Five-Year Review Report

Second Five-Year Review Report
(Years 1999 through 2004)

for

F. T. Rose Disposal Pit Superfund Site

Lanesborough

Berkshire County, Massachusetts

September 2004

PREPARED BY:

United States Environmental Protection Agency
Region I, New England
Boston, Massachusetts

Approved by: **Date:**

Susan Studlien 09/30/04

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
1,1- DCA	1,1-Dichloroethane
AAL	Ambient Air Levels
ARAR	Applicable or Relevant and Appropriate Requirement
AUL	Activity and Use Limitation
AWQC	Ambient Water Quality Criteria
BAF	Bioaccumulation Factor
BBL	Blasland, Bouck & Lee
C_{diet}	Dietary Concentration
C_{insect}	Total Concentration in Insects
$C_{sediment}$	Total Concentration in Sediment
CAA	Clean Air Act
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CMR	Code of Massachusetts Regulations
COC	Contaminant of Concern
COPC	Contaminants of Potential Concern
CWA	Clean Water Act
DNAPL	Dense Non-Aqueous Phase Liquid
DOT	Department of Transportation
EA	Endangerment Assessment
EO	Executive Order
ERL	Effects Range Low
ERM	Effects Range Medium
ESD	Explanation of Significant Difference
ESR	Evaluation Summary Report
ET	Ecotox Threshold

ACRONYM	DEFINITION
FI	Food Intake
FS	Feasibility Study
G&M	Geraghty and Miller
GAC	Granulated Activated Carbon
GE	General Electric Company
GWTP	Groundwater Treatment Plant
LEL	Lowest Effects Level
LOAEL	Lowest Observed Adverse Effects Level
M&E	Metcalf & Eddy, Inc.
MADEP	Massachusetts Department of Environmental Protection
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MCP	Massachusetts Contingency Plan
MGL	Massachusetts General Law
MMCL	Massachusetts Maximum Contaminant Level
NAAQS	National Ambient Air Quality Criteria
NAWQC	National Ambient Water Quality Criteria
NCP	National Contingency Plan
NOAA	National Oceanic and Atmospheric Administration
NPL	National Priorities List
O&M	Operation and Maintenance
OBG	O'Brien & Gere
OMEE	Ontario Ministry of Environment and Energy
ORSG	Massachusetts Office of Research and Standards Guidelines
OSHA	Occupational Safety and Health Administration
P_{insect}	Proportion of Diet Consisting of Insects
PCB	Polychlorinated Biphenyl
PELs	Probable Effects Levels

ACRONYM	DEFINITION
PID	Photoionization Detector
PRG	Preliminary Remediation Goal
PRP	Potentially Responsible Party
RA	Remedial Action
RAC	Response Action Contract
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RfD	Reference Dose
RI	Remedial Investigation
ROD	Record of Decision
SACD	Settlement Agreement and Consent Decree
SCV	Secondary Chronic Value
SDWA	Safe Drinking Water Act
SEL	Severe Effects Level
TBCs	To Be Considereds
TELs	Threshold Effects Levels
TLV	Threshold Limit Value
trans-1,2-DCE	trans-1,2-Dichloroethene
TRV	Toxicity Reference Value
UAO	Unilateral Administrative Order
VOC	Volatile Organic Compound
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
UU/UE	Unlimited Use and Unrestricted Exposure

EXECUTIVE SUMMARY

The F. T. Rose Disposal Pit Superfund Site (the Site) is located on Balance Rock Road in Lanesborough, Massachusetts, and is approximately one-half mile from the town of Pittsfield, Massachusetts (see Figure 1). The property was used for the disposal of waste oils and solvents from General Electric Company (GE) as early as the 1950s and possibly later. The one and one-half acre disposal area occupies the northern section of what was at the time an approximate 12.5 acre residential lot. The disposal area was formerly a trench into which the waste oils and solvents were dumped. GE now owns the majority of the Site (approximately 10 acres, including the former trench disposal area), while the Rose residence occupies a small section with frontage along Balance Rock Road (see Figure 2). Polychlorinated biphenyls (PCBs) and volatile organic compounds (VOCs) are the principal contaminants in the soil and groundwater, respectively.

In September 1988, EPA signed a Record of Decision for the Site. The selected remedy was a comprehensive approach for Site remediation which included both a source control and a management of migration component, as well as institutional controls:

- Source Control: Excavation and on-site incineration of contaminants consisting of approximately 15,000 cubic yards of contaminated soil and sediment, excavation and incineration of soils to a cleanup concentration of 13 parts per million (ppm) of PCBs to the water table, and limited excavation in the saturated zone to remove the subsurface free product portion of the disposal area.

- Management of Migration: Active restoration of the shallow overburden aquifer contaminated with VOCs using on-site treatment involving air stripping and carbon adsorption, installation of a bedrock well in the vicinity of the free product area to prohibit migration into the fractured rock, groundwater treatment to reduce contaminant levels to drinking water standards or other appropriate guidelines, and treatment of sediments and surface water in Rose's pond and restoration of the pond to its original wetlands character after remediation.

- Institutional Controls: Implementation of institutional controls to prevent groundwater use and excavation into the saturated zone within the disposal area.

In September 1988, GE entered into a Consent Decree (CD) with EPA to perform the above work. Excavation in the source area portion of the disposal area extended into the saturated zone (below the water table). For the remaining portion of the disposal area, excavation of contaminated soil was restricted to the unsaturated zone (above the water table). This was due to the impracticability of excavating the entire saturated zone of the disposal area and possible adverse impacts to adjacent wetlands. Approximately 51,200 tons of PCB-contaminated soil were excavated in both the saturated and unsaturated portions of the disposal area and incinerated on-site. Since some PCBs remained in the saturated soil layer, it was also determined that institutional controls would be necessary.

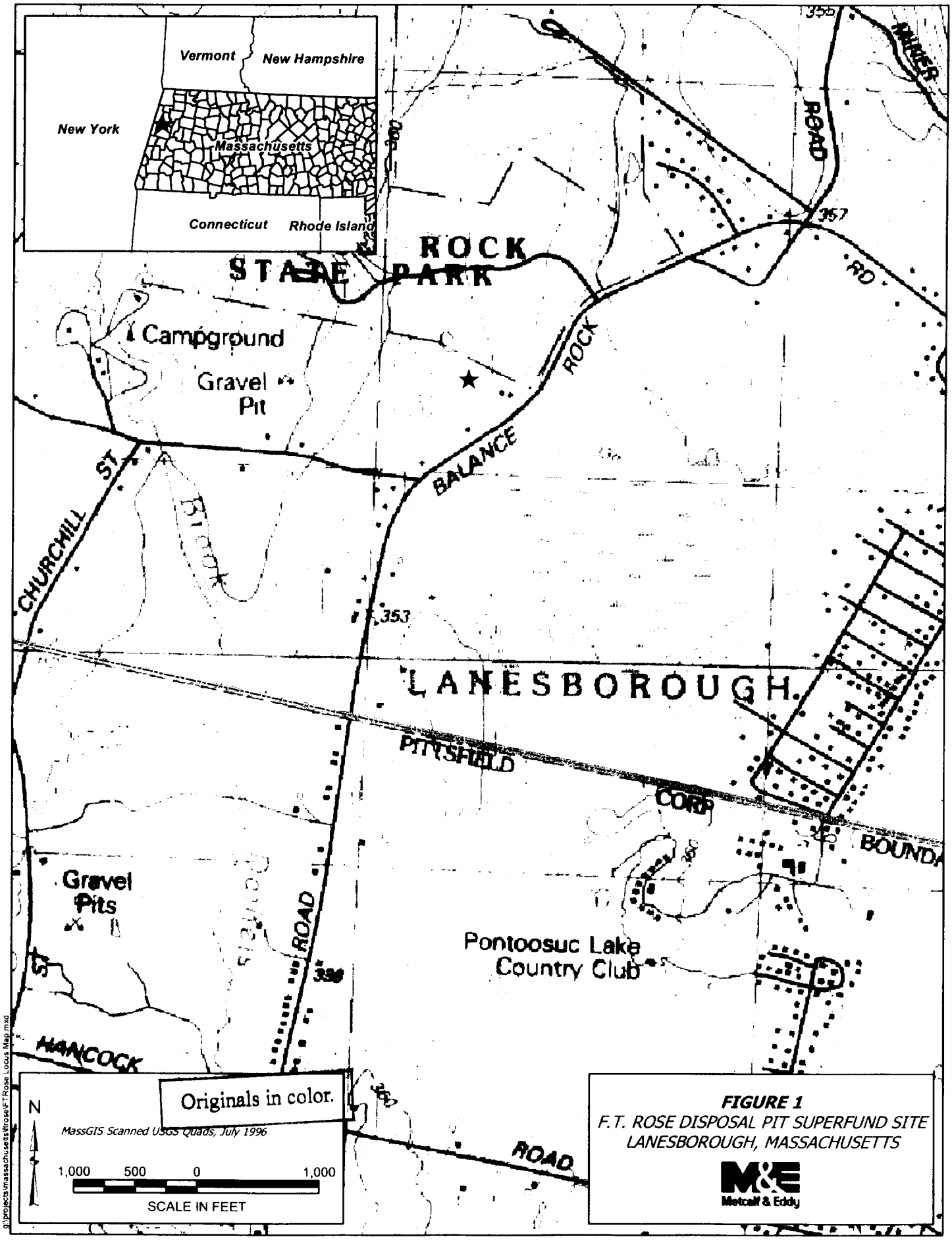

FIGURE 1
F.T. ROSE DISPOSAL PIT SUPERFUND SITE
LANESBOROUGH, MASSACHUSETTS

M&E
Metcalf & Eddy

LEGEND:

- MW-8A ⊕ MONITORING WELL
- E-7 ◉ DECOMMISSIONED/FORMER MONITORING WELL LOCATION
- ⊙ COLLECTION TRENCH MANHOLE
- ⊕ SEMI-ANNUAL GROUNDWATER QUALITY MONITORING LOCATION
- ⊕ SEMI-ANNUAL GROUNDWATER ELEVATION MONITORING LOCATION
- 1120 —— TOPOGRAPHIC ELEVATION CONTOUR IN FEET

NOTES:

1. SITE PLAN BASED ON PREVIOUS DRAWINGS BY BBL, INC. (2004) AND A SITE PLAN BY HILL ENGINEERS, ARCHITECTS AND PLANNERS (1992). LIMITS OF WETLANDS APPROXIMATED FROM SITE PLAN BY HMM ASSOCIATES (1992).
2. GROUNDWATER QUALITY MONITORING IS ALSO PERFORMED ON A SEMI-ANNUAL BASIS AT THE COLLECTION TRENCH MANHOLES AND WITHIN THE GROUNDWATER TREATMENT PLANT.
3. GROUNDWATER ELEVATION DATA IS ALSO MONITORED AT THE MONITORING WELLS AND MANHOLES AS PART OF SEMI-ANNUAL SAMPLING AND ANALYSIS.
4. WEEKLY DNAPL COLLECTION IS TAKEN FROM THE WEST COLLECTION TRENCH.

0 150' 300'

GRAPHIC SCALE

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Metcalf & Eddy

F.T. ROSE DISPOSAL PIT SUPERFUND SITE
PITTSFIELD, MASSACHUSETTS

FIGURE 2 – SITE PLAN AND MONITORING WELL LOCATION PLAN

SCALE: 1"=150'	AUG, 2004		C-1

The management of migration portion of the remedial action was designed to treat contaminated groundwater located in a shallow aquifer to drinking water standards. Two trenches were constructed to intercept the plumes of contaminated groundwater. From the collection trenches, contaminated groundwater is pumped to a groundwater treatment facility, where it is treated using a combination of air stripping and carbon adsorption. In addition, Rose's pond was excavated, treated, and restored to its original wetland habitat.

