 J[32]	25.5 U[28]

Notes.
1. Secondary MCLs denoted with *
2. Plant Influent sampled at Influent Equalization Tank effluent line (T-

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			19-Sep-01 (continued)					
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	EW-S2	EW-S3	EW-S4	EW-S5	EW-M1	EW-M2
Sample ID:				EWS2-091901	EWS3-091901	EWS4-091901	EWS5-091901	EWM1-091901	EWM2-091901
Parameter									
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	0.2 U	0.2 U	0.2 U	0.2 U	0.5 J	0.2 U
1,1-Dichloroethene	Not Listed	17.2	7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Acetone	Not Listed	Not Listed	--	3	2 U	2 U	2 U	2 U	2 U
2-Butanone	Not Listed	Not Listed	--	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Methylene Chloride	Not Listed	8,600	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichloroethene (total)	Not Listed	172	--	11	33	13	5	29	10
1,1-Dichloroethane	Not Listed	Not Listed	--	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
1,1,1-Trichloroethane	Not Listed	500	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Benzene	Not Listed	381	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Trichloroethene	Not Listed	434	5	8800	120	300	210	65	4
Toluene	Not Listed	2,500	1000	1,300	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Carbon Tetrachloride	Not Listed	Not Listed	5	0.5 J[33]	0.2 UJ[33]	0.2 UJ[33]	0.2 UJ[33]	0.2 UJ[33]	0.2 UJ[33]
1,1,2-Trichloroethane	Not Listed	Not Listed	5	0.6	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Tetrachloroethene	Not Listed	47.7	5	0.5	0.2 U	0.2 U	0.2 U	0.5 J	0.2 U
Chlorobenzene	Not Listed	112,600	100	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Metals (µg/L)									
Silver	0.9	Not Listed	100	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Arsenic	Not Listed	0.75	10	0.90 U	0.90 U	0.90 U	0.90 U	13.7	4.9
Barium	Not Listed	5,400	2000	42.3	10.2	14.2	15.6	17.3	12.6
Beryllium	Not Listed	10	4	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
Cadmium	2.3	2	5	0.095 UJ[23]	0.095 UJ[23]	0.095 UJ[23]	0.095 UJ[23]	0.095 UJ[23]	0.095 UJ[23]
Chromium (total)	41	27	100	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
Iron	Not Listed	Not Listed	300 *	95.8	647	92.0	87.9	13900	2210
Mercury	Not Listed	0.273	2	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U
Manganese	Not Listed	Not Listed	50 *	103	4.7 B	3.1 B	1.6 U	1340	883
Nickel	355	39	100	2.6 U	2.6 U	2.6 U	2.6 U	7.0 B	2.6 U
Lead	34	1.3	15	3.1	6.1	2.1	4.3	1.5	1.0
Antimony	Not Listed	23,000	6	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U
Selenium	Not Listed	12	50	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U
Vanadium	Not Listed	Not Listed	--	2.3 U	2.3 U	2.3 U	2.7 B	2.3 U	3.1 B
Zinc	Not Listed	Not Listed	5,000 *	52.4	42.8	53.4	16.9 U[28]	483	38.7

Notes.
1. Secondary MCLs denoted with *
2. Plant Influent sampled at Influent Equalization Tank effluent line (T-

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			19-Sep-01 (continued)					
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	EW-M3	G1	G2	Plant Influent[2]	Plant Influent[2]	Plant Effluent
Sample ID:				EWM3-091901	G1-091901	G2-091901	S2-091901-01	S2-091901-21	S9-091901
Parameter								(Duplicate)	
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	0.2 U	0.2 U	0.2 U	0.9 U	1 U	0.2 U
1,1-Dichloroethene	Not Listed	17.2	7	0.2 U	0.2 U	0.2 U	1 U	1 U	0.2 U
Acetone	Not Listed	Not Listed	--	2 U	2 U	2 U	8 U	8 U	3
2-Butanone	Not Listed	Not Listed	--	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed
Methylene Chloride	Not Listed	8,600	5	0.2 U	0.2 U	0.2 U	1 U	1 U	0.2 U
1,2-Dichloroethene (total)	Not Listed	172	--	9	8	1	13	13	0.4 U
1,1-Dichloroethane	Not Listed	Not Listed	--	0.2 U	0.2 U	0.2 U	1 U	1 U	0.2 U
1,1,1-Trichloroethane	Not Listed	500	5	0.2 U	0.2 U	0.2 U	1 U	1 U	0.2 U
Benzene	Not Listed	381	5	0.2 U	0.2 U	0.2 U	1 U	1 U	0.2 U
Trichloroethene	Not Listed	434	5	9	0.2 U	2	280	250	0.2 U
Toluene	Not Listed	2,500	1000	0.2 U	0.2 U	0.2 U	1 U	1 U	0.2 U
Carbon Tetrachloride	Not Listed	Not Listed	5	0.2 UJ[33]	0.2 UJ[33]	0.2 UJ[33]	0.2 UJ[33]	0.2 UJ[33]	0.2 UJ[33]
1,1,2-Trichloroethane	Not Listed	Not Listed	5	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Tetrachloroethene	Not Listed	47.7	5	0.2 U	0.6	0.2 U	1 U	1 U	0.2 U
Chlorobenzene	Not Listed	112,600	100	0.2 U	0.2 U	0.2 U	1 U	1 U	0.2 U
Metals (µg/L)									
Silver	0.9	Not Listed	100	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Arsenic	Not Listed	0.75	10	8.9	11.3	15.8	5.1	5.0	0.90 U
Barium	Not Listed	5,400	2000	16.3	12.0	11.7	15.2	14.5	13.4
Beryllium	Not Listed	10	4	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
Cadmium	2.3	2	5	0.36 J[23]	0.095 UJ[23]	0.095 UJ[23]	0.095 UJ[23]	0.095 UJ[23]	0.095 UJ[23]
Chromium (total)	41	27	100	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
Iron	Not Listed	Not Listed	300 *	15800	3290	5890	2180	2420	43.7 U
Mercury	Not Listed	0.273	2	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U
Manganese	Not Listed	Not Listed	50 *	1000	372	708	972	972	826
Nickel	355	39	100	4.9 B	2.6 U	2.6 U	2.6 U	2.7 B	2.6 U
Lead	34	1.3	15	57.0	1.0 U	1.0	1.0 U	1.0 U	1.0 U
Antimony	Not Listed	23,000	6	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U
Selenium	Not Listed	12	50	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U
Vanadium	Not Listed	Not Listed	--	2.3 U	2.3 U	2.7 B	2.3 U	2.4 B	2.3 U
Zinc	Not Listed	Not Listed	5,000 *	2710	54.2	32.5 U[28]	29.8 U[28]	28.0 U[28]	28.8 U[28]

Notes.
1. Secondary MCLs denoted with *
2. Plant Influent sampled at Influent Equalization Tank effluent line (T-

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			23-Oct-01		21-Jan-02			25-Feb-02	
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	Plant Influent[2]	Plant Effluent	Plant Influent[2]	Plant Influent[2]	Plant Effluent	Plant Influent[2]	Plant Effluent
Sample ID:				S2-102301	S9-102301	S2-012102-01	S2-012102-02	S9-012102	S2-022502	S9-022502
Parameter							(Duplicate)			
Volatile Organic Compounds (µg/L)										
Vinyl Chloride	Not Listed	2,816	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.18 U	0.18 U
1,1-Dichloroethene	Not Listed	17.2	7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U
Acetone	Not Listed	Not Listed	--	2 U	2 U	2 U	2 U	2 U	1.5 U	1.5 U
2-Butanone	Not Listed	Not Listed	--	Not Analyzed	Not Analyzed	2 U	2 U	2 U	1.7 U	1.7 U
Methylene Chloride	Not Listed	8,600	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.19 U	0.19 U
1,2-Dichloroethene (total)	Not Listed	172	--	11	0.4 U	7	6	0.4 U	5.7	0.42 U
1,1-Dichloroethane	Not Listed	Not Listed	--	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U
1,1,1-Trichloroethane	Not Listed	500	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.22 U	0.22 U
Benzene	Not Listed	381	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U
Trichloroethene	Not Listed	434	5	390	0.2 U	260	270	0.2 U	320	0.21 U
Toluene	Not Listed	2,500	1000	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.21 U	0.21 U
Carbon Tetrachloride	Not Listed	Not Listed	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.24 U	0.24 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.33 U	0.33 U
Tetrachloroethene	Not Listed	47.7	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U
Chlorobenzene	Not Listed	112,600	100	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.22 U	0.22 U
Metals (µg/L)										
Silver	0.9	Not Listed	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Arsenic	Not Listed	0.75	10	6.8	0.9 U	4.9	5.8	0.90 U	1.9	0.90 U
Barium	Not Listed	5,400	2000	15.5	11.8	17.1	17.1	13.8	17.7	16.6
Beryllium	Not Listed	10	4	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
Cadmium	2.3	2	5	0.095 U	0.095 U	0.095 U	0.096 J	0.095 U	0.095 J[5]	0.095 J[5]
Chromium (total)	41	27	100	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
Iron	Not Listed	Not Listed	300 *	2400	43.7 U	1920	1940	43.7 U	2140	43.7
Mercury	Not Listed	0.273	2	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U	0.065 U
Manganese	Not Listed	Not Listed	50 *	955	620	1200	1180	824	1110	912
Nickel	355	39	100	9.7 B	3.8 B	7.0 J	8.8 J	4.4 J	10.1	7.2 J
Lead	34	1.3	15	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Antimony	Not Listed	23,000	6	13.4 B	14.1 B	11.1 U	11.1 U	11.1 U	11.1 U	11.1 U
Selenium	Not Listed	12	50	4.9 U	4.9 U	4.9 U	5.1	6.5	4.9 U	4.9 U
Vanadium	Not Listed	Not Listed	--	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U	2.3 U
Zinc	Not Listed	Not Listed	5,000 *	25.3 U[28]	39.2	30.4 U[1]	28.9 U[1]	36.9 U[1]	37.4	50.2

Notes.
1. Secondary MCLs denoted with *
2. Plant Influent sampled at Influent Equalization Tank effluent line (T-

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			27-Mar-02						
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	EW-S1	EW-S2	EW-S3	EW-S3	EW-S4	EW-S5	EW-M1
Sample ID:				EWS1-032702	EWS2-032702	EWS3-032702-01	EWS3-032702-21	EWS4-032702	EWS5-032702	EWM1-032702
Parameter							(Duplicate)			
Volatile Organic Compounds (µg/L)										
Vinyl Chloride	Not Listed	2,816	2	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	Not Listed	17.2	7	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	Not Listed	Not Listed	--	5.0 U	50 U	5.0 U	5.0 U	5.0 U	68	5.0 U
2-Butanone	Not Listed	Not Listed	--	3.0 U	30 U	3.0 U	3.0 U	3.0 U	13	3.0 U
Methylene Chloride	Not Listed	8,600	5	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethene (total)	Not Listed	172	--	48 J[4]	10 U	42	33	7.0 U	1.0 U	12
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	Not Listed	500	5	4.3 J[4]	2.5 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Benzene	Not Listed	381	5	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	Not Listed	434	5	6400	6500	94 J[3]	54 J[3]	120	17	39
Toluene	Not Listed	2,500	1000	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	Not Listed	47.7	5	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	Not Listed	112,600	100	1.0 U	10 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Metals (µg/L)										
Silver	0.9	Not Listed	100	0.5 U	0.5 U	5 U	0.5 U	0.5 U	0.5 U	0.5 U
Arsenic	Not Listed	0.75	10	0.51	0.98	2.8 J[2]	0.59 J[2]	0.64	0.58	8.2
Barium	Not Listed	5,400	2000	14	29	8	8	13	13	16
Beryllium	Not Listed	10	4	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	2.3	2	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chromium (total)	41	27	100	5 U	5 U	5 U	5 U	5 U	5	5 U
Iron	Not Listed	Not Listed	300 *	50 U	100 J[1]	410 J[1,2]	840 J[1,2]	300 J[1]	1900 J[1]	4670 J[1]
Mercury	Not Listed	0.273	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Manganese	Not Listed	Not Listed	50 *	13	35	13	14	5	35	1440
Nickel	355	39	100	5	5 U	5 U	5 U	5 U	5 U	8
Lead	34	1.3	15	0.74	2.4	27 J[2]	6.9 J[2]	1.8	16	0.66
Antimony	Not Listed	23,000	6	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Selenium	Not Listed	12	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Vanadium	Not Listed	Not Listed	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Zinc	Not Listed	Not Listed	5,000 *	30	30	20	20	42	100	82

Notes.
1. Secondary MCLs denoted with *
2. Plant Influent sampled at Influent Equalization Tank effluent line (T-

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			27-Mar-02 (continued)					
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	EW-M2	EW-M3	G1	G2	Plant Influent[2]	Plant Effluent
Sample ID:				EWM2-032702	EWM3-032702	G1-032702	G2-032702	S2-032702	S9-032702
Parameter									
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
1,1-Dichloroethene	Not Listed	17.2	7	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
Acetone	Not Listed	Not Listed	--	5.0 U	26	5.0 U	5.0 U	10 U	5.0 U
2-Butanone	Not Listed	Not Listed	--	3.0 U	22	3.0 U	3.0 U	6.0 U	3.0 U
Methylene Chloride	Not Listed	8,600	5	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
1,2-Dichloroethene (total)	Not Listed	172	--	2.0	5.0	1.0 U	1.0 U	4.0	1.0 U
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
1,1,1-Trichloroethane	Not Listed	500	5	0.3 U	0.3 U	0.3 U	0.3 U	0.5 U	0.3 U
Benzene	Not Listed	381	5	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
Trichloroethene	Not Listed	434	5	5.5	6.4	1.0 U	1.0 U	210	1.0 U
Toluene	Not Listed	2,500	1000	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
Tetrachloroethene	Not Listed	47.7	5	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
Chlorobenzene	Not Listed	112,600	100	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	1.0 U
Metals (µg/L)									
Silver	0.9	Not Listed	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Arsenic	Not Listed	0.75	10	3.3	5.9	37	17	6.1	0.37
Barium	Not Listed	5,400	2000	15	15	9	13	15	12
Beryllium	Not Listed	10	4	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	2.3	2	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chromium (total)	41	27	100	5 U	5 U	5 U	5 U	5 U	5 U
Iron	Not Listed	Not Listed	300 *	1440 J[1]	6260 J[1]	1410 J[1]	6010 J[1]	2060 J[1]	5 U
Mercury	Not Listed	0.273	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Manganese	Not Listed	Not Listed	50 *	840	857	281	830	1000	843
Nickel	355	39	100	9	10	5 U	6	7	5
Lead	34	1.3	15	1.0	2.8	0.62	0.47	0.44	0.72
Antimony	Not Listed	23,000	6	5 U	5 U	5 U	5 U	5 U	5 U
Selenium	Not Listed	12	50	5 U	5 U	5 U	5 U	5 U	5 U
Vanadium	Not Listed	Not Listed	--	5 U	5 U	5 U	5 U	5 U	5 U
Zinc	Not Listed	Not Listed	5,000 *	30	200	30	20 U	30	20 U

Notes.
1. Secondary MCLs denoted with *
2. Plant Influent sampled at Influent Equalization Tank effluent line (T-

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			29-Apr-02		29-May-02				
Sample Location:	Daily Maximum	Average Monthly	MCL	Plant Influent[2]	Plant Effluent	EW-S1	EW-S2	EW-S3	EW-S4	EW-S5
Sample ID:				S2-042902	S9-042902	EWS1-052902	EWS2-052902	EWS3-052902	EWS4-052902	EWS5-052902
Parameter										
Volatile Organic Compounds (µg/L)										
Vinyl Chloride	Not Listed	2,816	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	Not Listed	17.2	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	Not Listed	8,600	5	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
1,2-Dichloroethene (total)	Not Listed	172	--	4.1	1.0 U	41	28.0 J[4]	48	8.5	1.0 U
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	Not Listed	500	5	1.0 U	1.0 U	4.1	9.3 J[4]	1.0 U	1.0 U	1.0 U
Benzene	Not Listed	381	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	Not Listed	434	5	380	1.0 U	5800	12000	95	110	56
Toluene	Not Listed	2,500	1000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	Not Listed	47.7	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	Not Listed	112,600	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Metals (µg/L)										
Silver	0.9	Not Listed	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Arsenic	Not Listed	0.75	10	8.7	0.62	1.6	0.59	0.56 U	0.78	0.56 U
Barium	Not Listed	5,400	2000	15	12 U	13	24	8	13	14
Beryllium	Not Listed	10	4	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	2.3	2	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chromium (total)	41	27	100	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Iron	Not Listed	Not Listed	300 *	2650	50 U	53	150	957	150	773
Mercury	Not Listed	0.273	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Manganese	Not Listed	Not Listed	50 *	1010	692	12	17	13	10	5.6
Nickel	355	39	100	10	5	5 U	5 U	5 U	5 U	5 U
Lead	34	1.3	15	1.3	0.13	10	0.99	13	2.4	6.7
Antimony	Not Listed	23,000	6	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Selenium	Not Listed	12	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Vanadium	Not Listed	Not Listed	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Zinc	Not Listed	Not Listed	5,000 *	20	40	20 U	40	20 U	20 U	20 U

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			29-May-02 (continued)					
Sample Location:	Daily Maximum	Average Monthly	MCL	EW-M1	EW-M2	EW-M3	G2	Plant Influent[2]	Plant Effluent
Sample ID:				EWM1-052902	EWM2-052902	EWM3-052902	EWG2-052902	S2-052902	S9-052902
Parameter									
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	Not Listed	17.2	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	Not Listed	8,600	5	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
1,2-Dichloroethene (total)	Not Listed	172	--	11	1.0 U	20	1.0 U	5.3	1.0 U
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	Not Listed	500	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzene	Not Listed	381	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	Not Listed	434	5	30	2.9	9.9	1.0 U	320	1.0 U
Toluene	Not Listed	2,500	1000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0	1.0 U	1.0 U	1.0 U
Tetrachloroethene	Not Listed	47.7	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	Not Listed	112,600	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Metals (µg/L)									
Silver	0.9	Not Listed	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Arsenic	Not Listed	0.75	10	7.1	2.7	2	17	4.2	0.56 U
Barium	Not Listed	5,400	2000	17	14	12	12	15	12
Beryllium	Not Listed	10	4	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	2.3	2	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chromium (total)	41	27	100	5 U	5 U	5 U	5 U	5 U	5 U
Iron	Not Listed	Not Listed	300 *	3890	1260	2390	6510	1820	98
Mercury	Not Listed	0.273	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Manganese	Not Listed	Not Listed	50 *	1330	773	439	731	847	607
Nickel	355	39	100	6	7.5	8.1	5 U	7.6	6
Lead	34	1.3	15	1.1	0.7	3.2	0.38	0.28	0.50
Antimony	Not Listed	23,000	6	5 U	5 U	5 U	5 U	5 U	5 U
Selenium	Not Listed	12	50	5 U	5 U	5 U	5 U	5 U	5 U
Vanadium	Not Listed	Not Listed	--	5 U	5 U	5 U	5 U	5 U	5 U
Zinc	Not Listed	Not Listed	5,000 *	39	20 U	56	20 U	20 U	28

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			12-Jun-02		11-Jul-02				
Sample Location:	Daily Maximum	Average Monthly	MCL	Plant Influent[2]	Plant Effluent	EW-S1	EW-S2	EW-S3	EW-S4	EW-S5
Sample ID:				S2-061202	S9-061202	EWS1-071102	EWS2-071102	EWS3-071102	EWS4-071102	EWS5-071102
Parameter										
Volatile Organic Compounds (µg/L)										
Vinyl Chloride	Not Listed	2,816	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	Not Listed	17.2	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	Not Listed	Not Listed	--	3.0 U	3.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	Not Listed	8,600	5	1.0 U	1.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
1,2-Dichloroethene (total)	Not Listed	172	--	4.8	1.0 U	37	49 J[4]	45	5.0	1.2
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	Not Listed	500	5	0.3 U	0.3 U	1.0 U	14	1.0 U	1.0 U	1.0 U
Benzene	Not Listed	381	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	Not Listed	434	5	540	1.0 U	9300	35000	110	94	45
Toluene	Not Listed	2,500	1000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	Not Listed	47.7	5	1.0 U	1.0 U	1.0 U	2.3 J[4]	1.0 U	1.0 U	1.0 U
Chlorobenzene	Not Listed	112,600	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Metals (µg/L)										
Silver	0.9	Not Listed	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Arsenic	Not Listed	0.75	10	4.1	0.56 U	0.75	0.67 U	0.56 U	0.62	0.61
Barium	Not Listed	5,400	2000	15	11	13	26	13	12	12
Beryllium	Not Listed	10	4	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	2.3	2	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chromium (total)	41	27	100	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Iron	Not Listed	Not Listed	300 *	1870	50 U	51	85	497	51	377
Mercury	Not Listed	0.273	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Manganese	Not Listed	Not Listed	50 *	836	627	7.8	49	12	9.6	5 U
Nickel	355	39	100	8	5 U	5 U	5 U	5 U	5 U	5 U
Lead	34	1.3	15	0.49	0.11 U	8.9	1.2	8	2	0.55
Antimony	Not Listed	23,000	6	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Selenium	Not Listed	12	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Vanadium	Not Listed	Not Listed	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Zinc	Not Listed	Not Listed	5,000 *	20 U	20 U	37	28	20 U	20 U	20 U