The excavation and incineration of soil was initiated in July 1992 and completed in July 1994. Treatment of contaminated groundwater is ongoing.

This is the second five-year review for the Site. The first five-year review was completed in September 1999, and that date was the trigger for this second review. The five-year review is required due to the fact that hazardous substances, pollutants, or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure.

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 institutional controls identified in the ROD must be implemented.

Five-Year Review Summary Form

SITE IDENTIFICATION

Site name *(from WasteLAN)*: F. T. Rose Disposal Pit

EPA ID *(from WasteLAN)*: MAD980524169

Region: 01	**State:** MA	**City/County:** Lanesborough/Berkshire County

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:** _September 1994_

Has site been put into reuse? ☐ YES ☒ NO

REVIEW STATUS

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

Author name: Melissa Taylor

Author title: Remedial Project Manager	**Author affiliation:** U.S. EPA

Review period:** 3/24/04 to 9/30/04

Date(s) of site inspection: 6/3/04

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 OU1____ ☐ Actual RA Start at OU#____
☐ Construction Completion ☒ Previous Five-Year Review Report
☐ Other (specify) _____

Triggering action date *(from WasteLAN)*: September 1999

Due date *(five years after triggering action date)*: September 2004

* ["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:

The Institutional Controls identified in the ROD are not yet implemented.

Recommendations and Follow-up Actions:

Implement Institutional Controls to prevent groundwater use and excavation into the saturated zone within the disposal area.

Protectiveness Statement(s):

The remedy at the F. T. Rose Superfund Site currently protects human health and the environment because access to the disposal area of the Site is restricted by the PRP to prevent excavation into the disposal area, and the groundwater is not being used. However, in order for the remedy to be protective in the long term, institutional controls to prevent groundwater use are required. Institutional controls are also required for the disposal area, to prevent excavation in this area without appropriate precautions.

Other Comments:

None.

SECTION 1.0
INTRODUCTION

This document is a comprehensive and interpretive report of the five-year review conducted for the F. T. Rose Disposal Pit Superfund Site (the Site) in Lanesborough, Massachusetts, for the U.S. Environmental Protection Agency (USEPA) Region I. This work was conducted by Metcalf & Eddy (M&E) under the Response Action Contract (RAC) (Contract No. 68-W6-0042). The USEPA is the lead agency and decision-maker for the F. T. Rose Superfund Site.

The purpose of this five-year review is to determine whether the remedies for the F. T. Rose Disposal Pit Superfund 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, the Five-Year Review reports identify issues found during the review, if any, and provide 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). CERCLA §121 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 NCP part 300.430(f)(4)(ii) of the Code of Federal Regulations (CFR) 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.*

This is the second five-year review for the Site. The completion of the first five-year review, in September 1999, was the trigger for this second five-year review. This statutory review is required due to the fact that hazardous substances, pollutants, or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure.

SECTION 2.0
SITE CHRONOLOGY

The chronology of the Site is included in Table 1.

Table 1: Chronology of Site Events	
Event	**Date**
A local contractor (who owned the property at that time) used a trench on the property for disposal of waste oils and solvents from General Electric Company (GE).	1950s (and possibly later)
Mr. and Mrs. Rose purchase the property	1978
Preliminary assessment, site inspection, and field investigation performed by USEPA.	1980-1982
GE provided a permanent potable water supply for the Rose household by connecting the residence to the Lanesborough Municipal Water System.	August 1983
USEPA issued GE an Administrative Order under Section 106(a) of CERCLA.	May 1984
GE erected site fencing and posting, covered contaminated soil with a polyethylene film, installed a recovery well to capture a localized free oil layer, and provided permanent potable water to private properties by connecting to the Lanesborough Municipal Water System.	1984
Remedial Investigations performed by Geraghty & Miller for GE	1984-1987
Blasland & Bouck conducts Feasibility Study for GE	1986-1988
Endangerment Assessment Report prepared by Geraghty & Miller for GE	June 1988
USEPA signs Record of Decision. Selected remedy includes both source control and management of migration components.	September 1988
GE enters into a Consent Decree with USEPA to perform the work detailed in the Record of Decision.	September 1988

Table 1: Chronology of Site Events	
Event	**Date**
GE purchases the 9.746 acre portion of the Site from the Rose family	November 10, 1989
Approximately 51,200 tons of PCB contaminated soil are excavated from the disposal area and incinerated. Two trenches are constructed to intercept contaminated groundwater plumes. Water in collection trenches is treated using air stripping and carbon adsorption. Rose's pond is excavated and restored to its original wetland habitat.	July 1992 to July 1994
A groundwater monitoring program and treatment of contaminated groundwater is ongoing.	1994 to present
First 5-year review report issued by EPA for the Site	September 1999
Second 5-year review report issued by EPA for the Site	September 2004

SECTION 3.0
BACKGROUND

3.1 PHYSICAL CHARACTERISTICS AND LAND AND RESOURCE USE

The F.T. Rose Disposal Pit Superfund Site (the Site) is located on Balance Rock Road in Lanesborough, Massachusetts, and is approximately one-half mile from the town of Pittsfield, Massachusetts. The Rose property was used for the disposal of waste oils and solvents from General Electric Company (GE) during the 1950s and possibly later. The one and one-half acre disposal area occupies the northern section of what was at the time a 12.5-acre residential lot. The disposal area was formerly a trench into which the waste oils and solvents were dumped. GE now owns the majority of the Site (approximately 10 acres, including the former trench disposal area), while the Rose residence occupies a small section with frontage along Balance Rock Road (see Figure 2). The property encompassing the Site is bounded on the north and northeast by the deciduous forest of Balance Rock State Park, on the east and southeast by cropland and pasture, on the west by mixed forest, and on the southwest by a residential area. A small wetland exists west of the disposal area and a larger forested wetland exists to the southeast of the property on the southern side of Balance Rock Road. A small man-made pond (formerly Rose's pond, restored as a wetland) is located approximately 200 feet south of the disposal area. The former disposal area is located on a small hill north of the Rose's house. The areal extent of the former disposal area is approximately 200 feet by 350 feet and the depth of contaminated soil varies between 10 and 30 feet.

3.2 HISTORY OF CONTAMINATION

During the 1950s, and possibly later, a contractor to the General Electric Company (GE) used the property for the disposal of waste oils and solvents. The waste materials containing Polychlorinated Biphenyls (PCBs) and Volatile Organic Compounds (VOCs) were dumped into a trench, and as a result have contaminated the soil and groundwater.

3.3 INITIAL RESPONSE

Beginning in 1980, a number of site investigations and remedial activities have been carried out on the Site. Preliminary assessment, site inspection, and field investigation were performed by EPA between 1980 and 1982. All subsequent Site activities have been conducted by GE. Permanent potable water was provided to the Rose residence by connecting to the Lanesborough Municipal Water System. In May 1984, EPA issued GE an Administrative Order under Section 106(a) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). In compliance with this Order, GE erected site fencing and posting, covered contaminated soil with a polyethylene film, installed a recovery well to capture a localized free oil layer, and connected other private properties to the Lanesborough Municipal Water System.

In September 1988, EPA signed a Record of Decision for the Site. The selected remedy was a

comprehensive approach for Site remediation which includes both a source control and a management of migration component. Section 4.1 discusses the details of the ROD.

3.4 BASIS FOR TAKING ACTION

The principal contaminants of concern in site soil and groundwater are PCBs and VOCs, respectively. Geraghty & Miller (G&M, 1988) performed an Endangerment Assessment to estimate potential adverse effects to human health and the environment from exposure to contamination at the Site. The Baseline Public Health Risk Assessment found that dermal contact with and ingestion of soils contaminated with PCBs posed an unacceptable lifetime maximum cancer risk for future residents. The future ingestion of drinking water from within the disposal area was also associated with unacceptable cancer and noncancer risk based on the presence of PCBs, tetrachloroethene, and vinyl chloride in groundwater. Human recreational exposures to sediments and surface water were estimated to be within or below regulatory criteria. The Baseline Environmental Risk Assessment concluded that contaminant concentrations in surface water were below USEPA National Ambient Water Quality Criteria (NAWQC), and ingestion of surface water did not pose a risk to white-tailed deer. However, the report generally indicated that contaminants in all media, including sediment, posed some risks to environmental receptors.

Soil and Sediment. PCBs are the principal contaminant in the soil and sediment, but investigations at the Site have reported both PCBs and VOCs in the soil. PCB soil concentrations in the disposal area varied considerably, with maximum recorded concentrations of 53,000 and 440,000 ppm in the eastern and western portions of the disposal area, respectively. Other portions of the disposal area had concentrations that were considerably lower. The average soil concentrations ranged from 500 to 1,000 ppm. EPA established a PCB cleanup level of 13 ppm in soil to be protective of human health, assuming future residential use and soil exposure via dermal contact and ingestion.

Groundwater. VOCs are the principal contaminants in the groundwater on the Site, and previous investigations at the Site have reported both PCBs and VOCs in the groundwater. Two plumes of VOCs emanate from the Site. Concentrations of a number of VOCs are above their associated Maximum Contaminant Levels (MCLs). Dense non-aqueous phase liquid (DNAPL) was also present, and continues to be recovered at the Site.

SECTION 4.0
REMEDIAL ACTIONS

4.1 REMEDY SELECTION

The ROD for the F. T. Rose Disposal Pit Superfund Site was signed in September 1988. The remedial action objectives listed in the ROD are:

- Control the source of contamination
- Manage migration of contamination

The selected remedy for the Site, as identified in the ROD, consisted of the following components:

- Excavation and on-site incineration of contaminants consisting of approximately 15,000 cubic yards of contaminated soil and sediment, excavation and incineration of soil to a cleanup concentration of 13 ppm for PCBs to the water table, and limited excavation in the saturated zone to remove the subsurface free product portion of the disposal area.
- Active restoration of the shallow overburden aquifer contaminated with VOCs using on-site treatment involving air stripping and carbon adsorption, installation of a bedrock well in the vicinity of the free product area to prohibit migration into the fractured rock, groundwater treatment to reduce contaminant levels to drinking water standards or other appropriate guidelines, and treatment of sediments and surface water in Rose's pond and restoration of the pond to its original wetlands character after remediation.
- Implementation of institutional controls to prevent groundwater use and excavation into the saturated zone within the disposal area.