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			11-Jul-02 (continued)					
Sample Location:	Daily Maximum	Average Monthly	MCL	EW-M1	EW-M2	EW-M3	G2	Plant Influent[2]	Plant Effluent
Sample ID:				EWM1-071102	EWM2-071102	EWM3-071102	EWG2-071102	S2-071102	S9-071102
Parameter									
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	Not Listed	17.2	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	Not Listed	8,600	5	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
1,2-Dichloroethene (total)	Not Listed	172	--	7.3	1.4	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	Not Listed	500	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzene	Not Listed	381	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	Not Listed	434	5	31	2.2	2.2	1.0 U	430	1.0 U
Toluene	Not Listed	2,500	1000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	Not Listed	47.7	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	Not Listed	112,600	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Metals (µg/L)									
Silver	0.9	Not Listed	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Arsenic	Not Listed	0.75	10	7.4	3.3	3.6	17	4.2	0.56 U
Barium	Not Listed	5,400	2000	18	13	12	12	14	12
Beryllium	Not Listed	10	4	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	2.3	2	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chromium (total)	41	27	100	5 U	5 U	5 U	5 U	5 U	5 U
Iron	Not Listed	Not Listed	300 *	3490	1850	2280	7090	1590	66
Mercury	Not Listed	0.273	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Manganese	Not Listed	Not Listed	50 *	1,290	703	630	727	730	531
Nickel	355	39	100	7.5	9.9	6	5.7	8.6	5 U
Lead	34	1.3	15	2.5	0.67	2.1	0.31	0.28	0.62
Antimony	Not Listed	23,000	6	5 U	5 U	5 U	5 U	5 U	5 U
Selenium	Not Listed	12	50	5 U	5 U	5 U	5 U	5 U	5 U
Vanadium	Not Listed	Not Listed	--	5 U	5 U	5 U	5 U	5 U	5 U
Zinc	Not Listed	Not Listed	5,000 *	20 U	37	25	20 U	20 U	20 U

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			21-Aug-02		17-Sep-02				
Sample Location:	Daily Maximum	Average Monthly	MCL	Plant Influent[2]	Plant Effluent	EW-S1	EW-S2	EW-S3	EW-S4	EW-S5
Sample ID:				S2-082102	S9-082102	EWS1-091702	EWS2-091702	EWS3-091702	EWS4-091702	EWS5-091702
Parameter										
Volatile Organic Compounds (µg/L)										
Vinyl Chloride	Not Listed	2,816	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	Not Listed	17.2	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	Not Listed	8,600	5	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
1,2-Dichloroethene (total)	Not Listed	172	--	3.7	1.0 U	50 J[8]	21 J[8]	33	4.8	1.0 U
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	Not Listed	500	5	1.0 U	1.0 U	6.2 J[9]	6.4	1.0 U	1.0 U	1.0 U
Benzene	Not Listed	381	5	9.8	8.7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	Not Listed	434	5	320	1.6	12000	16000	120	75	3.8
Toluene	Not Listed	2,500	1000	1.0 U	8.9	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	Not Listed	47.7	5	1.0 U	1.0 U	1.5 J[9]	2.3 J[4]	1.0 U	1.0 U	1.0 U
Chlorobenzene	Not Listed	112,600	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Metals (µg/L)										
Silver	0.9	Not Listed	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Arsenic	Not Listed	0.75	10	6.3	0.49	0.56 U	0.61	0.56 U	0.62	0.56 U
Barium	Not Listed	5,400	2000	15	12	13	25	8.1	11	9.8
Beryllium	Not Listed	10	4	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	2.3	2	5	0.5 U	0.5 U	0.5 U	0.5 U	0.89	0.5 U	0.5 U
Chromium (total)	41	27	100	5 UJ[7]	5 UJ[7]	5 U	5 U	5 U	5 U	5 U
Iron	Not Listed	Not Listed	300 *	2170	50 U	74	121	291	50 U	2160
Mercury	Not Listed	0.273	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Manganese	Not Listed	Not Listed	50 *	768	525	7.9	12	15	5 U	26 U
Nickel	355	39	100	8.2 J[7]	5 UJ[7]	5 U	5 U	5 U	5 U	5 U
Lead	34	1.3	15	0.4	0.32	2.5	1.2	4.6	2.7	2
Antimony	Not Listed	23,000	6	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Selenium	Not Listed	12	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Vanadium	Not Listed	Not Listed	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Zinc	Not Listed	Not Listed	5,000 *	20 U	22	30	20 U	32	26	38

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			17-Sep-02 (continued)					14-Oct-02	
Sample Location:	Daily Maximum	Average Monthly	MCL	EW-M1	EW-M2	EW-M3	Plant Influent[2]	Plant Effluent	Plant Influent[2]	Plant Effluent
Sample ID:				EWM1-091702	EWM2-091702	EWM3-091702	S2-091702	S9-091702	S2-101402	S9-101402
Parameter										
Volatile Organic Compounds (µg/L)										
Vinyl Chloride	Not Listed	2,816	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	Not Listed	17.2	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	Not Listed	8,600	5	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
1,2-Dichloroethene (total)	Not Listed	172	--	4.6	1.0 U	1.0 U	1.0 U	1.0 U	2.5 U	1.0 U
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	Not Listed	500	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzene	Not Listed	381	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	Not Listed	434	5	13	2.1	1.0 U	230	1.0 U	280	1.0 U
Toluene	Not Listed	2,500	1000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	Not Listed	47.7	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	Not Listed	112,600	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Metals (µg/L)										
Silver	0.9	Not Listed	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Arsenic	Not Listed	0.75	10	11	3	25	4.7	**0.79**	4.9	0.56 U
Barium	Not Listed	5,400	2000	17	13	15	15	17	14	11
Beryllium	Not Listed	10	4	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	2.3	2	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chromium (total)	41	27	100	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Iron	Not Listed	Not Listed	300 *	4510	1030	36,600	1730	160	1800	88
Mercury	Not Listed	0.273	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Manganese	Not Listed	Not Listed	50 *	1360	656	360	856	957	796	518
Nickel	355	39	100	6.8	7.5	7.5	9.2	8.3	15	5 U
Lead	34	1.3	15	0.56	0.54	2.1	0.66	0.38	0.96	0.11 U
Antimony	Not Listed	23,000	6	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Selenium	Not Listed	12	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Vanadium	Not Listed	Not Listed	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Zinc	Not Listed	Not Listed	5,000 *	80	20 U	114	27	23	20 U	25

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			14-Nov-02		9-Dec-02		14-Jan-03		
Sample Location:	Daily Maximum	Average Monthly	MCL	Plant Influent[2]	Plant Effluent	Plant Influent[2]	Plant Effluent	EW-S1		EW-S2
Sample ID:				S2-111402	S9-111402	S2-120902	S9-120902	EWS1-011403		EWS2-011403
Parameter										
Volatile Organic Compounds (µg/L)										
Vinyl Chloride	Not Listed	2,816	2	1.0 U	1.0 U	2.0 U	1.0 U	100	U	50 U
1,1-Dichloroethene	Not Listed	17.2	7	1.0 U	1.0 U	2.0 U	1.0 U	100	U	50 U
Acetone	Not Listed	Not Listed	--	5.0 U	5.0 U	10 U	5.0 U	500	U	250 U
2-Butanone	Not Listed	Not Listed	--	3.0 U	3.0 U	6.0 U	3.0 U	500	U	250 U
Methylene Chloride	Not Listed	8,600	5	1.0 U	1.0 U	2.0 U	1.0 U	300	U	150 U
1,2-Dichloroethene (total)	Not Listed	172	--	2.9	1.0 U	2.8	1.0 U	100	U	50 U
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 U	1.0 U	2.0 U	1.0 U	100	U	50 U
1,1,1-Trichloroethane	Not Listed	500	5	0.3 U	0.3 U	0.5 U	0.3 U	100	U	50 U
Benzene	Not Listed	381	5	1.0 U	1.0 U	2.0 U	1.0 U	200	U	100 U
Trichloroethene	Not Listed	434	5	250	1.0 U	240	1.0 U	9800	D	9800 D
Toluene	Not Listed	2,500	1000	1.0 U	1.0 U	2.0 U	1.0 U	100	U	50 U
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 U	1.0 U	2.0 U	1.0 U	100	U	50 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 U	1.0 U	2.0 U	1.0 U	100	U	50 U
Tetrachloroethene	Not Listed	47.7	5	1.0 U	1.0 U	2.0 U	1.0 U	100	U	50 U
Chlorobenzene	Not Listed	112,600	100	1.0 U	1.0 U	2.0 U	1.0 U	100	U	50 U
Metals (µg/L)										
Silver	0.9	Not Listed	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	U	0.5 U
Arsenic	Not Listed	0.75	10	5.6	0.57	6.3	0.56 U	0.56 U	U	1.00
Barium	Not Listed	5,400	2000	16	13	14	11	10		23
Beryllium	Not Listed	10	4	5 U	5 U	5 U	5 U	5 U	U	5 U
Cadmium	2.3	2	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	U	0.5 U
Chromium (total)	41	27	100	5 U	5 U	5 U	5 U	5 U	U	5 U
Iron	Not Listed	Not Listed	300 *	2180	50 U	1770	63	50 U		754
Mercury	Not Listed	0.273	2	0.2	**0.35**	0.2 U	0.2 U	0.2 U	U	0.2 U
Manganese	Not Listed	Not Listed	50 *	877	462	769	412	6		12
Nickel	355	39	100	9.5	5 U	8.6	5 U	5 U	U	5 U
Lead	34	1.3	15	0.45	0.11	2.4	0.18	4.00		2.30
Antimony	Not Listed	23,000	6	5 U	5 U	5 U	5 U	5 U	U	5 U
Selenium	Not Listed	12	50	5 U	5 U	5 U	5 U	5 U	U	5 U
Vanadium	Not Listed	Not Listed	--	5 U	5 U	5 U	5 U	5 U	U	5 U
Zinc	Not Listed	Not Listed	5,000 *	20 U	39 J[10]	20 U	20 U	20 U	U	32

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			14-Jan-03 (continued)						
Sample Location:	Daily Maximum	Average Monthly	MCL	EW-S3	EW-S4	EW-S5	EW-M1	EW-M2	EW-M3	EW-G2
Sample ID:				EWS3-011403	EWS4-011403	EWS5-011403	EWM1-011403	EWM2-011403	EWM3-011403	EWG2-011403
Parameter										
Volatile Organic Compounds (µg/L)										
Vinyl Chloride	Not Listed	2,816	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	Not Listed	17.2	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	Not Listed	Not Listed	--	5.0 U	5.0 U	12	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	Not Listed	8,600	5	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
1,2-Dichloroethene (total)	Not Listed	172	--	40	3.0	1.0 U	3.8	1.0 U	28	1.0 U
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	Not Listed	500	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzene	Not Listed	381	5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Trichloroethene	Not Listed	434	5	110	56	16	19	2.3	17	1.0 U
Toluene	Not Listed	2,500	1000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	Not Listed	47.7	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	Not Listed	112,600	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Metals (µg/L)										
Silver	0.9	Not Listed	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Arsenic	Not Listed	0.75	10	0.56 U	0.71	0.71	10	3.20	15	21
Barium	Not Listed	5,400	2000	7	12	12	19	13	9	12
Beryllium	Not Listed	10	4	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	2.3	2	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chromium (total)	41	27	100	5 U	5 U	10	5 U	5 U	5 U	5 U
Iron	Not Listed	Not Listed	300 *	185	51	6060	4100	1380	38300	7260
Mercury	Not Listed	0.273	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Manganese	Not Listed	Not Listed	50 *	11	5 U	12	1460	656	131	1340
Nickel	355	39	100	5 U	6	11	10	7	5 U	8
Lead	34	1.3	15	3.30	1.70	4.40	0.56 U	0.65	5.40	0.56 U
Antimony	Not Listed	23,000	6	5 U	5 U	5 U	5 U	5 U	5.15	5 U
Selenium	Not Listed	12	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Vanadium	Not Listed	Not Listed	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Zinc	Not Listed	Not Listed	5,000 *	20 U	47	85	23	23	123	20 U

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			14-Jan-03 (continued)		20-Feb-03			17-Mar-03	
Sample Location:	Daily Maximum	Average Monthly	MCL	Plant Influent[2]	Plant Effluent	Plant Influent[2]	Plant Influent[2]	Plant Effluent	Plant Influent[2]	Plant Effluent
Sample ID:				S2--011403	S9-011403	S2-022003-01	S2-022003-21	S9-022003	S2-031703	S9-031703
Parameter							(Duplicate)			
Volatile Organic Compounds (µg/L)										
Vinyl Chloride	Not Listed	2,816	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	Not Listed	17.2	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	Not Listed	Not Listed	--	5.0 U	5.0 U	3.0 U	3.0 U	3.0 U	5.0 U	5.0 U
Methylene Chloride	Not Listed	8,600	5	3.0 U	3.0 U	1.0 U	1.0 U	1.0 U	3.0 U	3.0 U
1,2-Dichloroethene (total)	Not Listed	172	--	4.2	1.0 U	4.7	4.6	1.0 U	4.7	1.0 U
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	Not Listed	500	5	1.0 U	1.0 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Benzene	Not Listed	381	5	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	Not Listed	434	5	330 D	1.0 U	230 D	240 D	1.0 U	290 D	4.0 U
Toluene	Not Listed	2,500	1000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	Not Listed	47.7	5	1.0 U	1.0 U	1.0 U	5.8 D[1]	1.0 U	1.0 U	1.0 U
Chlorobenzene	Not Listed	112,600	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Metals (µg/L)										
Silver	0.9	Not Listed	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Arsenic	Not Listed	0.75	10	4.80	0.56 U	5.6	5	0.66	4.3	0.40
Barium	Not Listed	5,400	2000	16	11	15	15	10	15	9
Beryllium	Not Listed	10	4	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	2.3	2	5	0.5 U	0.5 U	0.5 U	0.6	0.5 U	0.5 U	0.5 U
Chromium (total)	41	27	100	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Iron	Not Listed	Not Listed	300 *	1840	153	1950	2170	50 U	1760	50 U
Mercury	Not Listed	0.273	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Manganese	Not Listed	Not Listed	50 *	834	273	735	767	181	729	51
Nickel	355	39	100	11	5 U	6	6	5 U	8	5 U
Lead	34	1.3	15	1.20	**1.50**	0.67 J[11]	0.46 J[11]	0.11 U	0.30	0.22 U
Antimony	Not Listed	23,000	6	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Selenium	Not Listed	12	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Vanadium	Not Listed	Not Listed	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Zinc	Not Listed	Not Listed	5,000 *	24	23	20 U	20 U	29	20 U	21

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			23-Apr-03						
Sample Location:	Daily Maximum	Average Monthly	MCL	EW-S1	EW-S2	EW-S3	EW-S4	EW-S5	EW-M1	EW-M2
Sample ID:				EWS1-042303	EWS2-042303	EWS3-042303	EWS4-042303	EWS5-042303	EWM1-042303	EWM2-042303
Parameter										
Volatile Organic Compounds (µg/L)										
Vinyl Chloride	Not Listed	2,816	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	Not Listed	17.2	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	Not Listed	8,600	5	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
1,2-Dichloroethene (total)	Not Listed	172	--	291.2 D	180	75	3.1	3.0	3.4	1.0 U
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	Not Listed	500	5	4.9	4.1	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Benzene	Not Listed	381	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	Not Listed	434	5	11,000 D	9700 D	110	56	51	13	2.2
Toluene	Not Listed	2,500	1000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	Not Listed	47.7	5	1.7 J[12]	2.0 J[12]	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	Not Listed	112,600	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Metals (µg/L)										
Silver	0.9	Not Listed	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Arsenic	Not Listed	0.75	10	0.56 U	0.56 U	0.56 U	0.56 U	0.56 U	8.6	2.3
Barium	Not Listed	5,400	2000	14	56	8	12	12	18	10
Beryllium	Not Listed	10	4	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	2.3	2	5	0.5 U	0.53	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chromium (total)	41	27	100	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Iron	Not Listed	Not Listed	300 *	238	966	915	50 U	1420	4720	1570
Mercury	Not Listed	0.273	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Manganese	Not Listed	Not Listed	50 *	35	167	12	5 U	7	1370	545
Nickel	355	39	100	5 U	5	5 U	5 U	5 U	12	6
Lead	34	1.3	15	7.3	10	3.3	1.3	2.1	1.1	1.3
Antimony	Not Listed	23,000	6	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Selenium	Not Listed	12	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Vanadium	Not Listed	Not Listed	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Zinc	Not Listed	Not Listed	5,000 *	20	105	20 U	27	35	30	20 U

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			23-Apr-03				6-May-03	
Sample Location:	Daily Maximum	Average Monthly	MCL	EW-M3	EW-G2	Plant Influent[2]	Plant Effluent	Plant Influent[2]	Plant Effluent
Sample ID:				EWM3-042303	EWG2-042303	S2--042303	S9-042303	S2-050603-01	S9-050603-01
Parameter									
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	Not Listed	17.2	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	Not Listed	8,600	5	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
1,2-Dichloroethene (total)	Not Listed	172	--	1.0 U	1.0 U	15	1.0 U	17	1.0 U
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	Not Listed	500	5	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Benzene	Not Listed	381	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	Not Listed	434	5	3.0	2.0 U	280 D	3.6	370 D	1.0 U
Toluene	Not Listed	2,500	1000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	Not Listed	47.7	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	Not Listed	112,600	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Metals (µg/L)									
Silver	0.9	Not Listed	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Arsenic	Not Listed	0.75	10	42	20	3.2	0.56 U	3.6	0.5 U
Barium	Not Listed	5,400	2000	12	17	14	9	14	8
Beryllium	Not Listed	10	4	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	2.3	2	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chromium (total)	41	27	100	5 U	5 U	5 U	5 U	5 U	5 U
Iron	Not Listed	Not Listed	300 *	48100	8230	1530	72	1850	50 U
Mercury	Not Listed	0.273	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Manganese	Not Listed	Not Listed	50 *	419	1530	662	77	639	27
Nickel	355	39	100	6	6	11	15	12	5 U
Lead	34	1.3	15	8.7	0.74	0.56 U	0.76	0.5 U	0.5 U
Antimony	Not Listed	23,000	6	5 U	5 U	5 U	5 U	5 U	5 U
Selenium	Not Listed	12	50	5 U	5 U	5 U	5 U	5 U	5 U
Vanadium	Not Listed	Not Listed	--	6	5 U	5 U	5 U	5 U	5 U
Zinc	Not Listed	Not Listed	5,000 *	29	29	29	20 U	39	27

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			17-Jun-03		10-Jul-03				
Sample Location:	Daily Maximum	Average Monthly	MCL	Plant Influent[2]	Plant Effluent	EW-S1	EW-S2	EW-S3	EW-S4	EW-S5
Sample ID:				S2-061703-01	S9-061703-01	EWS1-071003	EWS2-071003	EWS3-071003	EWS4-071003	EWS5-042303
Parameter										
Volatile Organic Compounds (µg/L)										
Vinyl Chloride	Not Listed	2,816	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	Not Listed	17.2	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	Not Listed	Not Listed	--	25 U	25 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	Not Listed	8,600	5	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
1,2-Dichloroethene (total)	Not Listed	172	--	6.8	1.0 U	170	200	40	1.0 U	1.0 U
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	Not Listed	500	5	0.3 U	0.3 U	2.0	4.6	1.0 U	1.0 U	1.0 U
Benzene	Not Listed	381	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	Not Listed	434	5	150	3.0 U	2200 D	11000 D	120	42	18
Toluene	Not Listed	2,500	1000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	Not Listed	47.7	5	1.0 U	1.0 U	1.0	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	Not Listed	112,600	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Metals (µg/L)										
Silver	0.9	Not Listed	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Arsenic	Not Listed	0.75	10	4.6	**0.79**	0.5 U	0.64	0.5 U	0.5 U	0.5 U
Barium	Not Listed	5,400	2000	15	10	13	42	11	13	11
Beryllium	Not Listed	10	4	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	2.3	2	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chromium (total)	41	27	100	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Iron	Not Listed	Not Listed	300 *	1710	84	497	173	139	50 U	558
Mercury	Not Listed	0.273	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Manganese	Not Listed	Not Listed	50 *	701	31	9	41	12	4	28
Nickel	355	39	100	11	7	13	5 U	5 U	8	7
Lead	34	1.3	15	0.88	0.5 U	5 U	5 U	5.8	21	5 U
Antimony	Not Listed	23,000	6	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Selenium	Not Listed	12	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Vanadium	Not Listed	Not Listed	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Zinc	Not Listed	Not Listed	5,000 *	20 U	20	45	31	20	21	20 U

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			10-Jul-03 (continued)					
Sample Location:	Daily Maximum	Average Monthly	MCL	EW-M1	EW-M2	EW-M3	EW-G2	Plant Influent[2]	Plant Effluent
Sample ID:				EWM1-071003	EWM2-071003	EWM3-071003	EWG2-042303	S2--071003	S9-071003
Parameter									
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	Not Listed	17.2	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	Not Listed	8,600	5	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
1,2-Dichloroethene (total)	Not Listed	172	--	1.0 U	4.7	1.0 U	1.0 U	4.9	1.0 U
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	Not Listed	500	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzene	Not Listed	381	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	Not Listed	434	5	13	2.1	4.1	1.0 U	160	2.0
Toluene	Not Listed	2,500	1000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	Not Listed	47.7	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	Not Listed	112,600	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Metals (µg/L)									
Silver	0.9	Not Listed	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Arsenic	Not Listed	0.75	10	12	2.3	7.2	24	4.9	0.5 U
Barium	Not Listed	5,400	2000	18	11	9	11	17	9
Beryllium	Not Listed	10	4	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	2.3	2	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chromium (total)	41	27	100	5 U	5 U	5 U	5 U	5 U	5 U
Iron	Not Listed	Not Listed	300 *	5030	1220	6070	7350	2070	50
Mercury	Not Listed	0.273	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Manganese	Not Listed	Not Listed	50 *	1160	473	219	824	686	48
Nickel	355	39	100	7	6	11	9	10	5 U
Lead	34	1.3	15	5 U	5 U	5 U	5 U	5 U	5 U
Antimony	Not Listed	23,000	6	5 U	5 U	5 U	5 U	5 U	5 U
Selenium	Not Listed	12	50	5 U	5 U	5 U	5 U	5 U	5 U
Vanadium	Not Listed	Not Listed	--	5 U	5 U	5 U	5 U	5 U	5 U
Zinc	Not Listed	Not Listed	5,000 *	20 U	20 U	120	25	20	20 U

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			5-Aug-03		2-Sep-03		2-Oct-03		
Sample Location:	Daily Maximum	Average Monthly	MCL	Plant Influent[2]	Plant Effluent	Plant Influent[2]	Plant Effluent	EW-S1	EW-S2	EW-S3
Sample ID:				S2-080503-01	S9-080503-01	S2-090203-01	S9-090203-01	EWS1-100203-01	EWS2-100203-01	EWS3-100203-01
Parameter										
Volatile Organic Compounds (µg/L)										
Vinyl Chloride	Not Listed	2,816	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	Not Listed	17.2	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	Not Listed	8,600	5	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
1,2-Dichloroethene (total)	Not Listed	172	--	3.6	1.0 U	3.5	1.0 U	100	54	28
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	Not Listed	500	5	1.0 U	1.0 U	1.0 U	1.0 U	3.4	6.5	1.0 U
Benzene	Not Listed	381	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	Not Listed	434	5	170	1.0 U	220	1.0 U	7100 D	18000 D	100
Toluene	Not Listed	2,500	1000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	Not Listed	47.7	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	Not Listed	112,600	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Metals (µg/L)										
Silver	0.9	Not Listed	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Arsenic	Not Listed	0.75	10	4.9	**0.96**	5.50	0.4	0.48	1.2	0.46
Barium	Not Listed	5,400	2000	15	9	15	9.00	14	47	9
Beryllium	Not Listed	10	4	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	2.3	2	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chromium (total)	41	27	100	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Iron	Not Listed	Not Listed	300 *	1880	60	1820	50 U	192	3450	461
Mercury	Not Listed	0.273	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Manganese	Not Listed	Not Listed	50 *	675	44	685	15	11	63	17
Nickel	355	39	100	10	5 U	11	5 U	5 U	5 U	5 U
Lead	34	1.3	15	0.72	0.5 U	0.5	0.1 U	18	1	6.2
Antimony	Not Listed	23,000	6	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Selenium	Not Listed	12	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Vanadium	Not Listed	Not Listed	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Zinc	Not Listed	Not Listed	5,000 *	20 U	27	20 U	32	20	31	20 U

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			2-Oct-03 (continued)						
Sample Location:	Daily Maximum	Average Monthly	MCL	EW-S4	EW-S5	EW-M1	EW-M1	EW-M2	EW-M3	EW-G2
Sample ID:				EWS4-100203-01	EWS5-100203-01	EWM1-100203-	EWM1-100203- (Duplicate)	EWM2-100203-01	EWM3-100203-01	EWG2-100203-01
Parameter										
Volatile Organic Compounds (µg/L)										
Vinyl Chloride	Not Listed	2,816	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	Not Listed	17.2	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	Not Listed	8,600	5	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
1,2-Dichloroethene (total)	Not Listed	172	--	3.5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	Not Listed	500	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzene	Not Listed	381	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	Not Listed	434	5	35	24	8.2	8.2	2.0 U	2.0 U	2.0 U
Toluene	Not Listed	2,500	1000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 `	1.0 U	1.0 U
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	Not Listed	47.7	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	Not Listed	112,600	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Metals (µg/L)										
Silver	0.9	Not Listed	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Arsenic	Not Listed	0.75	10	0.57	0.53	12	12	5.5	3.3	24
Barium	Not Listed	5,400	2000	12	16	21	19	12	12	23
Beryllium	Not Listed	10	4	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	2.3	2	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chromium (total)	41	27	100	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Iron	Not Listed	Not Listed	300 *	50 U	669	4170	4250	1160	1900	11300
Mercury	Not Listed	0.273	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Manganese	Not Listed	Not Listed	50 *	39	5 U	1210	1180	549	524	1590
Nickel	355	39	100	5	6	10	10	7	7	7
Lead	34	1.3	15	7.2	4.3	1.4	0.34	0.49	0.56	0.65
Antimony	Not Listed	23,000	6	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Selenium	Not Listed	12	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Vanadium	Not Listed	Not Listed	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Zinc	Not Listed	Not Listed	5,000 *	20 U	32	20 U	20 U	20 U	194	20

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			2-Oct-03 (continued)		19-Jan-04				
Sample Location:	Daily Maximum	Average Monthly	MCL	Plant Influent[2]	Plant Effluent	EW-S1	EW-S2	EW-S3	EW-S4	EW-S5
Sample ID:				S2--100203-01	S9-100203-01	EWS1-011904	EWS2-011904	EWS3-011904	EWS4-011904	EWS5-011904
Parameter										
Volatile Organic Compounds (µg/L)										
Vinyl Chloride	Not Listed	2,816	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	Not Listed	17.2	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	Not Listed	8,600	5	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
1,2-Dichloroethene (total)	Not Listed	172	--	3.7	1.0 U	160	170 J[4]	34	1.0 U	1.0 U
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	Not Listed	500	5	1.0 U	1.0 U	4.5	13 J[4]	1.0 U	1.0 U	1.0 U
Benzene	Not Listed	381	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	Not Listed	434	5	250 D	2.0 U	9100 D	29000 D	94	35	26
Toluene	Not Listed	2,500	1000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	4.0 J[4]	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	Not Listed	47.7	5	1.0 U	1.0 U	1.9	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	Not Listed	112,600	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Metals (µg/L)										
Silver	0.9	Not Listed	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Arsenic	Not Listed	0.75	10	5.7	0.37	0.43	0.78	0.54	0.53	0.61
Barium	Not Listed	5,400	2000	15	8	12	35	11	13	18
Beryllium	Not Listed	10	4	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	2.3	2	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chromium (total)	41	27	100	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Iron	Not Listed	Not Listed	300 *	1770	75	335	157	1490	50 U	295
Mercury	Not Listed	0.273	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Manganese	Not Listed	Not Listed	50 *	667	10	9	13	16	8	5 U
Nickel	355	39	100	11	5 U	5 U	5 U	5 U	8	5
Lead	34	1.3	15	1.5	0.28	4.8	1.4	4.4	13	11
Antimony	Not Listed	23,000	6	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Selenium	Not Listed	12	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Vanadium	Not Listed	Not Listed	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Zinc	Not Listed	Not Listed	5,000 *	20	20 U	25	20 U	20 U	20 U	20 U

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			19-Jan-04					
Sample Location:	Daily Maximum	Average Monthly	MCL	EW-M1	EW-M2	EW-M3	G2	Plant Influent[2]	Plant Effluent
Sample ID:				EWM1-011904	EWM2-011904	EWM3-011904	G2-011904	S2-011904	S9-011904
Parameter									
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	Not Listed	17.2	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	Not Listed	8,600	5	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
1,2-Dichloroethene (total)	Not Listed	172	--	1.0 U	1.0 U	1.0 U	1.0 U	5.5	1.0 U
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	Not Listed	500	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzene	Not Listed	381	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	Not Listed	434	5	6.2	1.0 U	1.0 U	1.0 U	350	1.0 U
Toluene	Not Listed	2,500	1000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	Not Listed	47.7	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	Not Listed	112,600	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Metals (µg/L)									
Silver	0.9	Not Listed	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Arsenic	Not Listed	0.75	10	12	6	3.6	24	4.2	0.45
Barium	Not Listed	5,400	2000	19	9	10	22	13	10
Beryllium	Not Listed	10	4	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	2.3	2	5	0.5 U	0.5 U	0.5 U	0.5 U	0.52	0.5 U
Chromium (total)	41	27	100	5 U	5 U	5 U	5 U	5 U	5 U
Iron	Not Listed	Not Listed	300 *	9020	1870	1410	12400	1350	59
Mercury	Not Listed	0.273	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Manganese	Not Listed	Not Listed	50 *	1170	481	444	1180	526	91
Nickel	355	39	100	11	6	5	8	9	5 U
Lead	34	1.3	15	0.22	0.85	0.65	3.8	0.51	0.1 U
Antimony	Not Listed	23,000	6	5 U	5 U	5 U	5 U	5 U	5 U
Selenium	Not Listed	12	50	5 U	5 U	5 U	5 U	5 U	5 U
Vanadium	Not Listed	Not Listed	--	5 U	5 U	5 U	5 U	5 U	5 U
Zinc	Not Listed	Not Listed	5,000 *	20 U	20 U	28	25	64	32

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			2-Feb-04		
Sample Location:	Daily Maximum	Average Monthly	MCL	Plant Influent[2]	Plant Influent[2]	Plant Effluent
Sample ID:				S2-020204-01	S2-020204-21	S9-11904
Parameter					(Duplicate)	
Volatile Organic Compounds (µg/L)						
Vinyl Chloride	Not Listed	2,816	2	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	Not Listed	17.2	7	1.0 U	1.0 U	1.0 U
Acetone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U
2-Butanone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U
Methylene Chloride	Not Listed	8,600	5	3.0 U	3.0 U	3.0 U
1,2-Dichloroethene (total)	Not Listed	172	--	5.5	5.9	1.0 U
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	Not Listed	500	5	1.0 U	1.0 U	1.0 U
Benzene	Not Listed	381	5	1.0 U	1.0 U	12 U[2]
Trichloroethene	Not Listed	434	5	380 D	340 D	1.0 U
Toluene	Not Listed	2,500	1000	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U
Tetrachloroethene	Not Listed	47.7	5	1.0 U	1.0 U	1.0 U
Chlorobenzene	Not Listed	112,600	100	1.0 U	1.0 U	1.0 U
Metals (µg/L)						
Silver	0.9	Not Listed	100	0.5 U	0.5 U	0.5 U
Arsenic	Not Listed	0.75	10	3.3	3.3	0.36
Barium	Not Listed	5,400	2000	12	12	7
Beryllium	Not Listed	10	4	5 U	5 U	5 U
Cadmium	2.3	2	5	2.68	0.5 U	0.5 U
Chromium (total)	41	27	100	6	5 U	5 U
Iron	Not Listed	Not Listed	300 *	1410 J[14]	1120 J[14]	524 J[14]
Mercury	Not Listed	0.273	2	0.2 U	0.2 U	0.2 U
Manganese	Not Listed	Not Listed	50 *	464	478	32
Nickel	355	39	100	10	9	5 U
Lead	34	1.3	15	0.43	0.39	0.2
Antimony	Not Listed	23,000	6	5 U	5 U	5 U
Selenium	Not Listed	12	50	5 U	5 U	5 U
Vanadium	Not Listed	Not Listed	--	5 U	5 U	5 U
Zinc	Not Listed	Not Listed	5,000 *	85	100	25

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			16-Mar-04					
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	EW-S1	EW-S2	EW-S3	EW-S4	EW-S5	EW-M1
Sample ID:				EWS1-031604	EWS2-031604	EWS3-031604	EWS4-031604	EWS5-031604	EWM1-031604-01
Parameter									
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	Not Listed	17.2	7	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	Not Listed	Not Listed	--	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	Not Listed	Not Listed	--	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	Not Listed	8,600	5	3.0 U	3.0 UJ	3.0 U	3.0 U	3.0 U	3.0 U
1,2-Dichloroethene (total)	Not Listed	172	--	210 E	98 J[14]	36	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	Not Listed	500	5	4.2 J[15]	5.0 J[15]	1.0 U	1.0 U	1.0 U	1.0 U
Benzene	Not Listed	381	5	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	Not Listed	434	5	10000 J[16]	18000 J[16]	89 J[16]	23 J[16]	29 J[16]	12.0 J[16]
Toluene	Not Listed	2,500	1000	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	Not Listed	47.7	5	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	Not Listed	112,600	100	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U
Metals (µg/L)									
Silver	0.9	Not Listed	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Arsenic	Not Listed	0.75	10	0.66	1.3	0.95	0.73	0.68	13
Barium	Not Listed	5,400	2000	12	34	11	19	11	19
Beryllium	Not Listed	10	4	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	2.3	2	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chromium (total)	41	27	100	5 U	5 U	5 U	5 U	5 U	5 U
Iron	Not Listed	Not Listed	300 *	306	209	2470	917	50 U	5430
Mercury	Not Listed	0.273	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Manganese	Not Listed	Not Listed	50 *	5 U	7	19	5 U	5 U	1150
Nickel	355	39	100	5 U	5 U	5 U	5 U	5 U	7
Lead	34	1.3	15	2.2	0.96	5.4	4.9	11	0.4
Antimony	Not Listed	23,000	6	5 U	5 U	5 U	5 U	5 U	5 U
Selenium	Not Listed	12	50	5 U	5 U	5 U	5 U	5 U	5 U
Vanadium	Not Listed	Not Listed	--	5 U	5 U	5 U	5 U	5 U	5 U
Zinc	Not Listed	Not Listed	5,000 *	20 U	20 U	20 U	20 U	20 U	20 U

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			16-Mar-04 (continued)					
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	EW-M1	EW-M2	EW-M3	G2	Plant Influent[2]	Plant Effluent
Sample ID:				EWM1-031604-21	EWM2-031604	EWM3-031604	EWG2-031604	S2-031604	S9-031604
Parameter				(Duplicate)					
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	Not Listed	17.2	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	Not Listed	8,600	5	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
1,2-Dichloroethene (total)	Not Listed	172	--	1.0 U	1.0 U	21	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	Not Listed	500	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzene	Not Listed	381	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	Not Listed	434	5	7.5 J[16]	1.0 U	20 J[16]	1.0 U	250 J[16]	1.0 U
Toluene	Not Listed	2,500	1000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	Not Listed	47.7	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	Not Listed	112,600	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Metals (µg/L)									
Silver	0.9	Not Listed	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Arsenic	Not Listed	0.75	10	13	4.1	2.1	24	4.6	0.62
Barium	Not Listed	5,400	2000	19	18	11	21	14	9
Beryllium	Not Listed	10	4	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	2.3	2	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Chromium (total)	41	27	100	5 U	5 U	5 U	5 U	5 U	5 U
Iron	Not Listed	Not Listed	300 *	5910	967	1990	11300	1810	110
Mercury	Not Listed	0.273	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Manganese	Not Listed	Not Listed	50 *	1140	74	505	1020	575	63
Nickel	355	39	100	6	5 U	6	5	5	10
Lead	34	1.3	15	0.6	0.52	0.27	1.8	0.34	**1.6**
Antimony	Not Listed	23,000	6	5 U	5 U	5 U	5 U	5 U	5 U
Selenium	Not Listed	12	50	5 U	5 U	5 U	5 U	5 U	5 U
Vanadium	Not Listed	Not Listed	--	5 U	5 U	5 U	5 U	5 U	5 U
Zinc	Not Listed	Not Listed	5,000 *	20 U	35	20 U	20 U	45	20 U

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			23-Apr-04		19-May-04		1-Jun-04	
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	Plant Influent[2]	Plant Effluent	Plant Influent[2]	Plant Effluent	Plant Influent[2]	Plant Effluent
Sample ID:				S2-042304	S9-042304	S2-051904	S9-051904	S2-060104	S9-060102
Parameter									
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	1.0 U	1.0 U	1.0 UJ[17]	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	Not Listed	17.2	7	1.0 U	1.0 U	1.0 UJ[17]	1.0 U	1.0 U	1.0 U
Acetone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 UJ[17]	5.0 U	5.0 U	5.0 U
2-Butanone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 UJ[17]	5.0 U	5.0 U	5.0 U
Methylene Chloride	Not Listed	8,600	5	3.0 U	3.0 U	3.0 UJ[17]	3.0 U	3.0 U	3.0 U
1,2-Dichloroethene (total)	Not Listed	172	--	11.0	1.0 U	3.9 J[17]	1.0 U	10	1.0 U
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 U	1.0 U	1.0 UJ[17]	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	Not Listed	500	5	1.0 U	1.0 U	1.0 UJ[17]	1.0 U	1.0 U	1.0 U
Benzene	Not Listed	381	5	1.0 U	1.0 U	1.0 UJ[17]	1.0 U	1.0 U	1.0 U
Trichloroethene	Not Listed	434	5	480 D	1.0 U	20 J[17]	1.0 U	230 D	1.0 U
Toluene	Not Listed	2,500	1000	1.0 U	1.0 U	1.0 UJ[17]	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 UJ[17]	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 UJ[17]	1.0 U	1.0 U	1.0 U
Tetrachloroethene	Not Listed	47.7	5	1.0 U	1.0 U	1.0 UJ[17]	1.0 U	1.0 U	1.0 U
Chlorobenzene	Not Listed	112,600	100	1.0 U	1.0 U	1.0 UJ[17]	1.0 U	1.0 U	1.0 U
Metals (µg/L)									
Silver	0.9	Not Listed	100	0.5 U	0.5 U	0.5 UJ[18]	0.5 UJ[18]	0.5 U	0.5 U
Arsenic	Not Listed	0.75	10	4.0	0.36	3.8	0.28	3.50	0.22
Barium	Not Listed	5,400	2000	14	8	14	9	15	10
Beryllium	Not Listed	10	4	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	2.3	2	5	0.5 U	1.3	0.5 U	0.7	0.5 U	0.5 U
Chromium (total)	41	27	100	5 U	5 U	5 U	5 U	5 U	5 U
Iron	Not Listed	Not Listed	300 *	2300	78	1700	50 U	1370	52
Mercury	Not Listed	0.273	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Manganese	Not Listed	Not Listed	50 *	586	8	578	6	561	5 U
Nickel	355	39	100	25	5 U	12	5 U	6	5 U
Lead	34	1.3	15	1.0	0.14	2.9	0.11	0.32	0.20 U
Antimony	Not Listed	23,000	6	5 U	5 U	5 U	5 U	5 U	5 U
Selenium	Not Listed	12	50	7740	5 U	5 U	5 U	5 U	5 U
Vanadium	Not Listed	Not Listed	--	5 U	5 U	5 U	5 U	5 U	5 U
Zinc	Not Listed	Not Listed	5,000 *	362	22	85	20 U	46	29

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			15-Jul-04					
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	EW-S1	EW-S2	EW-S3	EW-S4	EW-S5	EW-M1
Sample ID:				EWS1-071504	EWS2-071504	EWS3-071504	EWS4-071504	EWS5-071504	EWM1-071504
Parameter									
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	Not Listed	17.2	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	Not Listed	8,600	5	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
1,2-Dichloroethene (total)	Not Listed	172	--	290 D	150	75	3.5	1.0 U	1.0 U
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	Not Listed	500	5	3.7	3.6	1.0 U	1.0 U	1.0 U	1.0 U
Benzene	Not Listed	381	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	Not Listed	434	5	4500 D	8100 D	84	43	17	11
Toluene	Not Listed	2,500	1000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	Not Listed	47.7	5	1.9	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	Not Listed	112,600	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Metals (µg/L)									
Silver	0.9	Not Listed	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Arsenic	Not Listed	0.75	10	0.26	0.48	0.31	0.41	0.45	9.90
Barium	Not Listed	5,400	2000	14	43	14	18	18	19
Beryllium	Not Listed	10	4	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	2.3	2	5	0.66	2.89	0.5 U	0.5 U	0.5 U	0.5
Chromium (total)	41	27	100	5 U	5 U	5 U	5 U	5 U	5 U
Iron	Not Listed	Not Listed	300 *	330	381	516	72	203	5000
Mercury	Not Listed	0.273	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Manganese	Not Listed	Not Listed	50 *	6	23	11	7	5 U	1180
Nickel	355	39	100	5 U	5 U	5 U	5 U	5	5
Lead	34	1.3	15	17	1	6.40	19	7.60	0.25
Antimony	Not Listed	23,000	6	5 U	5 U	5 U	5 U	5 U	5 U
Selenium	Not Listed	12	50	5 U	5 U	5 U	5 U	5 U	5 U
Vanadium	Not Listed	Not Listed	--	5 U	5 U	5 U	5 U	5 U	5 U
Zinc	Not Listed	Not Listed	5,000 *	24	28	20 U	63	40	20 U

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			15-Jul-04 (continued)					
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	EW-M2	EW-M3	EW-M3	G2	Plant Influent[2]	Plant Effluent
Sample ID:				EWM2-071504	EWM3-071504	EWM3-071504-21	G2-071504	S2-071504	S9-011904
Parameter						(Duplicate)			
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	Not Listed	17.2	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	Not Listed	8,600	5	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
1,2-Dichloroethene (total)	Not Listed	172	--	1.0 U	12	14	1.0 U	7.4	1.0 U
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	Not Listed	500	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzene	Not Listed	381	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	Not Listed	434	5	1.0 U	14	15	1.0 U	160	1.0 U
Toluene	Not Listed	2,500	1000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	Not Listed	47.7	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	Not Listed	112,600	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Metals (µg/L)									
Silver	0.9	Not Listed	100	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Arsenic	Not Listed	0.75	10	2.60	0.39	0.39	20	3.80	0.23
Barium	Not Listed	5,400	2000	11	19	18	17	16	10
Beryllium	Not Listed	10	4	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	2.3	2	5	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.5 U
Chromium (total)	41	27	100	5 U	5 U	5 U	5 U	5 U	5 U
Iron	Not Listed	Not Listed	300 *	1200	89 J[19]	147 J[19]	7780	1590	90
Mercury	Not Listed	0.273	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Manganese	Not Listed	Not Listed	50 *	479	51	48	878	602	8
Nickel	355	39	100	16	5 U	5 U	6	5	5 U
Lead	34	1.3	15	2	0.20	0.21	2.90	0.75	0.24
Antimony	Not Listed	23,000	6	5 U	5 U	5 U	5 U	5 U	5 U
Selenium	Not Listed	12	50	5 U	5 U	5 U	5 U	5 U	5 U
Vanadium	Not Listed	Not Listed	--	5 U	5 U	5 U	5 U	5 U	5 U
Zinc	Not Listed	Not Listed	5,000 *	31	34	45	29	52	177