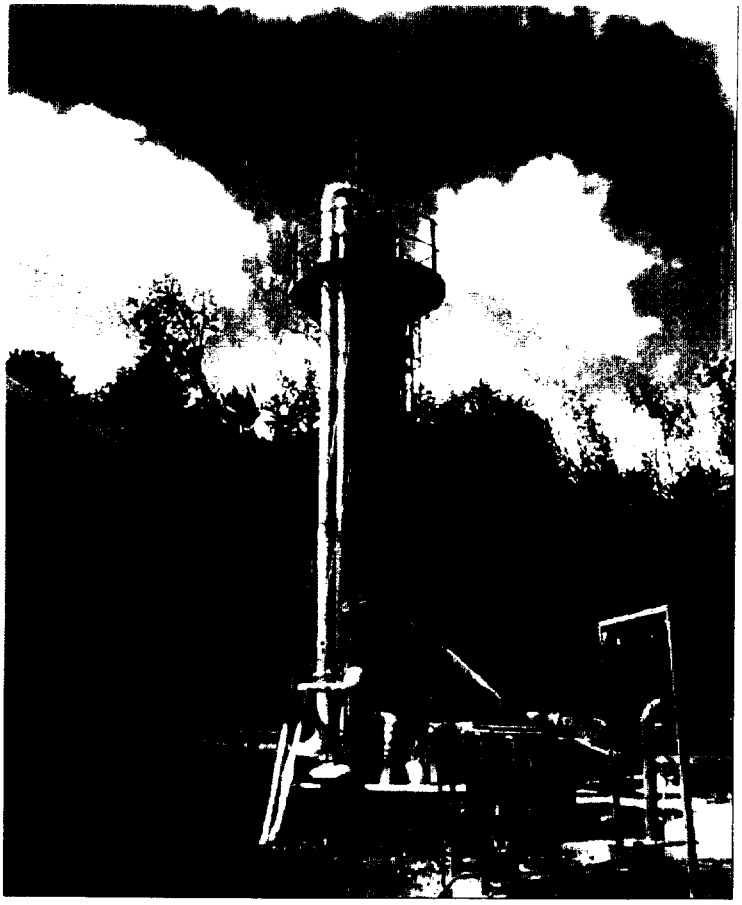
4.2 REMEDY IMPLEMENTATION

The remedial design/remedial action activities were performed by the potentially responsible party, General Electric.

In September 1988, GE entered into a Consent Decree (CD) with EPA to perform the remediation. Excavation in the source area portion of the disposal area extended into the saturated zone (below the water table). For the remaining portion of the disposal area, excavation of contaminated soil was restricted to the unsaturated zone (above the water table). This was due to the impracticability of excavating the entire saturated zone of the disposal area and possible adverse impacts to adjacent wetlands. Approximately 51,200 tons of PCB contaminated soil were excavated in both the saturated and unsaturated portions of the disposal area and incinerated on-site. It was determined that institutional controls would be necessary because some PCBs

remained in the saturated soil layer.

The management of migration portion of the remedial action was designed to treat contaminated groundwater located in a shallow aquifer to drinking water standards. Two trenches were constructed to intercept the plumes of contaminated groundwater. From the collection trenches, contaminated groundwater is pumped to a groundwater treatment facility, where it is treated using a combination of air stripping and carbon adsorption (Photograph 1). In addition, Rose's pond was excavated, treated, and restored to its original wetland habitat.



Originals in color.

Photograph 1. Air Stripping Tower: June 3, 2004

The site excavation and incineration was initiated in July 1992 and completed in July 1994. Treatment of contaminated groundwater is ongoing.

This five-year review, similar to the first five-year review in 1999, 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 institutional controls

identified in the ROD must be implemented.

4.3 SYSTEM OPERATIONS/O&M

General Electric has instituted an O&M program for the Site which includes the continual improvement of the plant and the O&M procedures. An updated Operation and Maintenance Manual for the Groundwater Treatment Facility (BBL, 2004c) was prepared by Blasland, Bouck & Lee in July 2004. These programs have prevented substantial deterioration of the plant from occurring and, in some cases, have increased the efficiency and decreased the O&M requirements of the plant.

Plant Scheduled Operations. The treatment plant is operated automatically 24 hours per day, seven days per week with an on-site control system. The control system is capable of shutting the plant down in the event of a component failure. This system appears to be functioning properly. If the treatment plant shuts down due to a component failure, an auto-dialer will page a plant operator and give one of twelve preset alarm codes which indicates the reason for the shut down. Treatment plant operators are on-call 24 hours per day, and can respond to an alarm immediately to repair and restart the groundwater treatment plant. Currently, the groundwater treatment plant is operating at a flow of 40 gallons per minute and has the capacity to treat 70 gallons per minute.

The groundwater treatment plant is defined as an Industrial Grade 3 waste water treatment plant by 257 CMR 2.00. As such, the plant is required to be managed, operated, and maintained by a licensed wastewater treatment plant operator holding a current minimum rating of Industrial Grade 3. In compliance with this regulation, the operators of the plant all hold a minimum of an Industrial Grade 3 license, with most operators holding an Industrial Grade 4 license.

Daily inspections are performed by a treatment plant operator as detailed in the F.T. Rose Site O&M Manual (BBL, 2004c), where any maintenance issues are noted in the plant logbook and maintenance is scheduled. Numerous checks are performed on each routine facility inspection including:

- General facility condition
- Data collection from gauges
- Off-gas heating unit check
- Acid/caustic supply check
- Check of pressure drop across liquid phase GAC units
- Check for bacterial build-up on air stripper tower
- Check of effluent drains

Other maintenance activities are scheduled less frequently including checking the emergency equipment (monthly), below grade hydraulic structures (quarterly), lighting protection system (every six months), and electrical systems (annually).

Manual operations are also conducted during daily inspections and may include:

- Backwashing the carbon beds
- Change out of vapor phase and/or liquid phase carbon
- Air stripper acid washing
- Replacement stripper packing material
- Cleaning the intake of influent pump
- Cleaning of retention pumps
- Clean out of accumulated sludge

All O&M activities at the Rose Site are documented and recorded in the monthly O&M status reports in accordance with Section XI of the Consent Decree.

Additionally, samples are collected as part of O&M to examine efficiency of the treatment processes and to ensure that treated water does not exceed Performance Standards. Numerous treatment by-products are analyzed for PCBs prior to disposal, including GAC backwash materials, tower wash filters and tower wash residuals. For liquid-phase carbon monitoring, removal efficiencies of VOCs are determined from effluent water samples monthly to allow coordination of carbon change-outs to avoid "break through." For vapor-phase carbon monitoring, air stripper off-gases are monitored for VOC vapors using a 10.2 eV photoionization detector (PID). Water samples are collected from the effluent lines monthly and are analyzed for 19 VOCs and 7 different PCB congeners. During the period from January 2003 to April 2004, no PCB congeners were detected. The VOC cis-1,2-Dichloroethene was detected in every monthly effluent sample at a range of concentrations from 0.53 µg/L to 250 µg/L, with an average concentration of 46 µg/L.

The treatment plant has recently been operating continually, with no unscheduled interruptions. The plant operation is temporarily suspended for scheduled maintenance such as carbon bed backwash, carbon change out, and air stripping tower acid washing. The monthly O&M progress reports from January 2003 through May 2004 were reviewed. Two instances of O&M issues were noted:

- The backflow preventer test was failed on November 11, 2003. Repairs were made, and the backflow preventer test was passed on January 7, 2004.

- An overnight power outage on April 21, 2004 shut down the plant for 12 hours. GAC and influent pumps were locked onto pump #1. Power outage called for reset to pump #2, but it could not reset. To avoid a future similar problem alternating relays were turned back on line.

DNAPL Collection At The West Collection Trench. Shortly after the groundwater treatment system was first put into operation, a significant quantity of DNAPL was unexpectedly drawn into the west collection manhole. From there, the DNAPL flowed through the entire treatment

system, forcing the treatment plant to be shut down, and requiring the entire treatment system to be decontaminated. In order to prevent this from reoccurring, GE installed a pneumatic pump in a well (stand pipe) within the west collection manhole. GE has been manually removing DNAPL from the well with this pump on a weekly basis. GE reported that an air compressor is brought to the Site for the DNAPL collection. Typically, 2 to 3 gallons of DNAPL are collected each week (based on the 2003 monthly O&M progress reports), although 9 gallons were removed one week. Weekly DNAPL recovery volumes during the first six months of 2004 are on the order of one gallon per week (Spectra and BBL, 2004). The DNAPL is pumped into five gallon containers and stored on-site, prior to transport off-site under hazardous waste manifest by a licensed hazardous waste hauler.

The continued collection of DNAPL is necessary to the continued operation of the groundwater treatment plant. Evidence supporting this includes the continued and consistent quantity of DNAPL recovered from the well on a weekly basis, and the effect of a build-up of DNAPL in the past, which required unscheduled shut-down and decontamination of the treatment plant.

Since the treatment plant is designed to operate automatically with only periodic maintenance, GE collected data to determine if an automated system would be more efficient than manual collection of the DNAPL. During a series of recovery tests performed in the spring of 1998, DNAPL recovery volumes decreased during a given test period, and initial recovery volume was a result of accumulation within the trench. Additionally, a reduction in overall DNAPL recovery was noted over the course of these recovery tests, which was consistent with DNAPL recovery trends over several years. GE interpreted these results as a reduction in the DNAPL volume available for recovery. It was concluded that an automated DNAPL recovery system is neither required nor would it be cost effective, and that routine monitoring and manual recovery will continue to be appropriate to recover DNAPL and minimize migration. The letter report by GE that documents the evaluation of automated DNAPL recovery (GE, 1998) is included as Attachment 2.

Discharge Location. Treated effluent from the treatment plant is discharged though a dispersal system located in the vicinity of MW-24A into a wetland west of the site (Photograph 2). The wetland, classified as a palustrine forested/emergent wetland, is dominated by eastern hemlock (*Tsuga canadensis*) and red maple (*Acer rubrum*). The wetland substrate appears to be an organic muck. Historically, there has been no observable flow in this area of the wetland. The wetland also receives Site groundwater.

Downstream of the wetland is an area referred to as the pond (Rose's pond), although since remediation, the manmade pond no longer functions as an open water habitat (Photograph 3). This area is now an emergent wetland dominated by grasses with some limited cattail (*Typha sp.*) interspersed around the previously existing pond shoreline. Below the pond, a narrow stream channel develops as the surface gradient increases. The stream depth is shallow and substrate is composed of sand and cobble. The stream is culverted as it flows in a southerly direction underneath Balance Rock Road. South of Balance Rock Road, the stream flow continues to

increase with the increase in surface gradient, and enters another forested wetland (Photograph 4). Ultimately, the system discharges to Pontoosuc Lake.

Originals in

Photograph 2. Dispersal pipe conveying treated effluent into forested wetland.

Photograph 3. Former manmade pond.

Photograph 4. Stream draining former manmade pond.

Originals in color.

SECTION 5.0
PROGRESS SINCE THE LAST FIVE-YEAR REVIEW

The following recommendations were made in the previous Five-Year Review report (USEPA, 1999).

- Finalize implementation of the Institutional Controls
- Monitor water quality in the bedrock aquifer to ensure that private wells in the vicinity of the Site do not become contaminated
- Sample shallow wells in the vicinity of nearby residences to confirm that no VOCs are migrating through the subsurface and potentially impacting indoor air quality
- Continue to sample shallow wells representative of groundwater discharging to the wetlands/stream, to determine whether PCB discharge from groundwater to surface water represents a significant pathway.
- Consider sampling of on-site and off-site soils for PCBs to determine whether residual levels represent a risk to human or ecological receptors.

Progress towards implementing these recommendations is summarized below.

Institutional Controls. The ROD specifies institutional controls to restrict groundwater use and to prevent excavation into the disposal area, where PCB soil contamination above the 13 ppm cleanup level remains below the water table. GE currently owns most of the Site and controls access to the former disposal area by a fence. However, institutional controls are not yet in place. GE has agreed to conduct further activities to establish legally enforceable institutional controls and has begun the process of drafting a deed restriction to prevent excavation into the disposal area without appropriate precautions. GE is also working towards a legally enforceable restriction on groundwater use on Site property, such as a town ordinance or State grant of environmental restriction. A letter documenting GE's agreement to establish institutional controls is included in Attachment 3.

GE has also established an agreement with the Department of Conservation and Management, which oversees Balance Rock State Park for the Commonwealth of Massachusetts (the agreement letter is also included in Attachment 3). This agreement allows GE and its contractors access to the eastern collection trench and monitoring wells that are on the park property, states that no supply wells are located on park property, and states that none would be installed without consultation with GE and EPA.