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			5-Aug-04		8-Sep-04		14-Oct-04	
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	Plant Influent[2]	Plant Effluent	Plant Influent[2]	Plant Effluent	EW-S1	EW-S2
Sample ID:				S2-080504	S9-080504	S2-090804	S9-090804	EWS1-101404	EWS2-101404
Parameter									
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ[20]
1,1-Dichloroethene	Not Listed	17.2	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ[20]
Acetone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ[22]	5.0 UJ[20]
2-Butanone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ[20]
Methylene Chloride	Not Listed	8,600	5	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 UJ[20]
1,2-Dichloroethene (total)	Not Listed	172	--	5.3	1.0 U	4.0	1.0 U	120 J[23]	83 J[20]
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ[20]
1,1,1-Trichloroethane	Not Listed	500	5	1.0 U	1.0 U	1.0 U	1.0 U	3.0	4.7 J[20]
Benzene	Not Listed	381	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ[20]
Trichloroethene	Not Listed	434	5	200	1.0 U	180	1.0 U	5,600 DJ[24]	1,300 DJ[20]
Toluene	Not Listed	2,500	1000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ[20]
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ[20]
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ[20]
Tetrachloroethene	Not Listed	47.7	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ[20]
Chlorobenzene	Not Listed	112,600	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ[20]
Metals (µg/L)									
Silver	0.9	Not Listed	100	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U
Arsenic	Not Listed	0.75	10	4.30	0.27	4.50	0.5 U	0.50 U	0.78
Barium	Not Listed	5,400	2000	17	11	18	12	15	51
Beryllium	Not Listed	10	4	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	2.3	2	5	0.50 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U
Chromium (total)	41	27	100	5 U	5 U	5 U	5 U	5 U	5 U
Iron	Not Listed	Not Listed	300 *	1950	82	1620	50 U	694	232
Mercury	Not Listed	0.273	2	0.2 U	0.2 U	0.2 U	0.2 U	0.20 U	0.20 U
Manganese	Not Listed	Not Listed	50 *	648	7	685	7	12	25
Nickel	355	39	100	9	22	6	5 U	5 U	5 U
Lead	34	1.3	15	0.56	0.90	0.33	0.10	2.40 U	1.20
Antimony	Not Listed	23,000	6	5 U	5 U	5 U	5 U	5 U	5 U
Selenium	Not Listed	12	50	5 U	5 U	5 U	5 U	5 U	5 U
Vanadium	Not Listed	Not Listed	--	5 U	5 U	5 U	5 U	5 U	5 U
Zinc	Not Listed	Not Listed	5,000 *	121	20 U	71	20 U	28	42

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			14-Oct-04 (continued)					
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	EW-S3	EW-S4	EW-S5	EW-M1	EW-M2	EW-M3
Sample ID:				EWS3-101404	EWS4-101404	EWS5-101404	EWM1-101404	EWM2-101404	EWM3-101404
Parameter									
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	1.0 UJ[20]	1.0 UJ[20]	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	Not Listed	17.2	7	1.0 UJ[20]	1.0 UJ[20]	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	Not Listed	Not Listed	--	5.0 UJ[20]	5.0 UJ[20]	5.0 UJ[22]	5.0 UJ[22]	5.0 UJ[22]	5.0 UJ[22]
2-Butanone	Not Listed	Not Listed	--	5.0 UJ[20]	5.0 UJ[20]	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	Not Listed	8,600	5	3.0 UJ[20]	3.0 UJ[20]	3.0 U	3.0 U	3.0 U	3.0 U
1,2-Dichloroethene (total)	Not Listed	172	--	12 J[20]	1.0 UJ[20]	1.0 UJ[23]	1.0 UJ[23]	1.0 UJ[23]	1.0 UJ[23]
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 UJ[20]	1.0 UJ[20]	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	Not Listed	500	5	1.0 UJ[20]	1.0 UJ[20]	1.0 U	1.0 U	1.0 U	1.0 U
Benzene	Not Listed	381	5	1.0 UJ[20]	1.0 UJ[20]	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	Not Listed	434	5	41 J[20]	31 J[20]	15	6.5	1.0 U	1.0 U
Toluene	Not Listed	2,500	1000	1.0 UJ[20]	1.0 UJ[20]	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 UJ[20]	1.0 UJ[20]	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 UJ[20]	1.0 UJ[20]	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	Not Listed	47.7	5	1.0 UJ[20]	1.0 UJ[20]	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	Not Listed	112,600	100	1.0 UJ[20]	1.0 UJ[20]	1.0 U	1.0 U	1.0 U	1.0 U
Metals (µg/L)									
Silver	0.9	Not Listed	100	0.50 U	0.50 U	0.5 U	0.5 U	0.5 U	0.5 U
Arsenic	Not Listed	0.75	10	1.80	0.50 U	0.50 U	9.90	5.20	0.73
Barium	Not Listed	5,400	2000	11	20	19	20	17	17
Beryllium	Not Listed	10	4	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	2.3	2	5	0.50 U	0.50 U	0.5 U	0.5 U	0.5 U	0.5 U
Chromium (total)	41	27	100	14	5 U	6	5 U	5 U	5 U
Iron	Not Listed	Not Listed	300 *	1780	76	1090	5100	2090	1390
Mercury	Not Listed	0.273	2	0.20 U	0.2 U	0.20 U	0.2 U	0.2 U	0.2 U
Manganese	Not Listed	Not Listed	50 *	18	65	10	1200	601	551
Nickel	355	39	100	5 U	13	12	6	11	16
Lead	34	1.3	15	130	16	6	0.17	0.89	1.60
Antimony	Not Listed	23,000	6	5 U	5 U	5 U	5 U	5 U	5 U
Selenium	Not Listed	12	50	5 U	5 U	5 U	5 U	5 U	5 U
Vanadium	Not Listed	Not Listed	--	5 U	5 U	5 U	5 U	5 U	5 U
Zinc	Not Listed	Not Listed	5,000 *	20 U	272	77	20 U	24	20 U

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			14-Oct-04 (continued)				17-Nov-04	
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	G2	Plant Influent[2]	Plant Effluent	Plant Effluent	Plant Influent[2]	Plant Effluent
Sample ID:				G2-101404	S2-101404	S9-101404	S9-101404-21	S2-111704	S9-111704
Parameter							(Duplicate)		
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	Not Listed	17.2	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	Not Listed	Not Listed	--	5.0 UJ[22]	5.0 UJ[22]	5.0 UJ[22]	5.0 U	5.0 U	5.0 U
2-Butanone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	Not Listed	8,600	5	3.0 U	3.0 U	3.0 U	3.0 U	3 U	3.0 U
1,2-Dichloroethene (total)	Not Listed	172	--	1.0 UJ[23]	3.6 J[23]	1.0 UJ[23]	1.0 UJ[23]	3.3	1.0 U
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	Not Listed	500	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzene	Not Listed	381	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	Not Listed	434	5	1.0 U	230 DJ[24]	1.0 U	1.0 U	180	1.0 U
Toluene	Not Listed	2,500	1000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	Not Listed	47.7	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	Not Listed	112,600	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Metals (µg/L)									
Silver	0.9	Not Listed	100	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U
Arsenic	Not Listed	0.75	10	21	4.30 U	0.5 U	0.5 U	3.50	0.50 U
Barium	Not Listed	5,400	2000	18	18	13	13	19	11
Beryllium	Not Listed	10	4	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	2.3	2	5	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U
Chromium (total)	41	27	100	5 U	5 U	5 U	5 U	5 U	5 U
Iron	Not Listed	Not Listed	300 *	10400	1910	50 U	52	2750 U	50 U
Mercury	Not Listed	0.273	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Manganese	Not Listed	Not Listed	50 *	993	658	6	6 U	671	17
Nickel	355	39	100	9	5	5 U	6	9	5 U
Lead	34	1.3	15	0.89	0.41	0.10 U	0.1 U	1.10 U	0.50 U
Antimony	Not Listed	23,000	6	5 U	5 U	5 U	5 U	5 U	5 U
Selenium	Not Listed	12	50	5 U	5 U	5 U	5 U	5 U	5 U
Vanadium	Not Listed	Not Listed	--	5 U	5 U	5 U	5 U	5 U	5 U
Zinc	Not Listed	Not Listed	5,000 *	23	63	22 J[21]	63 J[21]	61	20 U

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			13-Dec-04			20-Jan-05		
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	Plant Influent[2]	Plant Influent[2]	Plant Effluent	EW-S1	EW-S2	EW-S3
Sample ID:				S2-121304	S2-121304-21	S9-121304	EWS1-012005	EWS2-012005	EWS3-012005
Parameter					(Duplicate)				
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	Not Listed	17.2	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	Not Listed	8,600	5	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
1,2-Dichloroethene (total)	Not Listed	172	--	5.5	5.7	1.0 U	130	130 J[25]	16
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	Not Listed	500	5	1.0 U	1.0 U	1.0 U	1.0 U	9.9 J[25]	1.0 U
Benzene	Not Listed	381	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	Not Listed	434	5	270 D	260 D	1.0 U	5,200 D	33,000 D	50
Toluene	Not Listed	2,500	1000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	Not Listed	47.7	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	Not Listed	112,600	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Metals (µg/L)									
Silver	0.9	Not Listed	100	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Arsenic	Not Listed	0.75	10	5.1	4.9	0.46	0.45	0.75	0.48
Barium	Not Listed	5,400	2000	18	18	12	14	43	13
Beryllium	Not Listed	10	4	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	2.3	2	5	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chromium (total)	41	27	100	5 U	5 U	5 U	5 U	5 U	5 U
Iron	Not Listed	Not Listed	300 *	2410	1870	410	629	1,560	68
Mercury	Not Listed	0.273	2	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Manganese	Not Listed	Not Listed	50 *	657	641	6	10	20	11
Nickel	355	39	100	21	16	5 U	5 U	5 U	5 U
Lead	34	1.3	15	0.67	0.53	0.20 U	2	0.92	2
Antimony	Not Listed	23,000	6	5 U	5 U	5 U	5 U	5 U	5 U
Selenium	Not Listed	12	50	5 U	5 U	5 U	5 U	5 U	5 U
Vanadium	Not Listed	Not Listed	--	5 U	5 U	5 U	5 U	5 U	5 U
Zinc	Not Listed	Not Listed	5,000 *	144	109	43	32	62	31

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			20-Jan-05 (continued)					
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	EW-S4	EW-S5	EW-M1	EW-M2	EW-M3	G2
Sample ID:				EWS4-012005	EWS5-012005	EWM1-012005	EWM2-012005	EWM3-012005	G2-012005
Parameter									
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	Not Listed	17.2	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Acetone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	30	5.0 U
2-Butanone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	74	5.0 U
Methylene Chloride	Not Listed	8,600	5	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
1,2-Dichloroethene (total)	Not Listed	172	--	1.0 U	1.0 U	1.0 U	1.0 U	52	1.0 U
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	Not Listed	500	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzene	Not Listed	381	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	Not Listed	434	5	21	9.9	4.4	1.0 U	10	1.0 U
Toluene	Not Listed	2,500	1000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	Not Listed	47.7	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	Not Listed	112,600	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Metals (µg/L)									
Silver	0.9	Not Listed	100	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Arsenic	Not Listed	0.75	10	0.61	1.2	1.3	4.4	7.3	25
Barium	Not Listed	5,400	2000	17	22	15	22	18	20
Beryllium	Not Listed	10	4	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	2.3	2	5	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chromium (total)	41	27	100	5 U	5 U	5 U	5 U	34	5 U
Iron	Not Listed	Not Listed	300 *	133	828	2,120	10,700	45,900	10,500
Mercury	Not Listed	0.273	2	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Manganese	Not Listed	Not Listed	50 *	5 U	5 U	739	1290	458	1110
Nickel	355	39	100	5	7	15	17	17	5
Lead	34	1.3	15	17	5.6	0.62	0.79	66	1.2
Antimony	Not Listed	23,000	6	5 U	5 U	5 U	5 U	5 U	5 U
Selenium	Not Listed	12	50	5 U	5 U	5 U	5 U	5 U	5 U
Vanadium	Not Listed	Not Listed	--	5 U	5 U	5 U	5 U	5 U	5 U
Zinc	Not Listed	Not Listed	5,000 *	20 U	20 U	24	20 U	281	21

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Sample Date:	Effluent Discharge Limits			20-Jan-05 (continued)		10-Feb-05		15-Mar-05	
Sample Location:	Daily Maximum	Average Monthly	MCL[1]	Plant Influent[2]	Plant Effluent	Plant Influent[2]	Plant Effluent	Plant Influent[2]	Plant Effluent
Sample ID:				S2-012005	S9-012005	S2-021005	S9-021005	S2-031505	S9-031505
Parameter									
Volatile Organic Compounds (µg/L)									
Vinyl Chloride	Not Listed	2,816	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ[26]	1.0 UJ[26]
1,1-Dichloroethene	Not Listed	17.2	7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ[26]	1.0 UJ[26]
Acetone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Butanone	Not Listed	Not Listed	--	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Methylene Chloride	Not Listed	8,600	5	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
1,2-Dichloroethene (total)	Not Listed	172	--	1.0 U	1.0 U	1.0 U	1.0 U	5.5	1.0 U
1,1-Dichloroethane	Not Listed	Not Listed	--	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	Not Listed	500	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Benzene	Not Listed	381	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	Not Listed	434	5	220 D	1.0 U	260 D	1.0 U	200 D	1.9
Toluene	Not Listed	2,500	1000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Tetrachloride	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	Not Listed	Not Listed	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	Not Listed	47.7	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	Not Listed	112,600	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Metals (µg/L)									
Silver	0.9	Not Listed	100	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Arsenic	Not Listed	0.75	10	5.8	0.4	5.50	0.44	4.90	0.47
Barium	Not Listed	5,400	2000	19	12	18	10	17	12
Beryllium	Not Listed	10	4	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	2.3	2	5	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chromium (total)	41	27	100	5 U	5 U	5 U	5 U	5 U	5 U
Iron	Not Listed	Not Listed	300 *	2,220	279	1770	134	1860	50 U
Mercury	Not Listed	0.273	2	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Manganese	Not Listed	Not Listed	50 *	751	8	725	21	660	9
Nickel	355	39	100	12	5 U	8	5 U	9	5 U
Lead	34	1.3	15	1.3	0.5 U	0.84	0.5 U	0.87	0.18
Antimony	Not Listed	23,000	6	5 U	5 U	5 U	5 U	5 U	5 U
Selenium	Not Listed	12	50	5 U	5 U	5 U	5 U	5 U	5 U
Vanadium	Not Listed	Not Listed	--	5 U	5 U	5 U	5 U	5 U	5 U
Zinc	Not Listed	Not Listed	5,000 *	71	34	57	31	21	20 U

Table XX
Analytical Results
Groundwater Extraction and Treatment System
Groveland Wells Superfund Site

Notes:

[1] Secondary MCLs denoted with *

[2] Plant Influent sampled at Influent Equalization Tank effluent line (T-1 Effluent)

[a] Effluent arsenic sample for 4 January 2001 event analyzed by ICP/MS.

4 **Effluent samples that exceed Average Monthly Discharge Limit are shown highlighted in boldface.**

U = Analyte not detected. Reporting limit shown.

NA = Not Analyzed

J = Estimated concentration below sample reporting limit.

J^{1}/UJ^{1} = Estimate arsenic results in samples since lab duplicate results did not meet QC criteria.

J^{2}/UJ^{2} = Estimate all results in volatile sample due to surrogate recoveries below QC limit.

UJ^{3} or J^{3} = Lead results in all samples are estimated since spike recoveries did not meet QC criteria.

U^{4} = Positive iron results quantified as undetected (U^{4}) since iron was detected in the laboratory blank.

U^{5} = Positive acetone quantified as undetected (U^{5}) since acetone was detected in the trip blank.

U^{6} = Qualify 1,1-dichloroethene in sample as undetected since it was detected in the trip blank.

J^{7}/UJ^{7} = Estimate the positive and non-detected results for toluene, ethylbenzene and styrene in sample S7A-042400 due to poor MS/MSD recoveries.

J^{8}/UJ^{8} = Estimate iron and arsenic results in all samples since MS/MSD criterion was not met.

U^{9} = Qualify postive arsenic and nickel results in sample as undetected due to method blank contamination.

J^{10}/UJ^{10} = Estimate all lead results in all samples due to poor lab duplicate results.

U^{11} = Qualify the positive result for nickel as undetected in samples since it was detected in the prep blank.

J^{12}/UJ^{12} = Estimate the positive and non-detected results for chloromethane in samples since field duplicate criterion was not met. (sample date 8-14-00)

U^{13} = Qualify as undetected since it was detected in lab blank. (air sample)

U^{14} = Qualify chromium and lead as undetected because of detections in the method blank.

J^{15}/UJ^{15} = Estimate the positive and non-detected results for chromium, iron, and lead because lab duplicate QC criteria were not met.

U^{16} = Qualify silver as undetected because of method blank contamination

UJ^{17}/J^{17} = Estimate all chromium results since lab duplicate criteria was not met.

UJ^{18}/J^{18} = Estimate all iron results because serial dilution criteria were not met.

UJ^{20}/J^{20} = Estimate positive and non-detected results for iron since lab duplicate criteria were not met.

UJ^{21}/J^{21} = Estimate all results for zinc since serial dilution criteria were not met.

U^{22} = Qualify nickel and vanadium as undetected since it was detected in method blank

UJ^{23}/J^{23} = Estimate positive and non-detected results for cadmium since 90% spike recovery did not meet QC limits

UJ^{24}/J^{24} = Estimate positive and non-detected zinc results because laboratory duplicate criterion was not met.

UJ^{25}/J^{25} = Estimate the trichloroethene result in sample EW-M3 because MS/MSD criteria were not met.

UJ^{26}/J^{26} = Estimate positive and non-detected result for chloromethane in samples S2-041001-01and -21 since field duplicate criteria was not met.

UJ^{27}/J^{27} = Estimate all iron results since spike recovery was below the QC limits.

U^{28} = Qualify zinc as undetected since it was detected in the preparation blank.

UJ^{29}/J^{29} = Estimate positive and non-detected results for 2-hexanone since blank spike recoveries were above QC limits.

U^{30} = Qualify antimony as undetected since it was detected in the preparation blank.

UJ^{31}/J^{31} = Estimate all nickel results since laboratory duplicate criteria was not met.

UJ^{32}/J^{32} = Estimate all zinc results since laboratory duplicate criteria was not met.

ATTACHMENT 3
GROUNDWATER PLUME MAPS
APRIL 2000 AND OCTOBER 2004

N

12
12.4 AC

JOHNSON CREEK

SG-3

M-3

M-13

M-12

#13

8
19.0 AC

DEQE-9

GPW-04

GP-06

GPW-05

EW-M2

DEQE-5

ME20S

G1

SWJC1

DEQE-11

SWJC2

NO. 4

GPW-01

SG-4

DEQE-1-4

EW-M1

ME10D

DEQE-10

G2

ME-10S

GPW-03

GPW-02

DEQE-6

DEQE 4-1&2

DEQE-12

DEQE-13D&13S

MILL POND

APPROXIMATE EDGE OF POND – APRIL 10, 2000

100

500

S-DEQE-7

DEQE-7 -390

VALLEY MANUFACTURED PRODUCTS CO., INC.

GROUNDWATER TREATMENT FACILITY

EW-S4

GPW-11

1200

GP-12

SWMP3-10

EW-S5

NO.5

DEQE-8

TW-12

TW-24

TW-24A

107

ERT-9, 11, 13

0.6

ERT-1

MILL POND DAM

CENTER ST.

GP-09

TW-16A

EW-S1

EW-S2

GP-08

EW-S3

TW-2B

GP-07

TW-3

TW-17

12,000

TW-18

TW-1

TW-19

GZ-1

WASHINGTON ST.

26
13573

28
8315

29
16988

30
31000

31
27200

32
15240

31
1.1 AC

34
17100

33
11400

32
20645

29
5044

30
31000

25
10320

24

37
6800

ERT-22

ERT-7

MADISON AVE.

12
30400

11
30000

10
29745

9
30155

8
28880

7
33425

6
1.1 AC

5A
40004

LEGEND

DEQE-10 MONITORING WELL

GPW-04 GROUNDWATER PROBE WELL

SWJC2 SURFACE WATER ELEVATION GAUGE

GROUNDWATER PROBE LOCATION

G-1 EXISTING EXTRACTION WELL

100 TCE CONCENTRATION CONTOUR (µg/L) (DASHED WHERE INFERRED)

Metcalf & Eddy

GROVELAND WELLS SUPERFUND SITE
GROVELAND, MASSACHUSETTS

**TCE CONCENTRATIONS (µg/L)
IN SHALLOW OVERBURDEN GROUNDWATER
APRIL, 2000**

SCALE: 1"=120'	4609MOM	CZGROA113.DWG	06-06-05

ANS B – 10-11-02 4609MOM\C\APR00

JOHNSON CREEK

12
12.4 AC

N

8
19.0 AC

EW-M3
EW-M2
G1
G2
EW-M1

MILL POND
ACTUAL MILL POND FOOTPRINT ON 10-26-04
WAS SMALLER THAN SHOWN ON FIGURE

ERT-11
0.29J

DEQE-7
>0.5
EW-S4
GPW-11
3.9
EW-S5
DEQE-8
3.3

VALLEY MANUFACTURED PRODUCTS CO., INC.
GROUNDWATER TREATMENT FACILITY

52
TW-26A
EW-S3
EW-S1
EW-S2
TW-3
20
TW-17
130,000
1,000
30
100,000

CENTER ST.

26
13573
28
8315
29
16988
30
31000
31
27200
32
15240
31
1.1 AC
34
17100
33
11400
32
20645
29
5044
30
31000
25
10320
24
37
6800
3
123

MADISON AVE.

12
30400
11
30000
10
29745
9
30155
8
28880
7
33425
6
1.1 AC
5A
40004

WASHINGTON ST.

NOTES:

1. EXTRACTION WELLS G1 AND G2 ARE INACTIVE.
2. "J" AFTER CONCENTRATION DENOTES ESTIMATED VALUE;
   "!" DENOTES VALUE THAT MAY BE BIASED HIGH DUE TO BLANK CONTAMINATION.

LEGEND

DEQE-10 — MONITORING WELL
GPW-04 — GROUNDWATER PROBE WELL
G-1 — EXISTING EXTRACTION WELL
10 — TCE CONCENTRATION CONTOUR (µg/L) (DASHED WHERE INFERRED)

SCALE 0 120 FEET
1" = 120'

Metcalf & Eddy

GROVELAND WELLS SUPERFUND SITE
GROVELAND, MASSACHUSETTS

**TCE CONCENTRATIONS (ug/L)
IN SHALLOW OVERBURDEN GROUNDWATER
OCTOBER, 2004**

SCALE: 1"=120'	6/7/05	Czgro455.dwg	04609MOM

PLOT DATE: June 07, 2005 @ 01:48:16 pm
PATH/FILENAME: P:\04069MOM\C\OCT04\Czgro455.dwg
ANSI B - 11-20-01

N

12
12.4 AC

8
19.0 AC

JOHNSON CREEK

SG-3

MILL POND

MILL POND DAM

APPROXIMATE EDGE OF POND – APRIL 10, 2000

VALLEY MANUFACTURED PRODUCTS CO., INC.