Bedrock Groundwater Monitoring. No routine monitoring of groundwater quality in the bedrock aquifer at or near the Site is currently performed. During the last five-year review, five

private wells (of which four were believed to be bedrock wells) to the southwest of the Site were sampled. No VOCs or PCBs were detected at concentrations above the reporting limits in those samples.

The impetus for the recommendation in the last five-year review report to begin monitoring the bedrock aquifer was the presence of contamination in some of the deeper monitoring wells at the Site (MW-10B, MW-10C, and MW-11B). Since MW-10C is screened in the upper bedrock, the data suggested that contaminants were moving downward through the poorly permeable dense till into the bedrock aquifer. Although the nearest known active bedrock water supply wells are on the order of 1,000 feet from the Site and are not hydraulically downgradient, the concern was that a cluster of pumping wells could capture contaminants from the Site, if fractures in the bedrock aquifer promoted flow in that direction.

For this five-year review, supplemental groundwater samples were collected including one from a bedrock monitoring well (MW-6C). As described in Section 6.3.1 and as shown on Figure 5 in Attachment 6, chlorobenzene and PCBs (unfiltered sample only) were detected in MW-6C, but the concentrations were below the Performance Standards.

Sampling of Wells Near Residences. Two well clusters, the MW-6 cluster (6A, 6B, and 6C) and the MW-14 cluster (14A and 14B) were sampled by GE's contractor (BBL) in June 2004 as an addition to the routine set of wells that is part of the groundwater monitoring program. The MW-6 and MW-14 clusters were added at EPA request because of their proximity to the Rose residence and their location upgradient of that residence. The data were used to assess the potential for intrusion of VOC-contaminated vapors into the Rose residence. As discussed in Section 7, the traces of contamination detected in samples from these locations do not pose a risk via the vapor intrusion pathway.

Sampling of Wells Representative of Wetlands/Stream Discharge. Of the wells that are routinely sampled, W-5, MW-8, E-7R, and WCT-1 are positioned to intercept water that will not be captured by the collection trenches or is near the edge of the capture zones. Groundwater in these areas may eventually discharge to surface water or wetlands. Although these wells are sampled, the results are not discussed in the Groundwater Monitoring Reports with respect to whether the detected concentrations of contaminants could pose a risk of harm to ecological receptors in the surface water bodies. A discussion of the groundwater data in comparison to ecological benchmarks is presented in Section 7.2.2.

Soil Sampling for PCBs. Additional on-site soil sampling for PCBs has not been performed since the 1999 five-year review. GE has provided copies of correspondence to demonstrate that remediated soils were successfully treated by the on-site incinerator, and hence soil returned to the site after treatment would not contain PCBs in excess of the 13 mg/kg cleanup goal. In October 1994, GE transmitted confirmatory soil sampling results for ten soil samples collected at five locations (letter from Mark Phillips of GE to Anthony Pisanelli, EPA RPM, dated October 4, 1994). For three of the samples the PCB concentration was in excess of 13 mg/kg. The letter

proposed that the areas where these samples were collected would be excavated, and the soil disposed off site at an approved facility. The November 9, 1994 monthly status report from GE (Mark Phillips) to EPA (Anthony Pisanelli) states that these areas were excavated during October, with disposal off site to follow in November.

Sediment Sampling for PCBs. Several sediment samples were collected by GE in the summer of 2004, at the request of EPA, to determine whether off-site exposures present a risk to human or ecological receptors. Sediment samples were collected from locations SW-1, SW-4, SW-W5, SW-7, and SW-8. Figure 3 shows the approximate locations of these off-site sediment sampling points relative to the Site. Total PCBs concentrations in off-site sediments ranged from 0.22 mg/kg at SW-8 to 2.36 mg/kg at SW-4. These data were used to assess for potential risk, via trophic transfer to ecological receptors and direct exposures to human recreational receptors in these areas. As discussed in Section 7, PCB contamination detected in stream sediments is unlikely to pose a risk of harm to human or ecological receptor populations.

LEGEND:

- MW-8A ⊕ MONITORING WELL
- E-7 ● DECOMMISSIONED/FORMER MONITORING WELL LOCATION
- ⊙ COLLECTION TRENCH MANHOLE
- ⊕ SEMI-ANNUAL GROUNDWATER QUALITY MONITORING LOCATION
- ⊕ SEMI-ANNUAL GROUNDWATER ELEVATION MONITORING LOCATION
- 1120 —— TOPOGRAPHIC ELEVATION CONTOUR IN FEET
- SW-8 ▲ SEDIMENT SAMPLING LOCATIONS

NOTES:

1. SITE PLAN BASED ON PREVIOUS DRAWINGS BY BBL, INC. (2004) AND A SITE PLAN BY HILL ENGINEERS, ARCHITECTS AND PLANNERS (1992). LIMITS OF WETLANDS APPROXIMATED FROM SITE PLAN BY HMM ASSOCIATES (1992).
2. GROUNDWATER QUALITY MONITORING IS ALSO PERFORMED ON A SEMI-ANNUAL BASIS AT THE COLLECTION TRENCH MANHOLES AND WITHIN THE GROUNDWATER TREATMENT PLANT.
3. GROUNDWATER ELEVATION DATA IS ALSO MONITORED AT THE MONITORING WELLS AND MANHOLES AS PART OF SEMI-ANNUAL SAMPLING AND ANALYSIS.
4. WEEKLY DNAPL COLLECTION IS TAKEN FROM THE WEST COLLECTION TRENCH.

0 150' 300'

GRAPHIC SCALE

AKB 9 - 10-11-02 P:\00100RDP\C\CZRDP003

Metcalf & Eddy

F.T. ROSE DISPOSAL PIT SUPERFUND SITE
LANESBOROUGH, MASSACHUSETTS

FIGURE 3
SEDIMENT SAMPLING LOCATIONS

SCALE: 1"=150'	AUG, 2004		C-1

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. The F. T. Rose five-year review team was led by Melissa Taylor of EPA, Remedial Project Manager for the Site. Nikki Korkatti of MADEP assisted in the review as the representative for the support agency. The team included staff from Metcalf & Eddy, Inc. with expertise in hydrogeology and risk assessment.

6.1 COMMUNITY NOTIFICATION AND INVOLVEMENT

The town of Lanesborough was notified via telephone regarding the initiation of the five-year review. Nearby residences were canvassed to inform residents of the five-year review and to conduct interviews, if possible. The final Five-Year Review report will be provided to the Town and a press release will be issued to announce its availability.

6.2 DOCUMENT REVIEW

This five-year review consisted of a review of the documents listed below.

- Draft Endangerment Assessment Report (6/88)
- Record of Decision (9/88)
- Consent Decree (9/89)
- Remedial Action Completion Report (9/94)
- Scope of Work for Rose Disposal Pit Superfund Site (6/97)
- Site Remediation Work Plan, Vol. 4 (5/97)
- Evaluation of DNAPL Recovery Test (6/98)
- First Five Year Review (3/99)
- Groundwater Monitoring Reports (for 2002, 2003, and Spring 2004)
- General Electric Co. Monthly Progress Report No. 140-155 (2/03-5/04)
- Operation & Maintenance Manual (Revised, 7/04)

Complete references are included in Attachment 1.

6.3 DATA REVIEW

6.3.1 Groundwater Monitoring

A groundwater monitoring program has been developed to quantitatively describe groundwater conditions on the Site as well as to compare current groundwater conditions with those observed in the past. GE performs two semi-annual sampling events each year using low-flow sampling techniques. VOCs are the principal contaminants in the groundwater on the Site, and previous investigations at the Site have reported both PCBs and VOCs in the groundwater. Laboratory

analysis for VOCs and PCBs are performed under Methods 8260B and 8082, respectively, by Severn Trent Laboratories in Pittsburgh, PA. Generally, samples are collected at 12 locations: 8 groundwater monitoring wells, 2 manholes associated with groundwater collection trenches, a location between the two carbon treatment vessels within the GWTP, and at the GWTP discharge location.

Since the monitoring wells on the site vary in depth, the wells are divided into three zones based on length and depth of screened interval. The "A" zone monitoring wells are generally screened from approximately 5 to 15 feet below ground surface, the "B" zone monitoring wells are generally screened from approximately 30 to 40 feet below ground surface, and the "C" zone monitoring wells are screened deeper below the ground surface.

During each semiannual sampling event, water level elevations are measured in numerous monitoring wells in the "A" and "B" zones and in two wells in the "C" zone. Groundwater contour maps for the "A" and "B" zones, representing data from the Spring 2004 sampling round, are shown in Attachment 6. As shown on Figure 2 in Attachment 6, water levels within the collection trenches are lower than nearby "A" zone wells, showing that the trenches influence shallow groundwater flow.

Since the implementation of the remedial action, VOC concentrations on the Site have generally decreased temporally (1983 to 2003) as demonstrated by statistically significant linear regression analysis from several monitoring wells (Figure 4 for MW-12A). At nearly all wells sampled in 2002 and 2003, concentrations of total VOCs decreased from previous sampling rounds or VOCs were not detected. In some wells, minimal increases (0.007 to 0.066 ppm) in VOCs were recorded from the previous year's sampling events. Repairs were made to the GWTP discharge line during the summer of 2001, and temporary increases in total VOC concentration were observed in samples from wells in its vicinity during the sampling events prior to the repair.

Groundwater Performance Standards were created in the Consent Decree for 15 VOCs and for total PCBs and are presented in Table 2. During sampling events in 2002 and 2003, five VOCs were detected above their Performance Standards in three monitoring wells and/or the Western Collection Trench: benzene (MW-12A), methylene chloride (MW-12A), tetrachloroethylene (MW-6), trichloroethylene (MW-6 and MW-12A), and vinyl chloride (MW-12A, MW-23A, and WCT-1) (BBL 2004a, BBL 2004b) (Table 3).

Figure 4 - Historical VOC Concentrations in Groundwater
F.T. Rose Disposal Pit Superfund Site
Lanesborough, Massachusetts

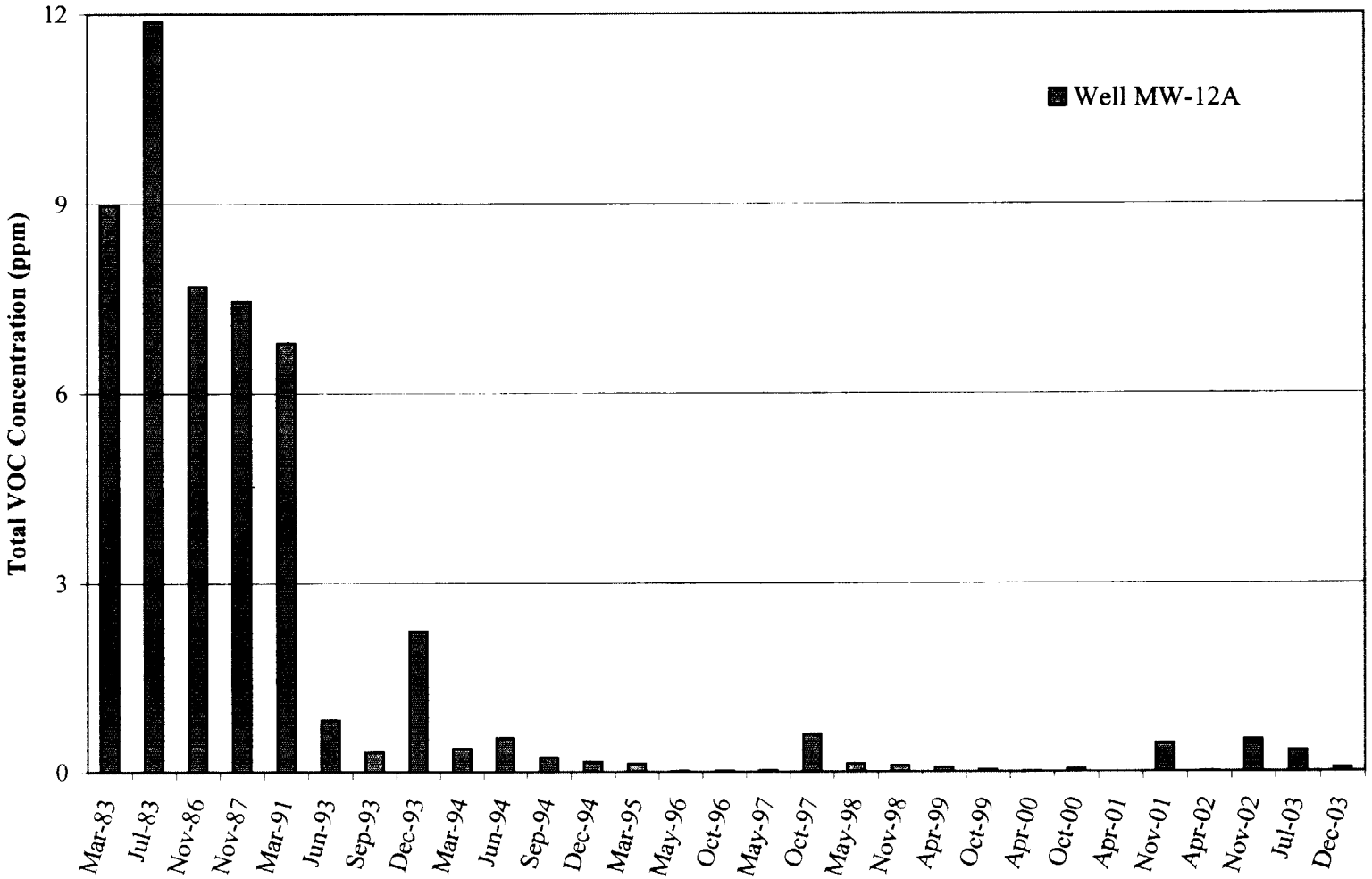


Table 2 - Performance Standards for F.T. Rose Disposal Pit Superfund Site

Compound	Performance Standard[1] (ppm)
1,1-Dichloroethylene	0.007
trans-1,2-Dichloroethylene	0.1
Methylene chloride	0.005
Tetrachloroethylene	0.005
1,1,2-Trichloroethane	0.00063
Trichloroethylene	0.005
Vinyl chloride	0.002
Benzene	0.005
Chlorobenzene	0.3
Ethylbenzene	0.7
Toluene	2
Total Xylenes	10
1,2-Dichlorobenzene	0.6
1,3-Dichlorobenzene	0.62
1,4-Dichlorobenzene	0.075
PCB	0.0005

Notes:

1. Performance Standards taken from F.T. Rose Disposal Pit Superfund Site, Lanesborough, MA, Site Remediation Plan, Volume 4 (Supplemental) Groundwater Monitoring Plan, General Electric Company, Pittsfield, MA, revised May 1993

Table 3. Wells Exceeding Performance Standards (2002 and 2003 Data)

Location	Compound	Concentration[1]	Performance Standard	Event
MW-6	Tetrachloroethylene	0.015	0.005	Apr-02
MW-6	Tetrachloroethylene	0.01	0.005	Jul-03
MW-6	Tetrachloroethylene	0.0069	0.005	Dec-03
MW-6	Trichloroethylene	0.047	0.005	Apr-02
MW-6	Trichloroethylene	0.047	0.005	Nov-02
MW-6	Trichloroethylene	0.035	0.005	Jul-03
MW-6	Trichloroethylene	0.026	0.005	Dec-03
MW-12A	Benzene	0.009	0.005	Nov-02
MW-12A	Methylene Chloride	0.0071	0.005	Nov-02
MW-12A	Trichloroethylene	0.34	0.005	Nov-02
MW-12A	Trichloroethylene	0.2	0.005	Jul-03
MW-12A	Trichloroethylene	0.051	0.005	Dec-03
MW-12A	Vinyl Chloride	0.15	0.002	Nov-02
MW-12A	Vinyl Chloride	0.13	0.002	Jul-03
MW-12A	Vinyl Chloride	0.081	0.002	Dec-03
MW-12A	PCB	0.0022	0.0005	Apr-02
MW-12A	PCB	0.0021	0.0005	Nov-02
MW-12A	PCB	0.0012	0.0005	Dec-03
MW-12A	cis-1,2-dichloroethylene[2]	0.33	0.07	Jul-03
MW-23A	Vinyl Chloride	0.0052	0.002	Apr-02
MW-24A	PCB	0.0082	0.0005	Apr-02
W-5	PCB	0.0022	0.0005	Apr-02
W-5	PCB	0.00079	0.0005	Nov-02
ECT-MH	PCB	0.00077	0.0005	Nov-02
ECT-MH	PCB	0.148	0.0005	Dec-03
WCT-1	Vinyl Chloride	0.0026	0.002	Nov-02
WCT-1	PCB	0.001	0.0005	Nov-02
WCT-1	PCB	0.001	0.0005	Jul-03
WCT-MH	Vinyl Chloride	0.019	0.002	Nov-02
WCT-MH	PCB	0.015	0.0005	Apr-02
WCT-MH	PCB	0.0136	0.0005	Nov-02
WCT-MH	PCB	0.0082	0.0005	Jul-03
WCT-MH	PCB	0.0269	0.0005	Dec-03

Notes:

1. All concentrations are in mg/liter (ppm). Reported concentrations for PCBs are all for unfiltered samples.

2. There is no site-specific Performance Standard for cis-1,2-dichloroethylene. Results were compared to the MCL of 0.07 ppm.

There is no Performance Standard in the Consent Decree for cis-1,2-dichloroethylene, which has an MCL of 0.07 ppm. The compound was detected during both 2003 sampling events, at concentrations ranging between 0.0082 to 2.0 ppm, at four monitoring wells (MW-12A, MW-6, W-5, WCT-1), the western collection trench manhole (WCT-MH), and in two GWTP sampling locations (TP-BETWEEN and TP-OUT). Some past detections exceeded the MCL; however, during the most recent groundwater sampling in May 2004, only the sample from WCT-MH exceeded the MCL (1.9 ppm compared to 0.07 ppm) (See Supplemental Figures in Attachment 6).

Several other VOCs (chloromethane and 1,2-dichloroethane) for which no site-specific Performance Standards have been specified were detected at several locations on the Site. These compounds, in addition to cis-1,2-dichloroethylene, are not included in the computation of total VOCs to allow comparison to historical data. Chloromethane and 1,2-dichloroethane were detected at 0.00034 and 0.00042 ppm, respectively in the Fall 2003 sampling event.

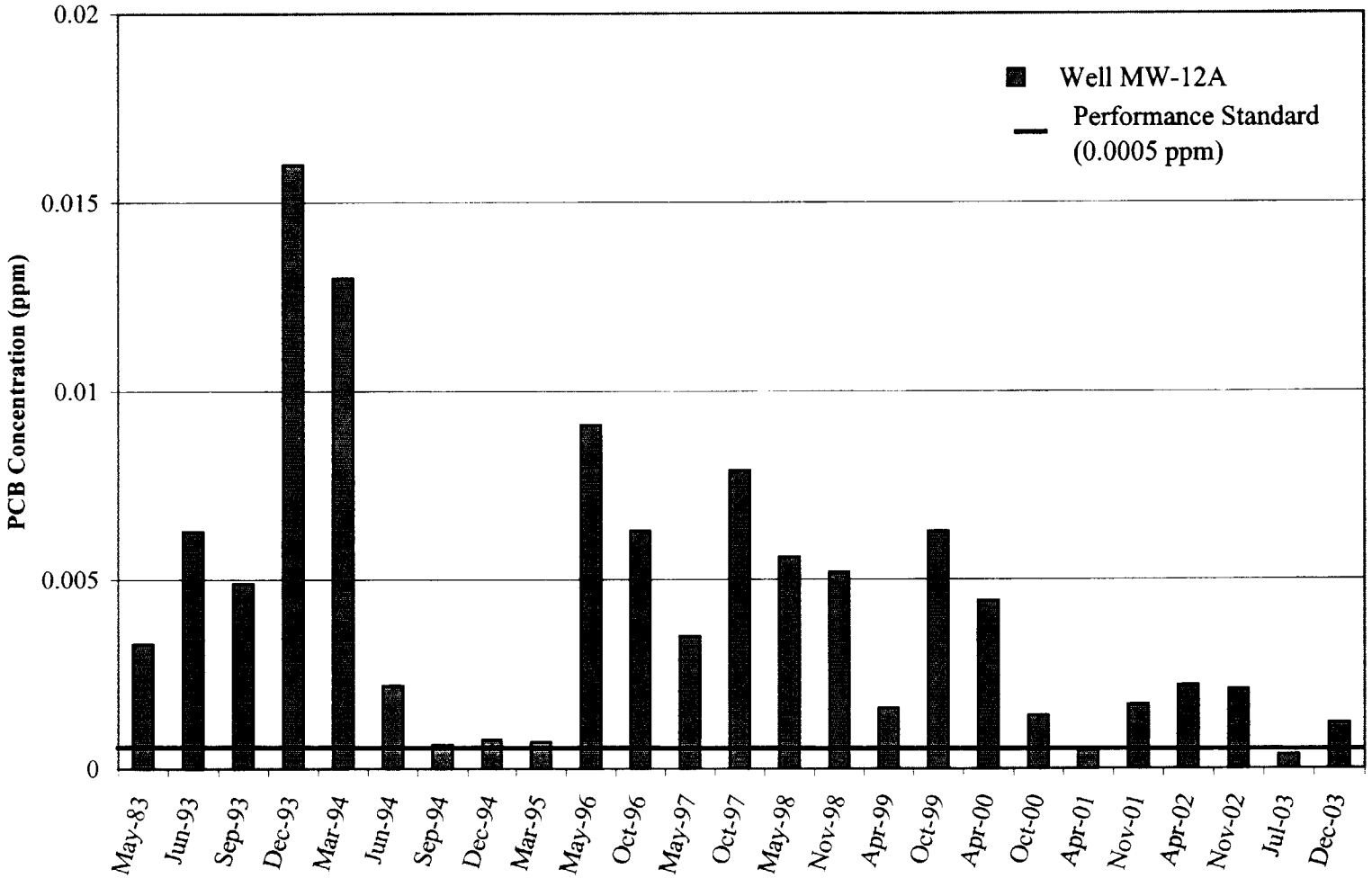
Sample data and statistical trend analysis indicate that PCB concentrations at groundwater sampling locations have been declining temporally, but the results are variable from year to year, from season to season, and between filtered and unfiltered samples. However, PCB data has been more consistent after commencement of low-flow sampling in 1998. Most PCB data collected are below the previous year's concentrations, and PCB concentrations in samples collected in 2003 were well below historical maximum values.

PCBs are consistently detected in unfiltered samples from five of the eight monitoring wells and in each collection trench manhole sampled in 2002 and 2003. Unfiltered PCB concentrations in monitoring wells MW-12A (Figure 5) and WCT-1 and from the two collection trench manholes have at times been above the PCB Performance Standard of 0.0005 ppm (BBL, 2004b).