GROUNDWATER TREATMENT FACILITY

CENTER ST.

WASHINGTON ST.

MADISON AVE.

M-3
M-13
M-12
#13
DEQE-9
GPW-04
GP-06
GPW-05
EW-M2
DEQE-5
ME20S
G1
SWJC1
DEQE-11
SWJC2
NO. 4
GPW-01
EW-M1
DEQE-1-S
(3) 880
DEQE-10
G2
GPW-03
GPW-02
ME-10S
DEQE-8
490
500
100
DEQE-12
DEQE 4-1&2
190
DEQE-13D&13S
107
ERT-9, 11, 13
120
ERT-1
S-DEQE-7
DEQE-7
EW-S4
GPW-11
GP-12
EW-S5
NO.5
1000
TW-12
DEQE-8
TW-24
TW-24A
GP-09
TW-26A
EW-S1
EW-S2
GP-08
EW-S3
TW-25
GP-07
TW-3
TW-17
TW-18
TW-1
TW-19
GZ-1
ERT-22
ERT-7

26
13573

28
8315

29
16988

30
31000

31
27200

32
15240

31
1.1 AC

34
17100

33
11400

32
20645

29
5044

30
31000

12
30400

11
30000

10
29745

9
30155

8
28880

7
33425

6
1.1 AC

5A
40004

25
10320

24

37
6800

LEGEND

- DEQE-10 — MONITORING WELL
- GPW-04 — GROUNDWATER PROBE WELL
- SWJC2 — SURFACE WATER ELEVATION GAUGE
- GROUNDWATER PROBE LOCATION
- G-1 — EXISTING EXTRACTION WELL
- 100 — TCE CONCENTRATION CONTOUR (µg/L) (DASHED WHERE INFERRED)

Metcalf & Eddy

GROVELAND WELLS SUPERFUND SITE
GROVELAND, MASSACHUSETTS

**TCE CONCENTRATION (µg/L)
IN DEEP OVERBURDEN GROUNDWATER
APRIL, 2000**

SCALE: 1"=120'	4609MOM	CZGRO116.DWG	06-06-05

ANSI B - 10-11-02 4609MOM\C\APR00

N

JOHNSON CREEK

12
12.4 AC

8
19.0 AC

EW-M3

EW-M2
DEQE-5
G1
<0.5
ME20D

NO. 4 <0.5
DEQE-1-3
G2
ME10D
2.6
EW-M1

MILL POND
ACTUAL MILL POND FOOTPRINT ON 10-26-04
WAS SMALLER THAN SHOWN ON FIGURE

DEQE 6
1.5

DEQE 4-2
4.2

ERT-13
2.6

APPROXIMATE EDGE OF
DEEP OVERBURDEN

EW-S4
EW-S5

VALLEY MANUFACTURED PRODUCTS CO., INC.

GROUNDWATER TREATMENT FACILITY

EW-S3
EW-S1
EW-S2

CENTER ST.

MILL

3.5

34
17100

33
11400

36
12396

37
6800

31
1.1 AC

32
20645

WASHINGTON ST.

29
5044

25
10320

24

26
13573

28
8315

29
16988

30
31000

31
27200

32
15240

12
30400

MADISON AVE.

11
30000

10
29745

9
30155

8
28880

7
33425

6
1.1 AC

5A
40004

30
31000

NOTES:

1. EXTRACTION WELLS G1 AND G2 ARE INACTIVE.
2. "J" AFTER CONCENTRATION DENOTES ESTIMATED VALUE;
   "!" DENOTES VALUE THAT MAY BE BIASED HIGH DUE TO BLANK CONTAMINATION.

LEGEND

DEQE-10 — MONITORING WELL

GPW-04 — GROUNDWATER PROBE WELL

G-1 — EXISTING EXTRACTION WELL

3 — TCE CONCENTRATION CONTOUR (ug/L) (DASHED WHERE INFERRED)

0 120
SCALE FEET
1" = 120'

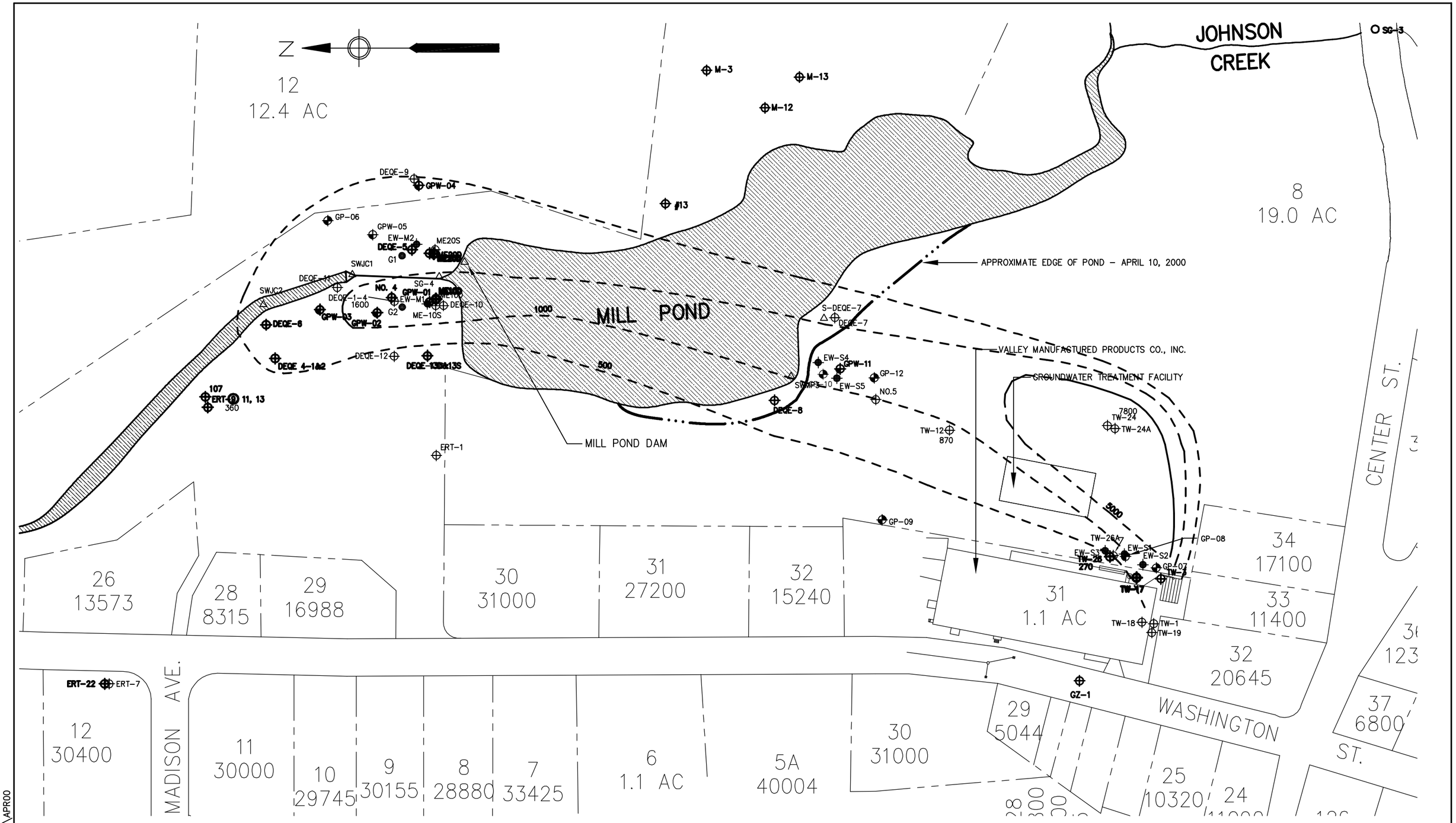
Metcalf & Eddy

GROVELAND WELLS SUPERFUND SITE
GROVELAND, MASSACHUSETTS

**TCE CONCENTRATIONS (ug/L)
IN DEEP OVERBURDEN GROUNDWATER
OCTOBER, 2004**

SCALE: 1"=120'	4/13/05	Czgro454.dwg	04609MOM

PLOT DATE: June 07, 2005 @ 01:46:56 pm
PATH/FILENAME: P:\04069MOM\C\OCT04\Czgro454.dwg
ANSI B - 11-20-01



LEGEND

- DEQE-10 — MONITORING WELL
- GPW-04 — GROUNDWATER PROBE WELL
- SWJC2 — SURFACE WATER ELEVATION GAUGE
- GROUNDWATER PROBE LOCATION
- G-1 — EXISTING EXTRACTION WELL
- 100 — TCE CONCENTRATION CONTOUR (µg/L) (DASHED WHERE INFERRED)

Metcalf & Eddy

GROVELAND WELLS SUPERFUND SITE
GROVELAND, MASSACHUSETTS

TCE CONCENTRATIONS (µg/L) IN BEDROCK GROUNDWATER APRIL, 2000

SCALE: 1"=120'	4609MOM	CZGRO115.DWG	06-06-05

ANSI B – 10-11-02 4609MOM\C\APROO

N

JOHNSON CREEK

12
12.4 AC

8
19.0 AC

EW-M3

EW-M2

G1

DEQE-1-4
0.79

EW-M1

G2

MILL POND

ACTUAL MILL POND FOOTPRINT ON 10-26-04
WAS SMALLER THAN SHOWN ON FIGURE

20

20

20

20

?

?

5

ERT-9
6.6

EW-S4

EW-S5

VALLEY MANUFACTURED PRODUCTS CO., INC.

GROUNDWATER TREATMENT FACILITY

TW-12
17

TW-24
70

EW-S3

EW-S1

EW-S2

TW-26
28

CENTER ST.

MILL

3.5

34
17100

33
11400

36
12396

32
20645

37
6800

31
1.1 AC

26
13573

28
8315

29
16988

30
31000

31
27200

32
15240

29
5044

30
31000

25
10320

24

WASHINGTON ST.

MADISON AVE.

12
30400

11
30000

10
29745

9
30155

8
28880

7
33425

6
1.1 AC

5A
40004

LEGEND

DEQE-10 MONITORING WELL

G-1 EXISTING EXTRACTION WELL

100 TCE CONCENTRATION CONTOUR (ug/L)
(DASHED WHERE INFERRED)

SCALE 0 120 FEET
1" = 120'

NOTES:

1. EXTRACTION WELLS G1 AND G2 ARE INACTIVE.
2. "J" AFTER CONCENTRATION DENOTES ESTIMATED VALUE;
"!" DENOTES VALUE THAT MAY BE BIASED HIGH DUE TO BLANK CONTAMINATION.

Metcalf & Eddy

GROVELAND WELLS SUPERFUND SITE
GROVELAND, MASSACHUSETTS

**TCE CONCENTRATIONS (ug/L)
IN BEDROCK GROUNDWATER
OCTOBER, 2004**

SCALE: 1"=120'	6/7/05	Czgro456.dwg	04609MOM

PLOT DATE: June 07, 2005 @ 01:50:10 pm
PATH/FILENAME: P:\04069MOM\C\OCT04\Czgro456.dwg
ANS B - 11-20-01

ATTACHMENT 4
SITE INSPECTION FORM AND INTERVIEW RECORDS

Five-Year Review Site Inspection Checklist

I. SITE INFORMATION	
Site name: Groveland Wells Superfund Site	**Date of inspection:**
Location and Region: Groveland, MA/Region I	**EPA ID:** MAD980732317
Agency, office, or company leading the five-year review: USEPA Region I	**Weather/temperature:** Cold

Remedy Includes: (Check all that apply)

G Landfill cover/containment
G Access controls
G Institutional controls
X Groundwater pump and treatment
G Surface water collection and treatment
G Other_____
_____
G Monitored natural attenuation
G Groundwater containment
G Vertical barrier walls

Attachments: G Inspection team roster attached G Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** ___Bob Ricard_____ _GWTP Lead Operator_ ___Feb 9, 2005____
_____
Name Title Date
Interviewed W at site G at office G by phone Phone no. _____
Problems, suggestions; W Report attached _____
_____

2. **O&M staff** _____ _____ _____
Name Title Date
Interviewed G at site G at office G by phone Phone no. _____
Problems, suggestions; G Report attached _____
_____

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; G Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; G Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; G Report attached _____
_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems; suggestions; G Report attached _____
_____

4. **Other interviews** (optional) G Report attached.

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Documents**

X O&M manual	**X** Readily available	**X** Up to date	G N/A
X As-built drawings	**X** Readily available	**X** Up to date	G N/A
X Maintenance logs	**X** Readily available	**X** Up to date	G N/A

Remarks_____

_____

2. **Site-Specific Health and Safety Plan** **X** Readily available **X** Up to date G N/A

G Contingency plan/emergency response plan **X** Readily available **X** Up to date G N/A

Remarks_____

_____

3. **O&M and OSHA Training Records** G Readily available G Up to date G N/A

Remarks_____

_____

4. **Permits and Service Agreements**

G Air discharge permit	G Readily available	G Up to date	**X** N/A
G Effluent discharge	G Readily available	G Up to date	**X** N/A
G Waste disposal, POTW	G Readily available	G Up to date	**X** N/A
G Other permits_____	G Readily available	G Up to date	**X** N/A

Remarks_____

_____

5. **Gas Generation Records** G Readily available G Up to date **X** N/A

Remarks_____

_____

6. **Settlement Monument Records** G Readily available G Up to date **X** N/A

Remarks_____

_____

7. **Groundwater Monitoring Records** **X** Readily available **X** Up to date G N/A

Remarks: Reports available onsite, raw data packages available at Metcalf & Eddy, Wakefield, MA office

8. **Leachate Extraction Records** G Readily available G Up to date **X** N/A

Remarks_____

_____

9. **Discharge Compliance Records**

X Air	**X** Readily available	**X** Up to date	G N/A
X Water (effluent)	**X** Readily available	**X** Up to date	G N/A

Remarks: Although permits are not required under Superfund, the facility complies with the intent of a permit. Effluent sampling is conducted monthly and air sampling is conducted quarterly.

10. **Daily Access/Security Logs** **X** Readily available **X** Up to date G N/A

Remarks_____

_____

IV. O&M COSTS

1. **O&M Organization**

G State in-house G Contractor for State
G PRP in-house G Contractor for PRP
G Federal Facility in-house **X** Contractor for Federal Facility
G Other_____
_____

2. **O&M Cost Records**

G Readily available G Up to date
X Funding mechanism/agreement in place
Original O&M cost estimate_____ G Breakdown attached

Total annual cost by year for review period if available

From_____ To_____ _____ G Breakdown attached
Date Date Total cost
From_____ To_____ _____ G Breakdown attached
Date Date Total cost
From_____ To_____ _____ G Breakdown attached
Date Date Total cost
From_____ To_____ _____ G Breakdown attached
Date Date Total cost
From_____ To_____ _____ G Breakdown attached
Date Date Total cost

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons: _____
_____
_____
_____
_____
_____

V. ACCESS AND INSTITUTIONAL CONTROLS **X** Applicable G N/A

A. Fencing

1. **Fencing damaged** **X** Location shown on site map **X** Gates secured G N/A

Remarks: The GWTF and aboveground well houses are fenced. All fencing is in good condition.

B. Other Access Restrictions

1. **Signs and other security measures** G Location shown on site map G N/A

Remarks_____
_____

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented G Yes G No **X** N/A
Site conditions imply ICs not being fully enforced G Yes G No **X** N/A

Type of monitoring (*e.g.*, self-reporting, drive by) _____
Frequency _____
Responsible party/agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.

Reporting is up-to-date G Yes G No **X** N/A
Reports are verified by the lead agency G Yes G No **X** N/A

Specific requirements in deed or decision documents have been met G Yes G No **X** N/A
Violations have been reported G Yes G No **X** N/A
Other problems or suggestions: G Report attached

_____
_____
_____
_____

2. **Adequacy** G ICs are adequate G ICs are inadequate **X** N/A
Remarks_____
_____
_____

D. General

1. **Vandalism/trespassing** G Location shown on site map **X** No vandalism evident
Remarks_____
_____

2. **Land use changes on site X** N/A
Remarks_____
_____

3. **Land use changes off site** G N/A
Remarks: A housing development has been proposed for land off Center Street. It is not anticipated to impact the remedy.

VI. GENERAL SITE CONDITIONS

A. Roads G Applicable **X** N/A

1. **Roads damaged** G Location shown on site map G Roads adequate **X** N/A
Remarks_____
_____

B. Other Site Conditions

Remarks _____

_____

_____

_____

_____

_____

VII. LANDFILL COVERS G Applicable **X** N/A

A. Landfill Surface

1. **Settlement** (Low spots) G Location shown on site map G Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Cracks** G Location shown on site map G Cracking not evident
   Lengths_____ Widths_____ Depths_____
   Remarks_____
   _____

3. **Erosion** G Location shown on site map G Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

4. **Holes** G Location shown on site map G Holes not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

5. **Vegetative Cover** G Grass G Cover properly established G No signs of stress
   G Trees/Shrubs (indicate size and locations on a diagram)
   Remarks_____
   _____

6. **Alternative Cover (armored rock, concrete, etc.)** G N/A
   Remarks_____
   _____

7. **Bulges** G Location shown on site map G Bulges not evident
   Areal extent_____ Height_____
   Remarks_____
   _____

8. **Wet Areas/Water Damage** G Wet areas/water damage not evident
G Wet areas G Location shown on site map Areal extent_____
G Ponding G Location shown on site map Areal extent_____
G Seeps G Location shown on site map Areal extent_____
G Soft subgrade G Location shown on site map Areal extent_____
Remarks_____
_____

9. **Slope Instability** G Slides G Location shown on site map G No evidence of slope instability
Areal extent_____
Remarks_____
_____

B. Benches G Applicable G N/A
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** G Location shown on site map G N/A or okay
Remarks_____
_____

2. **Bench Breached** G Location shown on site map G N/A or okay
Remarks_____
_____

3. **Bench Overtopped** G Location shown on site map G N/A or okay
Remarks_____
_____

C. Letdown Channels G Applicable G N/A
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** G Location shown on site map G No evidence of settlement
Areal extent_____ Depth_____
Remarks_____
_____

2. **Material Degradation** G Location shown on site map G No evidence of degradation
Material type_____ Areal extent_____
Remarks_____
_____

3. **Erosion** G Location shown on site map G No evidence of erosion
Areal extent_____ Depth_____
Remarks_____
_____

4. **Undercutting** G Location shown on site map G No evidence of undercutting
Areal extent_____ Depth_____
Remarks_____
_____

5. **Obstructions** Type_____ G No obstructions
G Location shown on site map Areal extent_____
Size_____
Remarks_____
_____

6. **Excessive Vegetative Growth** Type_____
G No evidence of excessive growth
G Vegetation in channels does not obstruct flow
G Location shown on site map Areal extent_____
Remarks_____
_____

D. Cover Penetrations G Applicable G N/A

1. **Gas Vents** G Active G Passive
G Properly secured/locked G Functioning G Routinely sampled G Good condition
G Evidence of leakage at penetration G Needs Maintenance
G N/A
Remarks_____
_____

2. **Gas Monitoring Probes**
G Properly secured/locked G Functioning G Routinely sampled G Good condition
G Evidence of leakage at penetration G Needs Maintenance G N/A
Remarks_____
_____

3. **Monitoring Wells** (within surface area of landfill)
G Properly secured/locked G Functioning G Routinely sampled G Good condition
G Evidence of leakage at penetration G Needs Maintenance G N/A
Remarks_____
_____

4. **Leachate Extraction Wells**
G Properly secured/locked G Functioning G Routinely sampled G Good condition
G Evidence of leakage at penetration G Needs Maintenance G N/A
Remarks_____
_____

5. **Settlement Monuments** G Located G Routinely surveyed G N/A
Remarks_____
_____

E. Gas Collection and Treatment G Applicable G N/A

1. **Gas Treatment Facilities**
   G Flaring G Thermal destruction G Collection for reuse
   G Good condition G Needs Maintenance
   Remarks_____
   _____

2. **Gas Collection Wells, Manifolds and Piping**
   G Good condition G Needs Maintenance
   Remarks_____
   _____

3. **Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings)
   G Good condition G Needs Maintenance G N/A
   Remarks_____
   _____

F. Cover Drainage Layer G Applicable G N/A

1. **Outlet Pipes Inspected** G Functioning G N/A
   Remarks_____
   _____

2. **Outlet Rock Inspected** G Functioning G N/A
   Remarks_____
   _____

G. Detention/Sedimentation Ponds G Applicable G N/A

1. **Siltation** Areal extent_____ Depth_____ G N/A
   G Siltation not evident
   Remarks_____
   _____

2. **Erosion** Areal extent_____ Depth_____
   G Erosion not evident
   Remarks_____
   _____

3. **Outlet Works** G Functioning G N/A
   Remarks_____
   _____

4. **Dam** G Functioning G N/A
   Remarks_____
   _____

H. Retaining Walls G Applicable G N/A

1. **Deformations** G Location shown on site map G Deformation not evident
   Horizontal displacement_____ Vertical displacement_____
   Rotational displacement_____
   Remarks_____
   _____

2. **Degradation** G Location shown on site map G Degradation not evident
   Remarks_____
   _____

I. Perimeter Ditches/Off-Site Discharge G Applicable G N/A

1. **Siltation** G Location shown on site map G Siltation not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Vegetative Growth** G Location shown on site map G N/A
   G Vegetation does not impede flow
   Areal extent_____ Type_____
   Remarks_____
   _____

3. **Erosion** G Location shown on site map G Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

4. **Discharge Structure** G Functioning G N/A
   Remarks_____
   _____

VIII. VERTICAL BARRIER WALLS G Applicable G N/A

1. **Settlement** G Location shown on site map G Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____
   _____

2. **Performance Monitoring** Type of monitoring_____
   G Performance not monitored
   Frequency_____ G Evidence of breaching
   Head differential_____
   Remarks_____
   _____

IX. GROUNDWATER/SURFACE WATER REMEDIES **X** Applicable G N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines **X** Applicable G N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
   X Good condition G All required wells properly operating G Needs Maintenance G N/A
   Remarks: Control valves on extraction wells are inoperable due to lightning strikes and are being operated manually.