The monitoring wells in which the most contaminants are found at concentrations exceeding the Performance Standards (Table 3) are upgradient of the collection trenches. Minor exceedances at MW-23A, MW-24A, and W-5 in 2002 may have been related to the discharge line leakage in 2001. Unfiltered PCB concentrations in samples from WCT-1 exceeded the Performance Standard in November 2002 and July 2003, but not in December 2003 and May 2004. PCBs have not been detected in filtered samples from WCT-1 since April 2001. The semi-annual groundwater monitoring program and evaluation of concentration trends should continue during the next five-year period.

Since data from MW-10C in 1998 and from MW-6C in 2004 suggest that small amounts of contamination may be penetrating the till and reaching the upper bedrock on the Site, it is recommended that, for the next five-year period, samples be collected annually from MW-6C, MW-7C, MW-10B, and MW-10C and tested for VOCs and PCBs. These wells would be in addition to the wells routinely monitored on a semi-annual basis.

Figure 5 - Historical PCB Concentrations in Groundwater
F.T. Rose Disposal Pit Superfund Site
Lanesborough, Massachusetts



6.4 SITE INSPECTION AND INTERVIEWS

A site inspection and interview session were conducted on June 3, 2004. Participants included Melissa Taylor of USEPA; Nikki Korkatti of MADEP; Barbara Weir and Tony Rodolakis of Metcalf & Eddy; and several PRP representatives: John Novotny (GE), John Levesque (GE), John Powers (O'Brien & Gere), John Ciampa (Spectra), and Nick Smith (BBL). The purpose of the inspection was to help assess the protectiveness of the remedy by observing the condition of the site fence, the monitoring wells, the groundwater treatment plant, and the pond and wetlands areas within the Site boundary. The purpose of the interview session was to obtain input from GE and its contractors regarding the progress of the remedy and any suggestions they might have for improvement.

O'Brien & Gere (OBG) is currently under contract with GE to operate the Site treatment plant. GE and OBG personnel participated in the interview and responded to questions regarding the O&M of the treatment plant. A completed Interview Record Form and Site Inspection Checklist Form are included as Attachment 4.

During the Site visit, GE provided access to the plant and Site, described the process and controls of the treatment plant, answered specific questions about the plant and Site, and led a tour of the Site and treatment plant facility. GE also provided examples of the routine inspection logs kept for the Site, an explanation of system modifications which have been implemented, and the routine and non-routine maintenance which has taken place at the treatment plant since startup. The GWTP was in good condition and the documentation of O&M activities was in good order.

During the Site visit, M&E also inspected the palustrine forested/emergent wetland, the pond area, and the stream. Vegetation within the wetland appeared to be healthy and there were no obvious signs of plant stress attributable to the GWTP discharge. Vegetation within the restored pond area appeared to be in early stages of succession from an inundated community to a community more typical of wet meadow. Vegetation around the stream appeared dense, with prevalent herbaceous ground cover and a developed low canopy dominated generally by staghorn sumac (*Rhus hirta*).

During the Site visit, it was planned that abutting residents would be interviewed if they were at home and receptive to discussion. Several houses were visited and one individual was found to be at home (a young man of approximately high school age). He confided that he was not aware of the Site and stated that his family had lived in the area for less than a year.

Interviews with town officials were not possible on June 3, because the Town Hall had closed by the time the Site inspection was completed. Subsequently, EPA and M&E made several attempts to contact the town of Lanesborough's Health Agent to arrange for an telephone interview, but as of August 27, 2004 had not received a return telephone call.

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 (USEPA, 2001).

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

The review of documents, ARARs, and risk assumptions indicates that the remedy was constructed in accordance with the ROD and is currently protective. Groundwater extraction and treatment is ongoing and continues to be needed, since groundwater contaminant concentrations are still above Performance Standards in some monitoring wells. Groundwater in the vicinity of the Site is not currently being used. The disposal area is owned by GE and access is restricted. The institutional controls identified in the ROD to prevent groundwater use and exposure to contaminated soil have yet to be implemented, however, and are needed to ensure protectiveness in the long-term future. Efforts to establish enforceable institutional controls are ongoing.

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 Risk Assessments and Toxicity Factors Serving as the Basis for the Remedy

The Endangerment Assessment Report prepared by Geraghty & Miller, Inc. (G&M, 1988) noted risks exceeding EPA risk management guidelines for dermal contact with and incidental ingestion of soils containing PCBs at the disposal area for child and adult residents and ingestion of shallow groundwater located from within the disposal area to 500 feet from the center of the disposal area (i.e., Areas 1 and 3) containing PCBs, tetrachloroethene, and vinyl chloride.

Risks were estimated as within or below EPA risk management guidelines for ingestion and dermal contact exposures to off-site soils, ingestion of groundwater 500 feet to 1,000 feet beyond the center of the disposal area (i.e., Areas 4 and 5), and recreational exposures to contaminants in sediments and surface waters in the vicinity of the Site.

In this five-year review report, the toxicity values that served as the basis for the cleanup levels, as contained in the ROD, have been re-evaluated to determine whether any changes in toxicity impact the protectiveness of the remedy. Any changes in current or potential future exposure pathways or exposure assumptions that may impact remedy protectiveness are also noted. In addition, environmental data, available since the last five year review, have been qualitatively evaluated to determine whether exposure levels existing at the Site present a risk to current human receptors.

Changes in Toxicity

Table 4 presents a summary of the changes in toxicity values (oral reference doses and oral cancer slope factors) for compounds selected as Contaminants of Concern (COCs) as identified in the 1988 Endangerment Assessment, along with any additional site contaminants identified in the 1988 Endangerment Assessment or detected in more recent sampling events. Updated toxicity information was obtained from the *Integrated Risk Information System* (IRIS; USEPA, 2004). Inorganics have not been evaluated since more recent sampling has not included inorganics as target analytes.

For most contaminants, changes to toxicity information have been minimal. Changes in toxicity values for groundwater COCs (e.g., trichloroethene, tetrachloroethene, and PCBs) would not affect remedy protectiveness since performance standards for groundwater are based on federal Maximum Contaminant Levels (MCLs). For PCBs, the oral slope factor has been decreased overall by a factor of approximately two and a reference dose has been derived. These changes would result in a decrease in the estimation of cancer risk and an increase in the noncarcinogenic risk estimates associated with PCBs in soil. However, the PCB soil cleanup level of 13 mg/kg would remain protective of future residential soil exposures. This statement is based on a comparison of the cleanup level to the Region 9 residential soil preliminary remediation goal (PRG) for PCBs (0.22 mg/kg; target cancer risk of 1E-06). Residential exposures to on-site soils would be associated with a future on-site cancer risk of approximately 5E-05, a value within EPA risk management guidelines.

Changes in Exposure Pathways/Assumptions

One pathway of potential concern that was not evaluated in the 1988 Endangerment Assessment was the vapor intrusion pathway. This pathway may be of concern at sites where shallow groundwater contaminated with VOCs exists in close proximity to occupied buildings. The Rose residence is downgradient of the Site. It was considered possible that volatile contaminants in shallow groundwater migrating from the Site could be impacting indoor air quality at this residence. Therefore, June 2004 VOC data collected from well clusters MW-6 and MW-14, the most proximate monitoring wells to the Rose residence, were evaluated for the vapor intrusion pathway.

Chlorobenzene and toluene were the only VOCs detected in samples from the MW-6 and MW-14 well clusters. Toluene concentrations ranged from 0.4 ppb to 0.41 ppb; the detected chlorobenzene concentration was 0.26 ppb. These concentrations were compared to screening values provided in Table 2c of the *Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance)* (USEPA, 2001). Screening values for non-carcinogens were adjusted to a non-cancer hazard index of 1 before comparison. Maximum concentrations of chlorobenzene and toluene are considerably below the screening values of 39 ppb and 150 ppb, respectively. Therefore, the vapor intrusion pathway is considered incomplete and exposures to residents via indoor air are likely to be

negligible.

Table 4: Comparison of 1988, 1998, and 2004 Oral Reference Doses and Oral Cancer Slope Factors for Compounds of Potential Concern

Contaminant of Potential Concern	Oral Reference Dose (RfD) (mg/kg-day)			Oral Slope Factor (SF) $(mg/kg\text{-}day)^{-1}$		
	1988	1998	2004	1988	1998	2004
COCs[1]						
Ethylbenzene	0.1	0.1	0.1	N/A	N/A	N/A
Tetrachloroethene	0.02	0.01	0.01	0.051	0.052	0.54
Toluene	0.3	0.2	0.2	N/A	N/A	N/A
trans-1,2-Dichloroethene	0.01	0.02	0.02	N/A	N/A	N/A
Trichloroethene	0.0074	N/A	0.0003	0.011	0.011	0.4
Vinyl chloride	0.013	N/A	0.003	2.3	1.9	1.5
PCBs	N/A	0.00002	0.00002	4.34	0.4	2
Other Site Contaminants[2]						
1,1,2-Trichloroethane	NI	0.004	0.004	NI	0.057	0.057
1,1-Dichloroethene	NI	0.009	0.05	NI	0.6	N/A
1,2,4-Trichlorobenzene	NI	0.01	0.01	NI	N/A	N/A
1,2-Dichlorobenzene	NI	0.09	0.09	NI	N/A	N/A
1,2-Dichloroethane	NI	0.03	0.02	NI	0.091	0.091
1,3-Dichlorobenzene	NI	0.089	0.0009	NI	N/A	N/A
1,4-Dichlorobenzene	NI	N/A	0.03	NI	0.024	N/A
2,4-Dimethylphenol	NI	0.02	0.02	NI	N/A	N/A
Benzene	NI	N/A	0.004	NI	0.029	0.055
Carbon disulfide	NI	0.02	0.1	NI	N/A	N/A
Chlorobenzene	NI	0.1	0.02	NI	N/A	N/A
cis-1,2-Dichloroethene	NI	0.01	0.01	NI	N/A	N/A
Methylene chloride	NI	0.06	0.06	NI	0.0075	0.0075
Naphthalene	NI	N/A	0.02	NI	N/A	N/A
Xylenes	NI	2	0.2	NI	N/A	N/A

N/A = Not Applicable

1. Chemicals of Concern (COCs) drawn from 1988 Endangerment Assessment Report
2. Other chemicals listed are site contaminants detected in groundwater, but not selected as indicator contaminants of concern.

NI = Not identified in the 1988 Endangerment Assessment Report

Evaluation of Recent Sampling Data

As discussed in Section 6.3.1, benzene, trichloroethene, tetrachloroethene, vinyl chloride, methylene chloride, and PCBs in select monitoring wells continue to exceed performance standards, i.e., federal Maximum Contaminant Levels (MCLs). There is an MCL for cis-1,2-dichloroethene, which is exceeded in select monitoring wells, but the Consent Decree did not

establish a performance standard for this compound. Additional VOCs lacking performance standards (chloromethane and 1,2-dichloroethane) have also been detected. Of these additional VOCs, the detected concentration of 1,2-dichloroethane (0.42 ppb) exceeds tap water risk-based PRGs provided by EPA Region 9 (USEPA, 2002). The PRG for 1,2-dichloroethane is 0.12 ppb, based on a cancer risk of 1E-06. Continued exceedances of performance standards and risk-based PRGs indicate that completion of the drinking water ingestion pathway would present a risk to human receptors. The continued provision of potable water to residents in the vicinity of the site prevents the completion of this exposure pathway. However, until groundwater concentrations meet performance standards and/or risk-based PRGs, institutional controls should be implemented at the Site to ensure that no private wells are installed at or near the Site.