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   X Good condition G Needs Maintenance
   Remarks_____
   _____

3. **Spare Parts and Equipment**
   X Readily available **X** Good condition G Requires upgrade G Needs to be provided
   Remarks_____
   _____

B. Surface Water Collection Structures, Pumps, and Pipelines G Applicable **X** N/A

1. **Collection Structures, Pumps, and Electrical**
   G Good condition G Needs Maintenance
   Remarks_____
   _____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
   G Good condition G Needs Maintenance
   Remarks_____
   _____

3. **Spare Parts and Equipment**
   G Readily available G Good condition G Requires upgrade G Needs to be provided
   Remarks_____
   _____

C. Treatment System **X** Applicable G N/A

1. **Treatment Train** (Check components that apply)
X Metals removal G Oil/water separation G Bioremediation
G Air stripping **X** Carbon adsorbers
X Filters: multimedia
X Additive (*e.g.*, chelation agent, flocculent): hydrogen peroxide, polymer (polymer is currently not being used).
X Others: Ultraviolet oxidation system
X Good condition G Needs Maintenance
X Sampling ports properly marked and functional
X Sampling/maintenance log displayed and up to date
X Equipment properly identified
X Quantity of groundwater treated annually: Approximately 4,330,000 gal/yr
G Quantity of surface water treated annually_____
Remarks_____
_____

2. **Electrical Enclosures and Panels** (properly rated and functional)
G N/A **X** Good condition G Needs Maintenance
Remarks_____
_____

3. **Tanks, Vaults, Storage Vessels**
G N/A **X** Good condition **X** Proper secondary containment G Needs Maintenance
Remarks_____
_____

4. **Discharge Structure and Appurtenances**
G N/A **X** Good condition G Needs Maintenance
Remarks_____
_____

5. **Treatment Building(s)**
G N/A **X** Good condition (esp. roof and doorways) G Needs repair
X Chemicals and equipment properly stored
Remarks_____
_____

6. **Monitoring Wells** (pump and treatment remedy)
X Properly secured/locked **X** Functioning **X** Routinely sampled **X** Good condition
X All required wells located G Needs Maintenance G N/A
Remarks: There have been numerous maintenance problems with retrofitted monitoring well EW-M3. Due to low contaminant concentrations and the potential for decommissioning, no major modifications will be made to this well.

D. Monitoring Data

1. Monitoring Data
X Is routinely submitted on time **X** Is of acceptable quality

2. Monitoring data suggests:
X Groundwater plume is effectively contained **X** Contaminant concentrations are declining

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)

G Properly secured/locked G Functioning G Routinely sampled G Good condition
G All required wells located G Needs Maintenance **X** N/A
Remarks_____
_____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.). The remedy is functioning as designed and appears effective in treating groundwater and containing the plume. Overall plume size has decreased significantly since startup five years ago.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. O&M procedures are adequate to maintain long-term protectiveness. Evaluation of aggressive remediation of the source area is currently underway to determine whether further action in this area could accelerate site cleanup.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future. Although there have been nonroutine repairs required over the last five years, overall O&M costs have decreased since startup. There are currently no O&M issues that would compromise the protectiveness of the remedy.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. The RAC contractor, Metcalf & Eddy, is in the process of switching from low-flow sampling to use of passive diffusion bags to better optimize monitoring. Based on semi-annual monitoring results, the potential for removing extraction well EW-M2 from operation and increasing flow from EW-S4 is being assessed. EPA is currently evaluating whether aggressive source remediation would decrease overall site cleanup time.

INTERVIEW DOCUMENTATION FORM

The following is a list of individual interviewed for this five-year review. See the attached contact record(s) for a detailed summary of the interviews.

Name	Title/Position	Organization	Date
Janet Waldron	Project Manager	MADEP	2/09/05
Bob Ricard	GWTF Operator	Weston Solutions	2/09/05

INTERVIEW RECORD

Site Name: Groveland Wells Superfund Site	**EPA ID No.:**MAD980732317	
Subject: Five Year Review	**Time:** 12:30 PM	**Date** 2/09/05
Type: W Telephone W Visit V Other **Location of Visit:** Groveland Wells Groundwater Treatment Facility, Groveland, MA	V Incoming V Outgoing	

Contact Made By:

Name: Cinthia McLane	**Title: Metcalf & Eddy Project Manager**	**Organization: Metcalf & Eddy**

Individual Contacted:

Name: Janet Waldron	**Title: Project Manager**	**Organization: MADEP, Bureau of Waste Site Cleanup**

Telephone No: (617) 556-1156 **Fax No: 617-292-5530** **E-Mail Address: Janet.Waldron@state.ma.us**	**Street Address:** **One Winter Street** **City, State, Zip:Boston, MA 02108**

Summary Of Conversation

There have been no changes in State regulations that would impact remedy protectiveness.

Routine site visits have been conducted as part of periodic site status meetings. There haven't been any complaints, violations, or other incidents requiring State response. Ms. Waldron indicated that she has been kept well informed.

INTERVIEW RECORD

Site Name: Groveland Wells Superfund Site		**EPA ID No.:**MAD980732317
Subject: Five Year Review		**Time:** 12:30PM **Date** 2/09/05
Type: V Telephone W Visit V Other **Location of Visit:** Groveland Wells Groundwater Treatment Facility, Groveland, MA		V Incoming V Outgoing

Contact Made By:

Name: Cinthia McLane	**Title: Metcalf & Eddy Project Manager**	**Organization: Metcalf & Eddy**

Individual Contacted:

Name: Bob Ricard	**Title: GWTF Operator**	**Organization: Weston Solutions**

Telephone No: (978) 374-3700 **Fax No: (978) 374-3701** **E-Mail Address: Bob.Ricard@WestonSolutions.com**	**Street Address:** **One Wall Street** **Manchester, NH 03301**

Summary Of Conversation

There have been no major changes in the O&M sampling or maintenance schedules since startup [in May 2000]. There have been a number of nonroutine issues, particularly a number of lightning strikes which have resulted in damage to instrumentation; problems with the Blackhawk pump systems used in the retrofitted monitoring wells (EW-S5 and EW-M3); stainless steel pipe leaks; problems with the paint in the clarifier; and problems with the peroxide destruction unit (PDU).

Modifications and improvements to plant surge protection have been made to address the lightning strikes. Wellhead control valves that were burnt out during the first lightning strike are now operated manually. Blackhawk has made changes to their pump system that have improved operation at extraction well EW-S5. No changes have been made to EW-M3 since this well may be shutdown in the near future. The clarifier was repainted under warranty, the PDU was replaced under warranty, and stainless steel piping is gradually being replaced with PVC.

Since startup, several cost saving measures have been taken, including decreasing the number of UV lamps in operation and disposing of the sludge as a nonhazardous liquid, which is less costly than disposing of dewatered sludge due to a high level of labor required to operate the filter press [contract modifications were made to decrease cost to the government for these changes].

There have been no security issues during the past 5 years.

Mr. Ricard had the following suggestions for improving plant operations:

- Switch all plant and wellhead piping to PVC;

- Replace EW-M1 and EW-M2 pump heads.

He also noted that there has been washout near EW-S4, which will need to be filled with rock.

ATTACHMENT 5
RISK CALCULATIONS

TABLE 1
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
GROVELAND WELLS SUPERFUND SITE

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits
Extraction Wells								
	71-55-6	1,1,1-Trichloroethane	NA	9.9 J	ug/L	EW-S2	NA	NA
	540-59-0	1,2-Dichloroethene (total)	NA	130	ug/L	EW-S1	NA	NA
	79-01-6	Trichloroethene	NA	33000 D	ug/L	EW-S2	NA	NA

(1) Minimum/maximum detected concentration.

TABLE 2
GROUNDWATER TO INDOOR AIR
GROVELAND WELLS

	GW EPC	GW Temp.	GW Temp.	Henry's Law Constant at ref. temp.	Henry's Law Reference Temp.	Normal Boiling Point	Enthalpy of vaporization at T_S	Critical Temp.	constant	Enthalpy of vaporization at T_S	Gas Constant	Henry's Law Constant at T_S	Gas Constant	Henry's Law Constant
	C_w	T_S	T'_S	H_R	T_R	T_B	ΔH_{vB}	T_C	n	ΔH_{vTS}	R_c	H_{TS}	R	H'_{TS}
Units:	µg/L	°C	K	atm-m^3/mol	K	K	cal/mol	K	unitless	cal/mol	cal/mol-K	atm-m^3/mol	m^3-atm/mol-K	unitless
Formula:	**Input**	(10 for screening)	(T_S + 273.15)	lookup	(lookup+273.15)	lookup	lookup	lookup	(Note 7)	(Note 8)		(Note 9)		H_{TS} / (R * T'_S)
Analyte														
1,1,1-Trichloroethane	**9.9E+00**	1.00E+01	2.83E+02	1.72E-02	2.98E+02	3.47E+02	7.14E+03	5.45E+02	3.55E-01	7.88E+03	1.99E+00	1.72E-02	8.21E-05	7.40E-01
1,2-Dichloroethene (total)	**1.3E+02**	1.00E+01	2.83E+02	4.07E-03	2.98E+02	3.34E+02	7.19E+03	5.44E+02	3.38E-01	7.73E+03	1.99E+00	4.07E-03	8.21E-05	1.75E-01
Trichloroethene	**3.3E+04**	1.00E+01	2.83E+02	1.03E-02	2.98E+02	3.60E+02	7.51E+03	5.44E+02	3.74E-01	8.56E+03	1.99E+00	1.03E-02	8.21E-05	4.43E-01

TABLE 2 (continued)
GROUNDWATER TO INDOOR AIR
GROVELAND WELLS

	Conversion Factor m^3 to L	Source Vapor Conc.	Depth below grade to bottom of enclosed space	Depth below grade to water table	Source Trench Separation	SCS soil type directly above water table	SCS soil type in vadose zone	Capillary zone mean particle diameter	Thickness of capillary zone	Diffusivity in air	Diffusivity in water	Vadose zone soil total porosity
	Conv01	C_{source}	L_F	L_{WT}	L_T	ST_{WT}	ST_v	D_{cz}	L_{cz}	D_a	D_w	n_v
Units:	L/m^3	$\mu g/m^3$	cm	cm	cm	unitless	unitless	cm	cm	cm^2/s	cm^2/s	cm^3/cm^3
Formula:		$C_w*H'_{TS}*Conv01$	(15 for slab construction)	(Note 3)	$L_{WT} - L_F$	(Note 10)	(Note 11)	lookup	(Note 12)	lookup	lookup	(0.43 for screening)
Analyte												
1,1,1-Trichloroethane	1.00E+03	7.33E+03	1.50E+01	1.07E+03	1.05E+03	SC	SCL	2.50E-02	3.00E+01	7.80E-02	8.80E-06	4.30E-01
1,2-Dichloroethene (total)	1.00E+03	2.28E+04	1.50E+01	1.07E+03	1.05E+03	SC	SCL	2.50E-02	3.00E+01	7.36E-02	1.13E-05	4.30E-01
Trichloroethene	1.00E+03	1.46E+07	1.50E+01	1.07E+03	1.05E+03	SC	SCL	2.50E-02	3.00E+01	7.90E-02	9.10E-06	4.30E-01

TABLE 2 (continued)
GROUNDWATER TO INDOOR AIR
GROVELAND WELLS

	Vadose zone soil water-filled porosity	Vadose zone soil air-filled porosity	Vadose zone Effective Diffusion Coeff.	Capillary zone soil total porosity	Capillary zone residual soil water content	Capillary zone saturated soil water content	Capillary zone van Genuchten shape parameter	Capillary zone soil water-filled porosity	Capillary zone soil air-filled porosity	Capillary zone Effective Diffusion Coeff.	Total Overall Effective Diffusion Coeff.
	$\theta_{w,v}$	$\theta_{a,v}$	D_v^{eff}	n_{cz}	$\theta_{r,cz}$	$\theta_{s,cz}$	M_{cz}	$\theta_{w,cz}$	$\theta_{a,cz}$	D_{cz}^{eff}	D_T^{eff}
Units:	cm^3/cm^3	cm^3/cm^3	cm^2/s	cm^3/cm^3	cm^3/cm^3	cm^3/cm^3	unitless	cm^3/cm^3	cm^3/cm^3	cm^2/s	cm^2/s
Formula:	(0.3 for screening)	$n_v - \theta_{w,v}$	(Note 13)	(0.43 for screening)	lookup	lookup	lookup	(Note 15)	$n_{cz} - \theta_{w,cz}$	(Note 14)	(Note 4)
Analyte											
1,1,1-Trichloroethane	3.00E-01	1.30E-01	4.74E-04	4.30E-01	1.17E-01	3.85E-01	1.72E-01	3.55E-01	7.52E-02	7.83E-05	4.14E-04
1,2-Dichloroethene (total)	3.00E-01	1.30E-01	4.52E-04	4.30E-01	1.17E-01	3.85E-01	1.72E-01	3.55E-01	7.52E-02	8.30E-05	4.01E-04
Trichloroethene	3.00E-01	1.30E-01	4.81E-04	4.30E-01	1.17E-01	3.85E-01	1.72E-01	3.55E-01	7.52E-02	8.07E-05	4.21E-04

TABLE 2 (continued)
GROUNDWATER TO INDOOR AIR
GROVELAND WELLS

	Area of Enclosed Space Below Grade	Building Ventilation Rate	Pressure Diff. between soil & enclosed space	Vadose zone soil saturated hydraulic conductivity	Conversion Factor hr to s	Viscosity of water at 10°C	Viscosity of water at system temp.	Density of water	Acceleration due to gravity	Vadose zone soil intrinsic permeability	Vadose zone residual soil water content	Vadose zone effective total fluid saturation
	A_B	$Q_{building}$	ΔP	$K_{s,v}$	Conv02	$\mu_{w\text{-}10}$	μ_w	ρ_w	g	$k_{i,v}$	$\theta_{r,v}$	S_{te}
Units:	cm^2	cm^3/s	$g/cm\text{-}s^2$	cm/hr	s/hr	g/cm-s	g/cm-s	g/cm^3	cm/s^2	cm^2	cm^3/cm^3	unitless
Formula:	(Note 2)	(8820 cfm assumed)	(40 for screening)	lookup			(Note 16)	(0.999 for screening)		(Note 17)	lookup	(Note 18)
Analyte												
1,1,1-Trichloroethane	6.69E+06	4.16E+06	4.00E+01	5.50E-01	3.60E+03	1.31E-02	1.31E-02	9.99E-01	9.81E+02	2.04E-09	6.30E-02	6.46E-01
1,2-Dichloroethene (total)	6.69E+06	4.16E+06	4.00E+01	5.50E-01	3.60E+03	1.31E-02	1.31E-02	9.99E-01	9.81E+02	2.04E-09	6.30E-02	6.46E-01
Trichloroethene	6.69E+06	4.16E+06	4.00E+01	5.50E-01	3.60E+03	1.31E-02	1.31E-02	9.99E-01	9.81E+02	2.04E-09	6.30E-02	6.46E-01

TABLE 2 (continued)
GROUNDWATER TO INDOOR AIR
GROVELAND WELLS

	Vadose zone van Genuchten shape parameter	Vadose zone soil relative air permeability	Vadose zone soil effective vapor permeability	Floor-wall seam perimeter	Vapor viscosity at avg. soil temp.	Crack depth below grade	Total area of cracks	Crack-to-total area ratio	Equivalent crack radius	Avg. Vapor Flow Rate Into Bldg.	Foundation or Slab Thickness	Crack Effective Diffusion Coeff.
	M_v	k_{rg}	k_v	X_{crack}	μ_{TS}	Z_{crack}	A_{crack}	η	r_{crack}	Q_{soil}	L_{crack}	D^{crack}
Units:	unitless	unitless	cm^2	cm	g/cm-s	cm	cm^2	unitless	cm	cm^3/s	cm	cm^2/s
Formula:	lookup	(Note 19)	(Note 20)	(perim. of bldg.)	0.00018*(T$_S$/298.15)^0.5	(= L_F for screening)	(1/10 of X_{crack})	A_{crack}/A_B	$\eta(A_B/X_{crack})$	(Note 5)	(15 for screening)	(Note 1)
Analyte												
1,1,1-Trichloroethane	2.48E-01	5.42E-01	1.10E-09	1.10E+04	1.75E-04	1.50E+01	1.10E+03	1.64E-04	1.00E-01	3.05E+00	1.50E+01	4.74E-04
1,2-Dichloroethene (total)	2.48E-01	5.42E-01	1.10E-09	1.10E+04	1.75E-04	1.50E+01	1.10E+03	1.64E-04	1.00E-01	3.05E+00	1.50E+01	4.52E-04
Trichloroethene	2.48E-01	5.42E-01	1.10E-09	1.10E+04	1.75E-04	1.50E+01	1.10E+03	1.64E-04	1.00E-01	3.05E+00	1.50E+01	4.81E-04

TABLE 2 (continued)
GROUNDWATER TO INDOOR AIR
GROVELAND WELLS

	Infinite Source Indoor Attenuation Coeff.	Infinite Source Bldg. Conc.
	α	$C_{building}$
Units:	unitless	$\mu g/m^3$
Formula:	(Note 6)	$C_{source} * \alpha$
Analyte		
1,1,1-Trichloroethane	3.39E-07	2.5E-03
1,2-Dichloroethene (total)	3.34E-07	7.6E-03
Trichloroethene	3.42E-07	5.0E+00

Notes:

Reference: *User's Guide for the Johnson and Ettinger (1991) Model for Subsurface Vapor Intrusion into Buildings*, USEPA, September 1997.

(1) Assumed equivalent to D_i^{eff} of soil layer i in contact with the floor

(2) Area of building slab: approximately 120 ft x 60 ft

(3) Depth to water table minus depth to bottom of floor assumed to be 35 ft

(4) $D_T^{eff} = L_T / (((L_{WT} - L_{cz}) / D_v^{eff}) + (L_{cz} / D_{cz}^{eff}))$

(5) $Q_{soil} = (2*\pi*\Delta P*k_v*X_{crack}) / (\mu_{TS}*\ln(2*Z_{crack}/r_{crack}))$

(6) $\alpha = [(D_T^{eff}*A_B/(Q_{building}*L_T))*EXP(Q_{soil}*L_{crack}/(D^{crack}*A_{crack}))]/[EXP(Q_{soil}*L_{crack}/(D^{crack}*A_{crack}))+(D_T^{eff}*A_B/(Q_{building}*L_T))+(D_T^{eff}*A_B/(Q_{soil}*L_T))*(EXP(Q_{soil}*L_{crack}/(D^{crack}*A_{crack}))-1)]$

(7) A function of the ratio T_B/T_C:

T_B/T_C	n
<0.57	0.30
0.57-0.71	$0.74(T_B/T_C)-0.116$
>0.71	0.41

(8) $\Delta H_{v,TS} = \Delta H_{v,B}*[(1-T_S/T_C)/(1-T_B/T_C)]^n$

(9) $H_{TS} = EXP[-\Delta H_{v,TS}/R_c*(1/T_S-1/T_R)]*H_R$; or taken from lookup table.

(10) Refer to 12 SCS soil types - use SC for screening.

(11) Refer to 12 SCS soil types - use SCL for screening.

(12) $L_{cz} = 0.15 / (0.2 * D_{cz})$

(13) $D_v^{eff} = D_a*(\theta_{a,v}^{3.33}/n_v^2)+(D_w/H'_{TS})(\theta_{w,v}^{3.33}/n_v^2)$

(14) $D_{cz}^{eff} = D_a*(\theta_{a,cz}^{3.33}/n_{cz}^2)+(D_w/H'_{TS})(\theta_{w,cz}^{3.33}/n_{cz}^2)$

(15) $\theta_{w,cz} = \theta_{r,cz}+((\theta_{s,cz}-\theta_{r,cz})/(2^{Mcz}))$, where the value 2 in the formula is used for screening, but may be refined based on soil parameters (see USEPA, 1999).

(16) $\mu_w = \mu_{w-10} * (T_S / 283.15)^{0.5}$

(17) $k_{i,v} = K_{s,v} * 1/Conv02 * \mu_w / (\rho_w * g)$

(18) $S_{te} = (\theta_{w,v} - \theta_{r,v}) / (n_v - \theta_{r,v})$

(19) $k_{rg} = (1 - S_{te})^{0.5} * (1-S_{te}^{1/Mv})^{2Mv}$

(20) $k_v = k_{i,v} * k_{rg}$; note that the model is very sensitive to this parameter and if site-specific values are available, they should be used.