Contaminants in groundwater may potentially discharge to nearby surface water bodies where direct contact human exposures could occur. VOCs discharged to surface water would likely attenuate rapidly due to volatilization and dispersion mechanisms. Non-volatile compounds (e.g., PCBs) present in surface water as a result of groundwater discharge would likely remain available for direct contact exposures. Therefore, the maximum detected groundwater concentration of total PCBs (8.2 ppb; MW-24A in April 2002) was evaluated for potential risk to human recreational receptors by comparison to the dermal component of the Region 9 tap water PRG (0.94 ppb; cancer risk of 1E-06). Prior to the comparison, the groundwater analytical result was decreased by a factor of 10 to account for dilution during groundwater to surface water discharge. The results of the comparison demonstrate that the diluted concentration (0.82 ppb) does not exceed the risk-based PRG (0.94 ppb). Therefore, there is likely to be negligible risk to human recreational receptors should groundwater to surface water discharge be occurring at the Site.

As discussed in Section 5.0, additional on-site soil sampling for PCBs has not been performed since the 1999 five-year review. However, October 1994 confirmatory soil sampling results for ten soil samples collected at five locations indicated that PCBs concentrations in three of the samples exceeded the 13 mg/kg soil cleanup level. The areas from where these samples were collected were excavated and disposed off-site, according to a GE monthly status report (November 9, 2004). There are no known surficial soil locations on site where the PCB concentration exceeds the cleanup level. On-site PCBs in excess of the cleanup level, if present, would indicate potential risk to human receptors should the soil direct contact pathway be complete. However, the presence and maintenance of soil cover and fencing at the Site prevents the completion of this human exposure pathway.

PCBs present in soil below the water table were not excavated beyond the one free product zone. Soil remaining on Site with PCB concentrations in excess of the PCB cleanup level could be evaluated in a future five-year review, once groundwater remediation is complete. Such an evaluation could be used to determine whether institutional controls must remain in place to prevent excavation into and movement of untreated soil with PCB concentrations in excess of the cleanup level. GE is currently pursuing establishment of the institutional controls as described in Section 5.0.

Sediment sampling locations SW-1, SW-4, SW-W5, SW-7, and SW-8 were sampled in July 2004 and analyzed for PCBs. Results of the sediment sampling indicated that Aroclor-1242 (0.37 mg/kg), Aroclor-1248 (0.53 mg/kg), Aroclor-1254 (0.11 mg/kg to 1.4 mg/kg), and Aroclor-1260 (0.11 mg/kg to 0.59 mg/kg) exceeded detection limits. Total PCB concentrations range from 0.22 mg/kg (SW-8) to 2.36 mg/kg (SW-4). A comparison of the maximum detected concentration (2.36 mg/kg) to the risk-based PRGs for residential soils (0.22 mg/kg; target cancer risk of 1E-06) indicates that a cancer risk estimate for sediment exposure would not exceed an upper-bound value of 2E-05. This is an overestimate of the potential risk, since the comparison is based on residential exposure assumptions. Recreational exposures of lesser frequency and intensity would be more realistic for off-site sediments. Therefore, direct contact recreational exposure to sediments would not exceed EPA risk management guidelines.

Summary and Conclusions

Toxicity values that served as the basis for the cleanup levels, as contained in the ROD, have been re-evaluated to determine whether any changes in toxicity impact the protectiveness of the remedy along with any changes in current or potential future exposure pathways or exposure assumptions. In addition, environmental data, available since the last five year review, have been qualitatively evaluated to determine whether exposure levels existing at the Site present a risk to current human receptors.

Based on the evaluation of changes in toxicity values, the PCB soil cleanup level of 13 mg/kg remains protective of future residential soil exposures. June 2004 VOC data collected from the MW-6 and MW-14 well clusters, the most proximate monitoring wells to the Rose residence, were qualitatively evaluated for the vapor intrusion pathway. Based on this evaluation, the vapor intrusion pathway is considered incomplete and exposures to residents via indoor air are likely to be negligible. In addition, sediment data collected in 2004 indicate that direct contact recreational exposure to sediments would not exceed EPA risk management guidelines. There is also likely to be negligible risk to human recreational receptors should groundwater to surface water discharge be occurring at the Site.

Continued exceedances of performance standards and risk-based PRGs in groundwater indicate that completion of the drinking water ingestion pathway would present a risk to human receptors. The continued provision of potable water to residents in the vicinity of the site prevents the completion of this exposure pathway. Until groundwater concentrations meet performance standards and/or risk-based PRGs, institutional controls should be implemented at the Site to ensure that no private wells are installed at the Site.

The presence of on-site PCBs within the saturated zone in excess of the cleanup level indicates potential risk to human receptors should the soil direct contact pathway be completed in the future. The presence and maintenance of soil cover and fencing at the Site prevents the completion of this current human exposure pathway. Soil remaining on Site with PCB concentrations in excess of the PCB cleanup level could be evaluated in a future five-year review, once groundwater remediation is complete. Such an evaluation could be used to determine

whether institutional controls must remain in place to prevent excavation into and movement of untreated soil with PCB concentrations in excess of the cleanup level. GE is currently pursuing establishment of the legally enforceable institutional controls as described in Section 5.0.

7.2.2 Ecological Risk Review

Groundwater collected from four monitoring wells that are routinely sampled for VOCs and PCBs (W-5, MW-8, E-7R, and WCT-1) represents water which has a slight potential of eventually discharging to surface water or wetlands, due to the possibility that the wells are outside or near the edge of the capture zones of the collection trenches. Results of groundwater monitoring from May 2004 indicated that detection limits were exceeded for trichloroethylene, vinyl chloride, 1,3-dichlorobenzene, 1,4-dichlorobenzene, and Aroclor 1254 in unfiltered samples; however, Aroclor-1254 was not detected in filtered samples. In addition, sediment sampling locations SW-1, SW-4, SW-W5, SW-7, and SW-8 were resampled in July 2004 and analyzed for PCBs. Results of the sediment sampling indicated that various PCBs, consisting of Aroclor-1242, Aroclor-1248, Aroclor-1254, and Aroclor-1260 exceeded detection limits.

The groundwater and sediment analytical data from May and July 2004, respectively, were compared to ecological screening benchmarks. Data were compared to the following sources in the order presented:

1) USEPA Ambient Water Quality Criteria (AWQC) (USEPA, 2002)

2) USEPA Ecotox Thresholds (ET) for Surface Water (USEPA, 1996)

3) Secondary Chronic Values (SCVs) for aquatic biota developed by Oak Ridge National Laboratory (Suter and Tsao, 1996).

Surface water benchmarks could not be found for vinyl chloride.

Sediment data were compared to the following screening benchmarks, in the order presented:

1) EPA Ecotox Thresholds for Sediment (USEPA, 1996)

2) National Oceanic and Atmospheric Administration (NOAA) Effects Range –Low (ER-L) for sediments (Long & Morgan, 1990; Long *et al.* 1995; *respectively cited in* Jones, Suter & Hull, 1997)

3) Ontario Ministry of the Environmental Lowest Effects Levels (*cited in* Jones, Suter & Hull, 1997)

4) Threshold Effects Levels (TELs) and Probable Effects Levels (PELs) for freshwater sediments (MacDonald, *et al.*, 1994)

Sediment screening benchmarks were available only for Aroclor-1216, Aroclor-1248, Aroclor-1254, Aroclor-1260, and Total PCBs. Sediment benchmarks were not available for Aroclor-1221, Aroclor-1232, or Aroclor-1248.

Groundwater analytical data were decreased by a dilution factor of 10 to estimate concentrations resulting from groundwater discharges into surface water. The results of the comparison of diluted analytical data from monitoring wells to benchmarks indicate that VOCs did not exceed screening criteria. Although surface water benchmarks typically apply only to dissolved concentrations, in this case, benchmarks were also used to screen Aroclor-1254. This comparison showed that total Aroclor-1254 is equal to the screening benchmark. Therefore, there is a negligible risk to aquatic organisms from VOCs and PCBs.

The results of the comparison of analytical data from sediment samples to screening benchmarks show that concentrations of Aroclor-1248 at SW-W5 (0.53 mg/kg) exceeded the benchmark value (0.03 mg/kg). Concentrations of Aroclor-1254 exceed the benchmark value at all sampling locations. Concentrations of Aroclor-1260 exceeded the benchmark at all locations except SW-7 where it was below detection limits. Total PCBs also exceeded benchmarks at all locations. Where concentrations were reported as non-detections, detection limits exceeded the screening value. Quality Control Plans for future analyses should be updated to ensure that selected analytical methods have detection limits at or below screening levels.

PCBs in sediments may bioaccumulate in aquatic organisms that live in or frequently contact sediments (Eisler, 1986). In turn, these organisms may be a source of PCB exposure to predators which consume them. Based on the Endangerment Assessment Report (G&M, 1988), the last Five Year Review Report (M&E, 1999), and recent site reconnaissance by EPA and M&E, the steam is small and shallow with a rocky bottom, does not likely support fish, and is located within a forested area with a relatively closed canopy. These characteristics also suggest that the stream is not frequently utilized by semi-aquatic birds that may consume fish and/or macroinvertebrates. However, insects which utilize the stream and emerge as adults may be consumed by bats and insectivorous birds foraging in nearby open areas. To determine if PCB contamination in sediments could result in impacts to insectivores, a model was constructed to estimate the amount of PCBs ingested by bats via consumption of emerging insects. The model, as described below, determined that PCBs in steam sediments are unlikely to pose a risk via trophic transfer.

The indicator species used in the model was the little brown bat, *Myotis lucifugus*, a common inhabitant of the Northeast. Individuals were assumed to consume 0.0025 kg/day (wet weight) (Anthony and Kunz, 1977 *cited in* Sample *et al.*, 1996). Body weight was set at 0.0075 kg (wet weight) (Gould, 1955 *cited in* Sample *et al.*, 1996). The daily ingestion rate was divided by body weight to obtain the food intake (FI) rate (0.33 kg insects/kg BW-day).

Equation (1) was used to calculate the PCB daily dose that *M. lucifugus* would be expected to be exposed to from the ingestion of emerging insects:

$$Dose = FI * C_{diet} \quad (1)$$

Where
Dose = PCB ingested per day via ingestion of insects (mg/kg BW-day);
FI = food intake rate (kg insects/kg BW-day); and
C_{diet} = estimated PCB concentration in diet (mg/kg).

The estimated PCB dietary concentration (C_{diet}) was calculated using the Equation (2):

$$C_{diet} = P_{insects} * C_{insects} \quad (2)$$

Where
C_{diet} = estimated concentration of PCB in diet (mg/kg);
$P_{insects}$ = proportion of diet consisting of insects (unitless); and
$C_{insects}$ = estimated concentration of PCBs in insects (mg/kg wet weight).

The proportion of the diet consisting of insects ($P_{insects}$) from the stream was conservatively set at 100 percent. A site use factor of 100 percent was also assumed in calculating the exposure dose.

The concentration of PCBs in insect tissue ($C_{insects}$) was determined using Equation (3):

$$C_{insects} = C_{sediment} * BAF \quad (3)$$

where
$C_{insects}$ = estimated concentration of PCBs in insects (mg/kg wet weight);
$C_{sediment}$ = concentration of total PCBs detected in sediment (mg/kg dry weight); and
BAF = sediment-to-insect bioaccumulation factor (unitless).

Based on sediment and invertebrate tissue sampling results reported in Charter (1991, *cited in* Boucher, 1993) a PCB BAF of 0.19 was selected for use in Equation (3).