TABLE 3
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
GROVELAND WELLS SUPERFUND SITE

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Indoor Air

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)
Extraction Wells															
	71-55-6	1,1,1-Trichloroethane	N/A	2.5E-03	ug/m^3	N/A	N/A	N/A	2.5E-03	N/A	230 N	N/A	N/A	N	BSL
	540-59-0	1,2-Dichloroethene (total)	N/A	7.6E-03	ug/m^3	N/A	N/A	N/A	7.6E-03	N/A	3.7 N	N/A	N/A	N	BSL
	79-01-6	Trichloroethene	N/A	5.0E+00	ug/m^3	N/A	N/A	N/A	5.0E+00	N/A	0.017 C	N/A	N/A	Y	ASL

(1) The modeled groundwater contributions to indoor air have been presented in the Maximum Concentration field. Refer to Table 2 for model results.
(2) Maximum concentration used for screening.
(3) Refer to supporting information for background discussion.
(4) USEPA Region 9 PRGs for ambient air (adjusted to an hazard quotient = 0.1 for noncarcinogens), October 2004.
(5) Rationale Codes:
Selection Reason: Above Screening Levels (ASL)
No Screening Level (NSL)
Deletion Reason: No Toxicity Information (NTX)
Below Screening Level (BSL)

Definitions:
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
PRG = Preliminary Remedial Goal
N/A = Not Applicable or Not Available
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 4

EXPOSURE POINT CONCENTRATION SUMMARY

REASONABLE MAXIMUM EXPOSURE

GROVELAND WELLS SUPERFUND SITE

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Indoor Air

Exposure Point (1)	Chemical of Potential Concern	Units	Arithmetic Mean	95% UCL (Distribution)	Maximum Concentration (Qualifier)	Exposure Point Concentration			
						Value	Units	Statistic	Rationale
Extraction Wells	Trichloroethene	N/A	N/A	N/A	N/A	5.0E+00	ug/m^3	Max	Screening Analysis

(1) Only COPCs selected on Table 3 appear.
Max = Maximum Detected Concentration
N/A = Not Applicable
UCL = Upper Confidence Limit

TABLE 5

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE

GROVELAND WELLS SUPERFUND SITE

Scenario Timeframe: Current
Medium: Groundwater
Exposure Medium: Indoor Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Commercial Worker	Adult	Extraction Wells	CA	Modeled Concentration in Air	see Table 3s	ug/m^3	see Table 3s	Chronic Daily Intake (CDI) (ug/m^3) =
				ET	Exposure Time	8	hrs/day	Prof. Judgement	$\frac{CA \times ET \times EF \times ED}{CF \times AT}$
				EF	Exposure Frequency	250	days/year	USEPA, 2004a	
				ED	Exposure Duration	25	years	USEPA, 2004a	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	9125	days	USEPA, 1989	
				CF	Conversion Factor	24	hrs/day	--	

TABLE 6

NON-CANCER TOXICITY DATA -- INHALATION

GROVELAND WELLS SUPERFUND SITE

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Extrapolated RfD		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfC : Target Organ(s)	
		Value	Units	Value	Units			Source(s)	Date(s) (MM/DD/YYYY)
Trichloroethene	Chronic	4E+01	ug/m^3	N/A	N/A	Liver/CNS	3000	STSC	01/05/05

STSC = Superfund Technical Support Center

N/A = Not Applicable

TABLE 7

CANCER TOXICITY DATA -- INHALATION

GROVELAND WELLS SUPERFUND SITE

Chemical of Potential Concern	Unit Risk		Inhalation Cancer Slope Factor		Weight of Evidence/ Cancer Guideline Description	Unit Risk : Inhalation CSF	
	Value	Units	Value	Units		Source(s)	Date(s) (MM/DD/YYYY)
Trichloroethene	1.1E-04	$(ug/m^3)^{-1}$	N/A	N/A	C-B2	NCEA	01/05/05

N/A = Not Applicable

EPA Group:

A - Human carcinogen

B1 - Probable human carcinogen - indicates that limited human data are available

B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans

C - Possible human carcinogen

D - Not classifiable as a human carcinogen (by the oral route)

E - Evidence of noncarcinogenicity

NCEA = National Center for Environmental Assessment; Trichloroethylene Health Risk Assessment: Synthesis and Characterization. EPA/600/P-01/002A (2001).

TABLE 8

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

GROVELAND WELLS SUPERFUND SITE

Scenario Timeframe: Current/Future
Receptor Population: Commercial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Indoor Air (Vapor Intrusion)	Extraction Wells	Inhalation	Trichloroethene	5E+00	ug/m^3	4.1E-01	ug/m3	1.1E-04	(ug/m3) $^{-1}$	4.5E-05	1.1E+00	ug/m3	4.0E+01	ug/m3	2.9E-02
			Exp. Route Total								4E-05					3E-02
		Exposure Point Total									4E-05					3E-02
	Exposure Medium Total										4E-05					3E-02
Medium Total											4E-05					3E-02
											Total of Receptor Risks Across All Media	4E-05				Total of Receptor Hazards Across All Media	3E-02

ATTACHMENT 6
SUMMARY OF ARARs

ATTACHMENT 6, TABLE 1. CURRENT NUMERICAL STANDARDS FOR CONTAMINANTS OF CONCERN FOR GROUNDWATER
GROVELAND WELLS NOS. 1 AND 2 SUPERFUND SITE, GROVELAND, MASSACHUSETTS

Contaminants Of Concern (COC) [1]	SDWA [2] MCL (mg/L)	SDWA [2] MCLG (mg/L)	RCRA MCL [3] (mg/L)	Massachusetts Drinking Water Stds [4] (mg/L)	Massachusetts Groundwater Quality Stds. Class I [5] (mg/L)	Massachusetts ORSGs [6] (mg/L)
Organic Compounds						
Acetone	--	--	--	--	[10]	6.3
Benzene	0.005	0	--	0.005	[10]	--
Chlorobenzene	0.1	0.1	--	0.1	[10]	--
1,1-Dichloroethane	0.005	0		--	[10]	0.07
1,2-Dichloroethane	0.005	0	--	0.005	[10]	0.07
1,1-Dichloroethene	0.007	0.007	--	0.007	[10]	--
cis-1,2-Dichloroethene	0.07	0.07		0.07	[10]	--
trans-1,2-Dichloroethene	0.1	0.1		0.1	[10]	--
Methylene chloride	0.005	0	--	0.005	[10]	--
Tetrachloroethene	0.005	0	--	0.005	[10]	--
Toluene	1	1	--	1	[10]	--
1,1,1-Trichloroethane	0.2	0.2		0.2	[10]	--
Trichloroethene	0.005	0	--	0.005	[10]	--
Vinyl chloride	0.002	0	--	0.002	[10]	--
Inorganic Compounds						
Arsenic	0.010 as of 1/23/06	0	0.05	0.05 [7]	0.05	--
Barium	2	2		2	1	--
Berrylium	0.004	0.004		0.004	--	--
Cadmium	0.005	0.005	0.01	0.005	0.01	--
Chromium (total)	0.1	0.1	0.05	0.1	0.05	--
Mercury (inorganic)	0.002	0.002	0.002	0.002	0.002	--
Selenium	0.05	0.05		0.05	0.01	--
Silver	0.1	0.1		0.1	0.05	--
Vanadium	--	--		--	[10]	--
Other Chemicals [8]						
Antimony	0.006	0.006	--	0.006	[10]	--
Lead	TT [9]	0	0.05	TT [9]	0.05	--
Nickel	--	--	--	--	[10]	0.1

FOOTNOTES

1 Contaminants of concern (COCs) are those listed in Table 23 of the Management of Migration Operable Unit ROD (1991).

2 National Primary Drinking Water Standards, June 2003. Office of Water (4606M), EPA 816-F-03-016. www.epa.gov/safewater.

3 Federal Resource Conservation and Recovery Act (RCRA) Maximum Concentration of Constituents for Groundwater Protection, 40 CFR 264.94, Table 1. RCRA sets the limits for organic contaminants at background levels.

4 Massachusetts Drinking Water Regulations, 310 CMR 22.00, MA Maximum Contaminant Level (MMCL), last promulgated Spring 2005.

5 Massachusetts Groundwater Quality Standards, 314 CMR 6.06.

6 Massachusetts Department of Environmental Protection, Office of Research and Standards, Drinking Water Standards and Guidelines, Spring 2005.

7 The MCL for arsenic was changed in 2001 and will become effective at 0.01 mg/L as of 1/23/06 following Implementation Guidance issued in August 2002.

8 Analytes detected in groundwater

9 TT: Treatment technique. Lead and copper are regulated by a Treatment Technique that requires systems to control the corrosiveness of their water. If more than 10% of tap water samples exceed the action level, water systems must take additional steps. For copper the action level is 1.3 mg/L and for lead it is 0.015 mg/L.

10 None in such concentrations which in the opinion of the department would impair the waters for use as a source of potable water or to cause or contribute to a condition in contravention of standards for other classified waters of the Commonwealth.

TABLE SC-1

CHEMICAL-SPECIFIC ARARs
GROVELAND WELLS NOS. 1 & 2 SUPERFUND SITE: OU2 - SOURCE CONTROL
GROVELAND, MASSACHUSETTS

Medium/Authority	Requirement/Citation	ROD Status	ROD Requirement Synopsis	Consideration in the RI/FS and Remedy	Five-Year Review
GROUNDWATER					
Federal Regulatory Requirements	SDWA - Maximum Contaminant Levels (MCLs) (49 CFR 141.1-141.16)	Relevant and Appropriate	MCLs have been promulgated for a number of common organic and inorganic contaminants. These levels regulate the concentrations of contaminants in public drinking water supplies, and may also be considered relevant and appropriate for groundwater aquifers potentially used for drinking water.	Used to evaluate risks to human health due to consumption of groundwater with contaminants of concern. MCLs were used to set clean-up levels in groundwater for these contaminants. Cleanup of soil will assure that groundwater is not contaminated further.	The Site is located within the Zone II recharge area for Groveland municipal well No. 1. Wellhead treatment had been in place to remove Site contaminants after the contamination was found, but it was discontinued in May 1994 when it was found to be no longer needed. Some MCLs and MCLGs have changed since completion of the RODs in 1988 and 1991. Current MCLs/MCLGs are provided in Table 1. Constituents in Site groundwater still exceed MCLs for several contaminants. Groundwater extraction and treatment is currently being conducted. Groundwater contamination remains, however, and treatment is expected to continue for many years. Groundwater requires continued remediation under this rule.

TABLE SC-1 (Continued)

CHEMICAL-SPECIFIC ARARs
GROVELAND WELLS NOS. 1 & 2 SUPERFUND SITE: OU2 - SOURCE CONTROL
GROVELAND, MASSACHUSETTS

Medium/Authority	Requirement/Citation	ROD Status	ROD Requirement Synopsis	Consideration in the RI/FS and Remedy	Five-Year Review
Commonwealth Regulatory Requirements and Standards	DEQE - Massachusetts Groundwater Quality Standards (314 CMR 6.00)	Applicable: **Now No Longer ARAR**	Massachusetts Groundwater Quality Standards have been promulgated for many contaminants. When the Commonwealth levels are more stringent than Federal levels, the Commonwealth levels will be used.	DEQE Groundwater Standards for iron and manganese are the only Commonwealth standards more stringent than federal standards for chemicals.	These standards are used to establish discharge limits for discharge to groundwaters of the Commonwealth. They are no longer applicable because the groundwater treatment plant discharge is to surface water rather than groundwater.

TABLE SC-1 (Continued)

CHEMICAL-SPECIFIC ARARs
GROVELAND WELLS NOS. 1 & 2 SUPERFUND SITE: OU2 - SOURCE CONTROL
GROVELAND, MASSACHUSETTS

Medium/Authority	Requirement/Citation	ROD Status	ROD Requirement Synopsis	Consideration in the RI/FS and Remedy	Five-Year Review
	DEQE - Drinking Water Standards (310 CMR 22.00 and CMR 33.00)	Relevant and Appropriate	Massachusetts adopted MCLs as its drinking water standards to regulate the concentration of contaminants in public drinking water supplies.	Since DEQE drinking water standards are the same as MCLs, promulgated MCLs were used to set clean-up levels for contaminants of concern.	The Site is located within the Zone II recharge area for Groveland municipal well No. 1. Wellhead treatment had been in place to remove Site contaminants after the contamination was found, but it was discontinued in May 1994 when it was found to be no longer needed. Some Massachusetts MCLs (MMCLs) have changed since completion of the RODs in 1988 and 1991. Current MMCLs are provided in Table 1. Constituents in Site groundwater still exceed MMCLs for several contaminants. Groundwater extraction and treatment is currently being conducted. Groundwater contamination remains, however, and treatment is expected to continue for many years. Groundwater requires continued remediation under this rule.

TABLE SC-1 (Continued)

CHEMICAL-SPECIFIC ARARs
GROVELAND WELLS NOS. 1 & 2 SUPERFUND SITE: OU2 - SOURCE CONTROL
GROVELAND, MASSACHUSETTS

Medium/Authority	Requirement/Citation	ROD Status	ROD Requirement Synopsis	Consideration in the RI/FS and Remedy	Five-Year Review
	Massachusetts Groundwater Discharge Permit Program (314 CMR 5.00)	Applicable: **Now No Longer ARAR**	Regulations for groundwater discharge limitations.	Discharges to this Class I aquifer must meet levels set at MCLs.	No discharges to the aquifer are occurring. Treated groundwater is discharged to surface water (Mill Pond). Discharge back to the aquifer was found to be infeasible during remedial design.
AIR					
Federal Regulatory Requirements	CAA - State Implementation Plans - 40 CFR 52	Relevant and Appropriate	These federally-approved Commonwealth standards were primarily developed to regulate stack (point source) automobile-related pollutants, and volatile organic compounds (VOCs).	Standards for particulate matter and VOCs to be used when assessing excavation and emission controls for soil and groundwater treatment.	This ARAR was complied with during remedial construction and continues to be complied with at the groundwater treatment plant, where VOC emissions are controlled using Granular Activated Carbon. Additional source control actions, if performed, will need to control VOC and dust emissions.

TABLE SC-1 (Continued)

CHEMICAL-SPECIFIC ARARs
GROVELAND WELLS NOS. 1 & 2 SUPERFUND SITE: OU2 - SOURCE CONTROL
GROVELAND, MASSACHUSETTS

Medium/Authority	Requirement/Citation	ROD Status	ROD Requirement Synopsis	Consideration in the RI/FS and Remedy	Five-Year Review
	CAA - National Ambient Air Quality Standards (NAAQS)	Relevant and Appropriate	The standards were developed to protect human health and welfare, by establishing primary and secondary concentrations for certain pollutants.	Air quality standards will be used to assess the off-site impact of remedial activities.	This ARAR was complied with during remedial construction and continues to be complied with at the groundwater treatment plant, where VOC emissions are controlled using Granular Activated Carbon. Additional source control actions, if performed, will need to control VOC and dust emissions.
Commonwealth Regulatory Requirements	DEQE - Air Pollution Control Emission Standards (310 CMR 7.00)	Relevant and Appropriate	These standards were primarily developed to regulate stack (point-source) automobile-related pollutants, and volatile organic compounds (VOCs).	Alternatives involving excavation and emission controls for soil and groundwater treatment would be regulated. Best available control technology would be required for VOCs.	This ARAR was complied with during remedial construction and continues to be complied with at the groundwater treatment plant, where VOC emissions are controlled using Granular Activated Carbon. Additional source control actions, if performed, will need to control VOC and dust emissions.

TABLE SC-1 (Continued)

CHEMICAL-SPECIFIC ARARs
GROVELAND WELLS NOS. 1 & 2 SUPERFUND SITE: OU2 - SOURCE CONTROL
GROVELAND, MASSACHUSETTS

Medium/Authority	Requirement/Citation	ROD Status	ROD Requirement Synopsis	Consideration in the RI/FS and Remedy	Five-Year Review
	DEQE - Ambient Air Quality Standards (310 CMR 6.00)	Relevant and Appropriate	These standards were developed to protect human health and welfare, by establishing primary and secondary concentrations for certain pollutants.	Air quality standards will be used to assess the off-site impact of remedial activities.	Emissions from the groundwater treatment plant are monitored on a regular basis to confirm proper operation of the Granular Activted Carbon that is in place to control VOC emissions to the atmosphere. Additional source control actions, if implemented, will need to consider these standards during remedial design, construction, and operation.
Federal Criteria, Advisories, and Guidance	Threshold Limit Values (TLVs)	Relevant and Appropriate: **Now No Longer ARAR** but remains To Be Considered	These standards were issued as consensus standards for controlling air quality in work place environments.	TLVs could be used for assessing site inhalation risks for workers during soil removal operations.	This guidance was considered during remedial construction and continues to be considered at the groundwater treatment plant, where VOC emissions are controlled using Granular Activated Carbon. Additional source control actions, if performed, will need to control VOC emissions and TLVs would be considered for worker protection.

TABLE SC-2

ACTION-SPECIFIC ARARs
GROVELAND WELLS NOS. 1 & 2 SUPERFUND SITE: OU2 - SOURCE CONTROL
GROVELAND, MASSACHUSETTS

ARARs	ROD Requirement Synopsis	Action To Be Taken To Attain ARARs	Five-Year Review
RCRA - Standards for Owners and Operators of Permitted Hazardous Waste Facilities (Subpart B, General Facility Standards, 40 CFR 264.10 - 264.19)	General facility requirements outline general waste analysis, security measures, inspections, and training requirements.	Any facilities will be constructed, fenced, posted, and operated in accordance with this requirement. All workers will be properly trained. Process wastes will be evaluated for the characteristics of hazardous wastes to assess further handling requirements.	The General Facility Standards do not apply to "remediation waste management sites" according to 40 CFR 264.1(j), but this section provides alternative requirements in 40 CFR 264.1(j)(1) through (5) regarding waste analysis, security, inspections, and training. The substantive aspects of these alternative requirements are complied with for the groundwater treatment plant, and will be relevant and appropriate for any additional facilities that may be constructed and operated as part of potential future source area remedial actions.

TABLE SC-2 (Continued)

ACTION-SPECIFIC ARARs
GROVELAND WELLS NOS. 1 & 2 SUPERFUND SITE: OU2 - SOURCE CONTROL
GROVELAND, MASSACHUSETTS

ARARs	ROD Requirement Synopsis	Action To Be Taken To Attain ARARs	Five-Year Review
RCRA - Preparedness and Prevention (40 CFR 264.30 - 264.37)	This regulation outlines requirements for safety equipment and spill control.	Safety and communication equipment will be installed at the Site; local authorities will be familiarized with Site operations.	The Preparedness and Prevention Standards do not apply to "remediation waste management sites" according to 40 CFR 264.1(j), but this section provides an alternative requirement for such sites in 40 CFR 264.1(j)(6) and (j)(10) to take precautions to prevent accidental ignition or reaction of ignitable or reactive waste, and prevent threats to human health and the environment from such wastes. The substantive aspects of the alternative requirements are complied with for the groundwater treatment plant, and will be relevant and appropriate for any additional facilities that may be constructed and operated as part of potential future source area remedial actions.

TABLE SC-2 (Continued)

ACTION-SPECIFIC ARARs
GROVELAND WELLS NOS. 1 & 2 SUPERFUND SITE: OU2 - SOURCE CONTROL
GROVELAND, MASSACHUSETTS

ARARs	ROD Requirement Synopsis	Action To Be Taken To Attain ARARs	Five-Year Review
RCRA - Contingency Plan and Emergency Procedures (40 CFR 264.50 - 264.56)	This regulation outlines the requirements for emergency procedures to be used following explosions, fires, etc.	Plans will be developed and implemented during Site work including installation of monitoring wells, and implementation of Site remedies. Copies of the plans will be kept on-site.	The Contingency Plan and Emergency Procedures Standards do not apply to "remediation waste management sites" according to 40 CFR 264.1(j), but this section provides an alternative requirement in 40 CFR 264.1(j)(10) to prevent accidents and develop a contingency and emergency plan. The substantive aspects of the alternative requirements are complied with for the groundwater treatment plant, and will be relevant and appropriate for to any additional facilities that may be constructed and operated as part of potential future source area remedial actions.
RCRA - Manifesting, Recordkeeping, and Reporting (40 CFR 264.70 - 264.77)	This regulation specifies the recordkeeping and reporting requirements for RCRA facilities.	Records of facility activities will be developed and maintained during remedial actions.	Records are maintained for the groundwater treatment plant. Recordkeeping requirements will also be relevant and appropriate for any additional facilities that may be constructed and operated as part of potential future source area remedial actions.
RCRA - Releases from Solid Waste Management Units (40 CFR 264.90 - 264.101)	This regulation details requirements for a corrective action groundwater monitoring program.	A groundwater monitoring program is a component of all alternatives. RCRA regulations will be utilized as guidance during development of this program.	A groundwater monitoring program has been established for the Site and will remain in effect during operation of the groundwater treatment plant and any subsequent source area remedial activities.

TABLE SC-2 (Continued)

ACTION-SPECIFIC ARARs
GROVELAND WELLS NOS. 1 & 2 SUPERFUND SITE: OU2 - SOURCE CONTROL
GROVELAND, MASSACHUSETTS

ARARs	ROD Requirement Synopsis	Action To Be Taken To Attain ARARs	Five-Year Review
RCRA - Closure and Post-Closure (40 CFR 265.110 - 265.120)	This regulation details specific requirements for closure and post-closure of interim status hazardous waste facilities.	Those parts of the regulation concerned with long-term monitoring and maintenance of the Site will be considered during remedial design. Remedial action will comply with regulations for closure of storage facility.	Closure of the groundwater treatment plant and any other facilities that may be installed for additional source control remedial actions would be performed in accordance with the substantive requirements of this subpart, such as those regarding disposal or decontamination of equipment.
RCRA - Land Disposal Restrictions (40 CFR 268)	This regulation outlines land disposal requirements and restrictions for hazardous wastes.	Contaminated soils will be treated to the Best-Demonstrated-Available-Technology (BDAT) levels before being placed or replaced on the land. Hazardous waste cannot be stored except for accumulation for recovery, treatment, or disposal.	Remedial actions have not included the on-site treatment of soil, with replacement back to the site. In-situ treatment was applied for the Source Control operable unit, and additional source control actions may be implemented in the future. The LDR treatment standards as applied to contaminated soil are applicable to further soil remedial actions.

TABLE SC-2 (Continued)

ACTION-SPECIFIC ARARs
GROVELAND WELLS NOS. 1 & 2 SUPERFUND SITE: OU2 - SOURCE CONTROL
GROVELAND, MASSACHUSETTS

ARARs	ROD Requirement Synopsis	Action To Be Taken To Attain ARARs	Five-Year Review
RCRA - Surface Impoundments (40 CFR 264.220 - 264.232)	This regulation details the design, construction, operation, monitoring, inspection, and contingency plans for a RCRA surface impoundment. It also provides three closure options for CERCLA sites; clean closure, containment closure, and alternate closure.	To comply with clean closure, the owner must remove or decontaminate all waste. To comply with containment closure, the owner must eliminate free liquid, stabilize remaining water, and cover impoundment with a cover that complies with the regulation. Cover integrity must be maintained, the groundwater system monitored, and runoff controlled. To comply with alternative closure, the owner must eliminate all pathways of exposure to contaminants and provide long-term monitoring.	This regulation is no longer applicable because no surface impoundments were constructed or operated at the site, and none are planned.
RCRA - Landfills (40 CFR 264.300 - 264.339)	This regulation details the design, operation, monitoring, inspection, recordkeeping, closure, and permit requirements for a RCRA landfill.	Disposal of contaminated materials from the Valley Site must be to a RCRA-permitted facility that complies with all RCRA landfill regulations.	Disposal of remediation wastes from the site is performed in accordance with RCRA hazardous waste requirements for any wastes that are characterized as RCRA hazardous wastes. This regulation does not apply to the site itself because no on-site landfill exists or is planned.

TABLE SC-2 (Continued)

ACTION-SPECIFIC ARARs
GROVELAND WELLS NOS. 1 & 2 SUPERFUND SITE: OU2 - SOURCE CONTROL
GROVELAND, MASSACHUSETTS

ARARs	ROD Requirement Synopsis	Action To Be Taken To Attain ARARs	Five-Year Review
RCRA - National RCRA Corrective Action Strategy (51 Federal Register 37608)	This regulation requires a corrective action program to prevent the release of hazardous constituents, through removal or treatment.	To-be-considered in the removal of subsurface disposal systems.	This regulation is not ARAR, but was To Be Considered during remedial construction. It would not be ARAR for future source control actions.
OSHA - General Industry Standards (29 CFR Part 1910)	These regulations specify the 8 hour time weighted average concentration for various organic compounds. Training requirements for workers at hazardous waste operations are specified in 29 CFR 1919.120.	Proper respiratory equipment will be worn, if it is impossible to maintain the work atmosphere below the concentrations. Workers performing remedial activities would be required to complete specified training.	OSHA worker protection standards are no longer considered ARAR for CERCLA response actions, but are To Be Considered. The remedial construction contractor and O&M contractor were/are required to comply with OSHA worker protection standards. Additional remedial actions in the source area, if any, would also be performed in conformance with OSHA worker protection standards.

TABLE SC-2 (Continued)

ACTION-SPECIFIC ARARs
GROVELAND WELLS NOS. 1 & 2 SUPERFUND SITE: OU2 - SOURCE CONTROL
GROVELAND, MASSACHUSETTS

ARARs	ROD Requirement Synopsis	Action To Be Taken To Attain ARARs	Five-Year Review
OSHA - Safety and Health Standards (29 CFR Part 1926)	This regulation specifies the type of safety equipment and procedures to be followed during Site remediation.	All appropriate safety equipment will be on-site. In addition, safety procedures will be followed during on-site activities.	OSHA worker protection standards are no longer considered ARAR for CERCLA response actions, but are To Be Considered. The remedial construction contractor and O&M contractor were/are required to comply with OSHA worker protection standards. Additional remedial actions in the source area, if any, would also be performed in conformance with OSHA worker protection standards.
OSHA - Recordkeeping, Reporting, and Related Regulations (29 CFR 1904)	This regulation outlines the recordkeeping and reporting requirements for an employer under OSHA.	These requirements apply to all Site contractors and subcontractors and must be followed during all site work.	OSHA worker protection standards are no longer considered ARAR for CERCLA response actions, but are To Be Considered. The remedial construction contractor and O&M contractor were/are required to comply with OSHA worker protection standards. Additional remedial actions in the source area, if any, would also be performed in conformance with OSHA worker protection standards.
CAA - NAAQS for Total Suspended Particulates (40 CFR 129.105, 750)	This standard specifies maximum primary and secondary 24-hour concentrations for particulate matter.	Fugitive dust emissions from Site excavation activities will be maintained below 260 ug/m^3 (primary standard) by dust suppressants, if necessary.	This ARAR was complied with during remedial construction. Additional source control actions, if performed, will need to control dust emissions.

TABLE SC-2 (Continued)

ACTION-SPECIFIC ARARs
GROVELAND WELLS NOS. 1 & 2 SUPERFUND SITE: OU2 - SOURCE CONTROL
GROVELAND, MASSACHUSETTS

ARARs	ROD Requirement Synopsis	Action To Be Taken To Attain ARARs	Five-Year Review
DOT Rules for Transportation of Hazardous Materials (49 CFR Parts 107, 171.1 - 171.5)	This regulation outlines procedures for the packaging, labeling, manifesting, and transporting of hazardous materials.	Contaminated materials will be packaged, manifested, and transported to a licensed off-site disposal facility in compliance with these regulations.	DOT requirements are no longer considered ARAR for CERCLA response actions. Transport of treatment residuals and chemicals to/from the Site is performed in compliance with DOT Rules.
U.S. EPA Groundwater Protection Strategy - U.S. EPA Policy Statement (August, 1984)	This strategy identifies the desired groundwater quality to be achieved during and upon completion of remedial actions. Strategy is based on aquifer characteristics and use.	To-be-considered in establishing site-specific remedial response objectives.	This policy is not ARAR but To Be Considered, and was considered during remedial design. It is not applicable to potential future source area remedial actions, because the remedial action objectives would be based on soil cleanup goals derived to reduce leaching to groundwater, as well as other factors.

TABLE SC-2 (Continued)

ACTION-SPECIFIC ARARs
GROVELAND WELLS NOS. 1 & 2 SUPERFUND SITE: OU2 - SOURCE CONTROL
GROVELAND, MASSACHUSETTS

ARARs	ROD Requirement Synopsis	Action To Be Taken To Attain ARARs	Five-Year Review
U.S. EPA Underground Storage Tank Requirements (Proposed) (52 Federal Register 12662, April 17, 1987). **Now regulation: 40 CFR Part 280, Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST) - Subpart G: Out-of-Service UST Systems and Closure**	These proposed regulations govern the design, installation, testing, removal and corrective action for underground storage tanks containing either petroleum products or hazardous materials.	To-be-considered in developing testing and corrective action programs.	The proposed regulation was not ARAR because USTs were not closed or removed during past remedial activities. Future source area remedial actions may involve the removal of six USTs still thought to be located under the Valley Building, four of which are believed to be either empty or filled with sand. Two of the 6 suspected USTs have not been located. This regulation would be applicable to closure of any not yet located USTs, should they contain product (either petroleum or chlorinated solvents).
MASSACHUSETTS DEQE (now MADEP) - Hazardous Waste Regulations, Phases I and II (310 CMR 30.000, MGL Ch. 21C)	This regulation provides a comprehensive program for the handling, storage and recordkeeping at hazardous waste facilities. They supplement RCRA regulations.	Because these requirements supplement RCRA hazardous waste regulations, they must also be considered at the Valley Site.	These regulations are complied with for off-site transport and disposal of remediation wastes that are classified as hazardous waste. These regulations remain ARAR for O&M activities and potential future source area remedial actions.

TABLE SC-2 (Continued)

ACTION-SPECIFIC ARARs
GROVELAND WELLS NOS. 1 & 2 SUPERFUND SITE: OU2 - SOURCE CONTROL
GROVELAND, MASSACHUSETTS

ARARs	ROD Requirement Synopsis	Action To Be Taken To Attain ARARs	Five-Year Review
Massachusetts Environmental Policy Act (MEPA) Regulations (30 CMR 10.00)	These regulations describe the process for filing an Environmental Impact Report (EIR).	Remedial activities will be coordinated with the MEPA unit.	Coordination with the Commonwealth was performed during remedial design and construction, and also would be performed for any additional source area remedial actions contemplated.
DEQE (now MADEP)- Ambient Air Quality Standards (310 CMR. 6.00) and Air Pollution Control (310 CMR 7.00)	This regulation outlines the standards and requirements for air pollution control in the Commonwealth of Massachusetts. All provisions, procedures, and definitions are described.	Particulate matter emissions from Site excavation activities must be maintained at an annual geometric mean of 75 ug/m^3 and a maximum 24-hour concentration of 40 mg/m^3 (primary standards). Appropriate emission standards from soil or groundwater treatment systems would have to be met. VOC emissions would be regulated by best available control technology.	This ARAR was complied with during remedial construction and continues to be complied with at the groundwater treatment plant, where VOC emissions are controlled using Granular Activated Carbon. Additional source control actions, if performed, will need to control dust and VOC emissions.
Department of Labor and Industries - Right-to-Know-Program (441 CMR 21.00)	This regulation outlines the procedures whereby employees must disclose the hazardous substances encountered in the workplace.	Remedial activity contractors would be required to prepare a Material Safety Data Sheet (MSDS).	Worker safety rules are no longer considered ARAR for CERCLA response actions but are To Be Considered. MSDS are maintained at the groundwater treatment facility.

TABLE SC-2 (Continued)

ACTION-SPECIFIC ARARs
GROVELAND WELLS NOS. 1 & 2 SUPERFUND SITE: OU2 - SOURCE CONTROL
GROVELAND, MASSACHUSETTS

ARARs	ROD Requirement Synopsis	Action To Be Taken To Attain ARARs	Five-Year Review
Department of Public Health - Right-to-Know-Program (105 CMR 670.00)	Same as Department of Labor and Industries.	Same as Department of Labor and Industries.	Worker safety rules are no longer considered ARAR for CERCLA response actions but are To Be Considered. MSDS are maintained at the groundwater treatment facility.
DEQE (now MADEP) - Right-to-Know-Program (310 CMR 33.00)	Same as Department of Labor and Industries.	Same as Department of Labor and Industries.	Worker safety rules are no longer considered ARAR for CERCLA response actions but are To Be Considered. MSDS are maintained at the groundwater treatment facility.
DEQE (now MADEP) - Massachusetts Contingency Plan (MCP) (310 CMR 40.00)	This regulation establishes the requirements for response to environmental releases of hazardous chemicals.	All remedial activities must conform with the MCP.	Under 310 CMR 40.0111, sites regulated under the Federal Superfund program are adequately regulated when MADEP concurs with the ROD. MADEP concurred with the RODs for the Groveland site and considers the Site to be adequately regulated. Hence the MCP is no longer considered to be ARAR for the CERCLA response action, but the MCP would be applicable should a new release occur at the Site. Remedial activities are in compliance with the intent of the MCP.

TABLE SC-2 (Continued)

ACTION-SPECIFIC ARARs
GROVELAND WELLS NOS. 1 & 2 SUPERFUND SITE: OU2 - SOURCE CONTROL
GROVELAND, MASSACHUSETTS

ARARs	ROD Requirement Synopsis	Action To Be Taken To Attain ARARs	Five-Year Review
Massachusetts Board of Fire Protection Regulations (527 CMR 9.00)	These regulations specify procedures for the installation of underground storage tanks, and for testing and removal requirements.	All underground storage tanks will be tested for release of hazardous substances and removed, as necessary.	No USTs were removed during previous remedial actions. Future source area remedial actions may involve the removal of six USTs still thought to be located under the Valley Building, four of which are believed to be either empty or filled with sand. Two of the 6 suspected USTs have not been located. This regulation would be applicable to closure of any not yet located USTs, should they contain product (either petroleum or chlorinated solvents).
DEQE (now MADEP) - Drinking Water Regulations (310 CMR 22.00)	These regulations require periodic monitoring of public water supplies and establish guidelines for allowable concentrations of certain contaminants and compounds.	Any installed groundwater treatment system must meet the appropriate limits for the Valley Site contaminants-of-concerns.	No longer ARAR because treated water is not discharged back to the drinking water aquifer, but is discharged to surface water (Mill Pond).

TABLE MOM-1

CHEMICAL-SPECIFIC ARARs
GROVELAND WELLS NOS. 1 & 2 SUPERFUND SITE: OU1- MANAGEMENT OF MIGRATION
GROVELAND, MASSACHUSETTS

Medium/Authority	Requirement/Citation	ROD Status	Consideration in the RI/FS and Remedy	Five-Year Review
GROUNDWATER				
Federal Regulatory Requirements	SDWA - Maximum Contaminant Levels (MCLs) and Non-Zero Maximum Contaminant Level Goals (MCLGs) 40 CFR 141.11 - 141.16 and 141.50 - 141.52	Relevant and Appropriate	These requirements will be attained by the selected alternative in the groundwater beneath the Site.	The Site is located within the Zone II recharge area for Groveland municipal well No. 1. Wellhead treatment had been in place to remove Site contaminants after the contamination was found, but it was discontinued in May 1994 when it was found to be no longer needed. Some MCLs and MCLGs have changed since completion of the RODs in 1988 and 1991. Current MCLs/MCLGs are provided in Table 1. Constituents in Site groundwater still exceed MCLs for several contaminants. Groundwater extraction and treatment is currently being conducted. Groundwater contamination remains, however, and treatment is expected to continue for many years. Groundwater requires continued remediation under this rule.

TABLE MOM-1 (Continued)

CHEMICAL-SPECIFIC ARARs
GROVELAND WELLS NOS. 1 & 2 SUPERFUND SITE: OU1 - MANAGEMENT OF MIGRATION
GROVELAND, MASSACHUSETTS

Medium/Authority	Requirement/Citation	ROD Status	Consideration in the RI/FS and Remedy	Five-Year Review
Commonwealth Regulatory Requirements and Standards	Groundwater Quality Standards 314 CMR 6.00	Applicable: **Now No Longer ARAR**	Groundwater quality standards exist for a number of contaminants in the groundwater. When state levels are more stringent than the federal levels, the state levels will be used. This remedial action will meet these standards in the groundwater beneath the Site.	These standards are used to establish discharge limits for discharge to groundwaters of the Commonwealth. They are no longer applicable because the groundwater treatment plant discharge is to surface water rather than groundwater.
	Massachusetts Drinking Water Maximum Contaminant Levels - 310 CMR 22.00	Relevant and Appropriate	These state drinking water standards will be compared to the federal standards. If more stringent, the state standards will be used. This remedial action will meet these standards in the groundwater beneath the Site.	The Site is located within the Zone II recharge area for Groveland municipal well No. 1. Wellhead treatment had been in place to remove Site contaminants after the contamination was found, but it was discontinued in May 1994 when it was found to be no longer needed. Some Massachusetts MCLs (MMCLs) have changed since completion of the RODs in 1988 and 1991. Current MMCLs are provided in Table 1. Constituents in Site groundwater still exceed MMCLs for several contaminants. Groundwater extraction and treatment is currently being conducted. Groundwater contamination remains, however, and treatment is expected to continue for many years. Groundwater requires continued remediation under this rule.

TABLE MOM-2

ACTION-SPECIFIC ARARs
GROVELAND WELLS NOS. 1 & 2 SUPERFUND SITE: OU1 - MANAGEMENT OF MIGRATION
GROVELAND, MASSACHUSETTS

Requirement	ROD Status	Actions to be Taken to Meet Requirements	Five-Year Review
FEDERAL			
CWA - Section 402	Applicable	Substantive requirements are applicable to the treatment system discharge. The treatment system will be designed and operated to achieve Clean Water Act requirements.	The treatment system was designed and is operated to meet discharge limits to Mill Pond that were derived by EPA in accordance with this regulation. Future source control actions, if they result in discharge to surface water, would also need to comply with the substantive requirements of the Clean Water Act.
CAA - National Ambient Air Quality Standards (40 CFR Part 50)	Relevant and Appropriate	Substantive requirements will be relevant and appropriate during the construction activities. Dust suppressants will be used as required during construction to minimize fugitive dust emissions.	This ARAR was complied with during remedial construction and continues to be complied with at the groundwater treatment plant, where VOC emissions are controlled using Granular Activated Carbon. Additional source control actions, if performed, will need to control VOC and dust emissions.
COMMONWEALTH OF MASSACHUSETTS			
Ambient Air Quality Standards (310 CMR 6.00)	Relevant and Appropriate	Substantive requirements will be relevant and appropriate during the construction activities. Dust suppressants will be used as required during construction to minimize fugitive dust emissions.	This ARAR was complied with during remedial construction and continues to be complied with at the groundwater treatment plant, where VOC emissions are controlled using Granular Activated Carbon. Additional source control actions, if performed, will need to control VOC and dust emissions.

TABLE MOM-2 (Continued)

ACTION-SPECIFIC ARARs
GROVELAND WELLS NOS. 1 & 2 SUPERFUND SITE: OU1 - MANAGEMENT OF MIGRATION
GROVELAND, MASSACHUSETTS

Requirement	ROD Status	Actions to be Taken to Meet Requirements	Five-Year Review
Air Pollution Control (310 CMR 7.00)	Applicable	Substantive requirements will be applicable to the air discharge from the treatment system.	This ARAR continues to be complied with at the groundwater treatment plant, where VOC emissions are controlled using Granular Activated Carbon. Additional source control actions, if performed, will need to control VOC emissions.
Surface Water Discharge Permit Program (314 CMR 3.00)	Applicable	Substantive requirements are applicable to the treatment system discharge. The treatment system will be designed and operated to meet these discharge requirements.	The treatment system was designed and is operated to meet discharge limits to Mill Pond that were derived by EPA in accordance with this regulation and the Clean Water Act. Future source control actions, if they result in discharge to surface water, would also need to comply with the substantive requirements of this regulation.
Operation and Maintenance and Pretreatment Standards for Wastewater Treatment Works and Indirect Discharge (314 CMR 12.00)	Relevant and Appropriate	Substantive requirements related to pretreatment of the sludge will be met.	Operation and maintenance of the groundwater treatment plant meets the substantive requirements of this regulation regarding licensed operators, operation and maintenance manuals, and other similar requirements. This regulation is intended for discharges to POTWs and is no longer considered ARAR. Sludge is not pretreated on site; hence any previous requirements that existed regarding sludge pretreatment are not relevant.

TABLE MOM-2 (Continued)

ACTION-SPECIFIC ARARs
GROVELAND WELLS NOS. 1 & 2 SUPERFUND SITE: OU1 - MANAGEMENT OF MIGRATION
GROVELAND, MASSACHUSETTS

Requirement	ROD Status	Actions to be Taken to Meet Requirements	Five-Year Review
Surface Water Quality Standards (310 CMR 4.00)	Applicable	Substantive requirements will be applicable to the treatment system discharge. Treatment system will be constructed to ensure that water quality standards are met.	The treatment system was designed and is operated to meet discharge limits to Mill Pond that were derived by EPA in accordance with this regulation and the Clean Water Act. Future source control actions, if they result in discharge to surface water, would also need to comply with the substantive requirements of this regulation.
Supplemental Requirements for Hazardous Waste Management Facilities (314 CMR 8.00)	Applicable	These regulations apply to wastewater treatment facilities exempted from M.G.L. c.21C, which treat, store, or dispose of hazardous wastes. The treatment plant will meet the substantive requirements of 314 CMR 8.05.	The groundwater treatment plant is in compliance with the substantive requirements of this regulation. It is not anticipated that additional source area remedial actions would involve a separate water treatment facility.
Hazardous Waste Regulations (310 CMR 30.00)	Applicable	These regulations will be looked at to determine the appropriate disposal method for the sludge. Sludge will be evaluated as to whether it is a listed (characteristic) waste to determine appropriate disposal methods. If hazardous, it will be stored in accordance with these regulations. If DNAPL were discovered and determined to be hazardous, it will be stored in accordance with these regulations.	Metal hydroxide sludge from the treatment plant has been characterized and determined not to be a hazardous waste. DNAPL has not been encountered and recovered at the site, to date. These regulations will be applicable to future source area remedial actions that could potentially generate hazardous waste. For example, if soil highly contaminated with TCE were to be excavated and disposed off site, federal LDR treatment standards and these regulations would apply.

TABLE MOM-3

LOCATION-SPECIFIC ARARs
GROVELAND WELLS NOS. 1 & 2 SUPERFUND SITE: OU1 - MANAGEMENT OF MIGRATION
GROVELAND, MASSACHUSETTS

Requirement	ROD Status	Actions Taken to Meet Requirements	Five-Year Review
FEDERAL			
CWA - Section 404	Applicable	Potentially applicable to construction of discharge piping and outfall near the creek. The routing of the treatment system effluent piping to the creek will avoid wetlands if possible. If passage through a wetland is necessary, the requirement in 33 CFR 330.5(a)(12) and 330.6 shall be met.	This ARAR was complied with for construction of the outfall to Mill Pond. Routing of piping through wetlands was no longer needed once the location of the treatment plant was changed, via an Explanation of Significant Differences, to its current location behind the Valley Building. It is not anticipated that additional source area remedial activities, if performed, would impact Johnson Creek or Mill Pond.
Wetlands Executive Order (EO 11990) 40 CFR, Part 6, Appendix A	Applicable	Federal agencies are required to minimize destruction, loss or degradation of wetlands and preserve and enhance natural and beneficial value of wetlands. Activities impacting wetlands are prohibited unless there is no practical alternative. The discharge pipe will not be located in wetlands if a practical alternative exists. Impacts will be minimized.	The re-location of the groundwater treatment plant from alongside Johnson Creek, to the area behind the Valley Building, complied with this ARAR by avoiding impacts to the wetlands along Johnson Creek. It is not anticipated that additional source area remedial activities, if performed, would impact wetlands because wetlands do not border the source area.

TABLE MOM-3 (Continued)

LOCATION-SPECIFIC ARARs
GROVELAND WELLS NOS. 1 & 2 SUPERFUND SITE: OU1 - MANAGEMENT OF MIGRATION
GROVELAND, MASSACHUSETTS

Requirement	ROD Status	Actions Taken to Meet Requirements	Five-Year Review
Floodplains Executive Order (EO 11988) 40 CFR, Part 6, Appendix A	Applicable	Federal agencies are required to reduce risk of flood loss, to minimize impact of floods and to restore and preserve the natural and beneficial value of floodplains. No practical alternative exists for placement of wells and discharge outfall in floodplain. Impacts will be minimized. Will have minimal displacement and will be built to withstand 100 year flood event.	The originally proposed location of the groundwater treatment plant adjacent to Johnson Creek was within the 100-year floodplain. The Explanation of Significant Differences re-located the plant to behind the Valley Building which is outside the 100-year floodplain. Hence, this order was no longer applicable. It is not anticipated that additional source area remedial activities, if performed, would approach the 100-year floodplain because the source area is well outside this zone.

TABLE MOM-3 (Continued)

LOCATION-SPECIFIC ARARs
GROVELAND WELLS NOS. 1 & 2 SUPERFUND SITE: OU1 - MANAGEMENT OF MIGRATION
GROVELAND, MASSACHUSETTS

Requirement	ROD Status	Actions Taken to Meet Requirements	Five-Year Review
COMMONWEALTH OF MASSACHUSETTS			
Wetlands Protection (310 CMR 10.00)	Applicable	Any regulated area disturbed by the remedial action will be restored to original conditions. All practical means will be used to minimize wetlands disturbance.	The re-location of the groundwater treatment plant from alongside Johnson Creek, to the area behind the Valley Building, complied with this ARAR by avoiding impacts to the wetlands along Johnson Creek. It is not anticipated that additional source area remedial activities, if performed, would impact wetlands because wetlands do not border the source area.