A relative oral bioavailability factor of one was also assumed for the PCBs. The use of a factor of one is conservative because it assumes that 100 percent of the chemical in the diet is bioavailable, and the bioavailability is similar to that of the bioassay from which the ecotoxicity reference value (TRV) is derived. Furthermore, it assumes that there is no difference in uptake of a chemical between that of the receptor species and the species form which the TRV was derived.

A calculated lowest-observed-adverse-effect-level (LOAEL) of 0.795 mg/kg-day (based on exposure to Aroclor 1254) was used as the TRV for *M. lucifugus* (Sample *et al.*, 1996). The estimated PCB exposure dose was compared to the TRV using Equation (4):

$$\text{Hazard Quotient} = \frac{\text{Calculated (estimated) exposure dose}}{\text{Toxicity Reference Value}} \quad (4)$$

The HQ for the ingestion of insects by *M. lucifugus* was 0.18. An HQ less than 1 indicates harm is unlikely. Therefore, PCBs in stream sediments are unlikely to pose a risk of harm via trophic transfer.

Additionally, historical data presented in the previous 5 Year Review (M&E, 1999) reports analytical sampling results for PCBs at SW-4. Comparison of sediment data from SW-4 collected in 1999 to data collected in 2004 indicates that concentrations are continuing to trend downward.

7.2.3 ARARs Review

M&E performed a review of Applicable or Relevant and Appropriate Requirements to check the impact on the remedy due to changes in standards that were identified as ARARs in the ROD and in the previous Five-Year Review Report (USEPA, 1999), newly promulgated standards for chemicals of potential concern, and TBCs (to be considereds). The results of the 1999 ARARs review, which was conducted consistent with the most recent five-year review guidance (USEPA, 2001), were used as a basis for this review.

The tables in Attachment 5 provide the ARARs review. The review is summarized below.

The following ARARs were identified for the selected remedy:

Location-specific:

- Resource Conservation and Recovery Act (RCRA)
- Clean Water Act (CWA)
- Fish and Wildlife Coordination Act (16 U.S.C. 661)
- Wetlands Executive Order (EO 11990)
- Executive Order (EO 11988)
- Massachusetts Wetlands Protection Regulations
- Massachusetts Hazardous Waste Facility Siting Regulations

Chemical-specific:

- Safe Drinking Water Act (SDWA)
- Resource Conservation and Recovery Act (RCRA)
- Federal Ambient Water Quality Criteria (AWQC)
- EPA Office of Water Guidance - Water-related Fate of 129 Priority Pollutants (1979)
- Health Advisories (EPA Office of Drinking Water)
- Threshold Limit Values (TLVs)
- National Oceanic Atmospheric Administration (NOAA)
- Ontario Ministry of Environment and Energy (OMEE)
- Massachusetts Groundwater Quality Standards
- Massachusetts Drinking Water Requirements

- Massachusetts Surface Water Discharge Permit Program Regulations
- Massachusetts Air Quality/Air Pollution Regulations
- Massachusetts Office of Research and Standards Guidelines (ORSGs)
- Massachusetts Guidance on Acceptable Ambient Air Levels (AALs)

Action-Specific:

- Resource Conservation and Recovery Act (RCRA)
- Clean Water Act (CWA)
- Clean Air Act (CAA)
- Department of Transportation (DOT) Rules for Transportation of Hazardous Materials
- Massachusetts Hazardous Waste Regulations, Phase I and II
- Massachusetts General Laws
- Massachusetts Wetlands Protection Regulations
- Massachusetts Surface Water Discharge Permit Program Regulations
- Massachusetts Certification for Dredging, Dredged Material Disposal, and Filling in Waters
- Massachusetts Employee and Community "Right to Know" Regulations

Tables A5-1, A5-2, and A5-3 of Attachment 5 provide an evaluation of ARARs using the regulations and requirement synopses listed in the ROD as a basis. The evaluation includes a determination of whether the regulation is currently ARAR or TBC and whether the requirements have been met. Most of the listed ARARs remain applicable or relevant and appropriate to the site. Some of the listed ARARs were for the soil remediation phase of the remedy, which was completed in 1994, and hence they are listed as formerly applicable or formerly relevant and appropriate. Those that are still applicable or relevant and appropriate are being complied with.

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

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 remedy is functioning as intended by the ROD. There have been no changes in the physical conditions of the Site that would affect the protectiveness of the remedy. The ARARs identified in the ROD remain applicable or relevant and appropriate and either have been met or are being complied with. Institutional controls need to be implemented for the remedy to be protective in the long term.

SECTION 8.0
ISSUES

Based on the activities conducted during this Five-Year Review, the issues identified in Table 5 have been noted.

Table 5: Issues

Issues	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
Although GE currently owns the majority of the Site and maintains the fencing and provides security, legally enforceable Institutional Controls are not yet in place. Institutional Controls are required to provide long-term protectiveness.	N	Y

SECTION 9.0
RECOMMENDATIONS AND FOLLOW-UP ACTIONS

In response to the issues noted above, it is recommended that the actions listed in Table 6 be taken:

Table 6: Recommendations and Follow-up Actions

Issue	Recommendations and Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness	
					Current	Future
Legally enforceable Institutional Controls are required for long-term protectiveness, but have not yet been implemented	Place deed restrictions on the disposal area to prevent excavation without proper precautions. Work towards establishment of enforceable institutional controls to prevent excavation without proper precautions, and to prevent use of groundwater on Site property.	PRP	EPA	By the next five year review.	N	Y

SECTION 10.0
PROTECTIVENESS STATEMENTS

The remedy at the F. T. Rose Superfund Site currently protects human health and the environment because there is no current exposure to groundwater contamination, PCB-contaminated surface soil has been remediated, and access to the disposal area is restricted so that there is no potential for exposure to contaminated subsurface soil that remains in place at the Site. According to the data reviewed, the site inspection, and the interviews, the remedy is functioning as intended by the ROD. There have been no changes in the physical conditions of the Site that would affect the protectiveness of the remedy. The ARARs identified in the ROD remain applicable or relevant and appropriate and either have been met or are being complied with. However, in order for the remedy to be protective in the long term, institutional controls need to be implemented to prevent groundwater use and excavation into the saturated zone within the disposal area.

SECTION 11.0
NEXT REVIEW

The next Five-Year Review for the F. T. Rose Superfund Site will be completed by September 30, 2009, five years from the date of this review. The next Five-Year Review should check that institutional controls have been implemented, and should include a review of data generated from groundwater monitoring and plant operations monitoring, to confirm that the remedial actions are protective of human health and the environment.

ATTACHMENT 1

ATTACHMENT 1
LIST OF DOCUMENTS REVIEWED/REFERENCES

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ATTACHMENT 2
DNAPL RECOVERY EVALUATION
(GE, JUNE 1998)

GE Corporate Environmental Programs
General Electric Company
100 Woodlawn Avenue, Pittsfield, MA 01201

Transmitted Via Federal Express

June 16, 1998

Ms. Melissa Taylor
U.S. Environmental Protection Agency
Mail Code HBO
JFK Federal Building
Boston, Massachusetts 02203-0001

Re: F.T. Rose Superfund Site, Lanesborough, MA 101.02
Evaluation of DNAPL Recovery Tests

Dear Ms. Taylor:

Attached please find a report documenting the results of a test program recently performed by the General Electric Company (GE) to evaluate the feasibility of an automated recovery of dense non-aqueous phased liquid (DNAPL) at the F. T. Rose Superfund Site in Lanesborough, Massachusetts. This test program was performed in accordance with a letter to United States Environmental Protection Agency (USEPA) dated December 8, 1997, and an associated USEPA comment letter dated January 23, 1998.

Upon your review of this letter, please contact me at (413) 494-3952 with your questions or comments regarding the contents of this letter.

Sincerely,

John D. Ciampa / DCK

John D. Ciampa
Remediation Project Manager

U:\PLH98\61781543.WPD
DCK/plh

Attachment

cc: J. Magee - GE (w/o attach.)
N. Korkatti - DEP
A. Weinberg - DEP
A.J. Thomas, Esq. - GE
J. Nuss, P.E., LSP - BBL

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS
F.T. ROSE DISPOSAL PIT SUPERFUND SITE
LANESBOROUGH, MASSACHUSETTS

EVALUATION OF DNAPL RECOVERY OPERATIONS

I. INTRODUCTION

As a follow-up to a December 8, 1997 letter from the General Electric Company (GE) to the United States Environmental Protection Agency (USEPA), GE has further evaluated the feasibility of installing an automated system to recover dense non-aqueous phase liquids (DNAPLs) within an isolated area of the F.T. Rose Superfund Site in Lanesborough, Massachusetts (the "site"). This report provides a summary of the recent investigations and evaluations performed by GE to support this feasibility evaluation, and provides a recommendation for future DNAPL recovery efforts at the site.

II. BACKGROUND

GE's December 8, 1997 letter to the USEPA summarized the current operations performed by GE to recover DNAPL from the site. As explained in that letter, on a weekly basis, DNAPL is manually removed from a standpipe located adjacent to the west collection manhole near the on-site groundwater treatment facility (Figure 1). This operation is effective at preventing potential DNAPL accumulations and subsequent entrance into the treatment system components. In addition, the current operations are also effective at reducing the volume of DNAPL present in the subsurface. However, to further evaluate potential DNAPL recovery rates, a DNAPL recovery test was conducted for 12 consecutive days in November 1997. The results of that trial (summarized in GE's December 8, 1997) indicate that approximately 10 gallons of DNAPL were recovered per day. Based on this one test, it appeared possible that additional DNAPL removal (beyond that associated with the current recovery operations) could be realized, and that an automated recovery system could possibly increase overall removal volumes. If, however, the recovery rates observed during this trial test could not be sustained over an extended time period, then an automated system would not be beneficial or cost-effective. To further evaluate potential DNAPL recovery rates, and the feasibility of an automated DNAPL recovery system, GE implemented a more extensive evaluation program. The results of this program are summarized below.

III. RECENT DNAPL RECOVERY TESTS

Between March and May 1998, GE conducted a series of DNAPL recovery tests. Four separate recovery tests were conducted. An initial test was conducted over a period of eight consecutive days between March 10, and March 18, 1998. Three subsequent tests were conducted on March 26, April 9, and May 8, 1998. These three daily tests were shorter in duration due to limited DNAPL recovery. During each test, the presence of DNAPL was monitored and recovered (if present) on approximately an hourly basis. Table 1 provides a tabulated summary of observed DNAPL thickness and recovery volume.

The results of the recovery tests indicate that the recovery rates associated with the November 1997 trial apparently over-represent the actual rates that could be realized over a sustained time period. For the 8-hour test conducted between March 10, and March 18, 1998, the daily recovery volumes (based on a 7-hour test period) decreased from approximately 15 gallons to 3 gallons. The subsequent one-day tests (conducted over a 2- to 5-hour duration) also indicated reduced DNAPL recovery (relative to both the November 1997 and March 10-18, 1998 trials), with removal of approximately 2 gallons during each test. To further illustrate

DNAPL recovery over time, a series of graphs have been prepared and are attached to this report.

IV. SUMMARY

Based on the results of a series of recent DNAPL recovery tests performed between March and May 1998, it appears that the sustainable DNAPL recovery rates and volumes are limited, and less than previously indicated by a previous November 1997 trial. Since its December 8, 1998 letter, GE has conducted four DNAPL recovery tests at the site. The results of these tests (as discussed in Part III of this letter) demonstrate that DNAPL recovery volumes steadily decrease during a given test period (typically 2 to 7 hours in duration). It appears that the initial recovery volumes are from DNAPL accumulated within the trench itself. Once this initial volume is removed, low recovery rates of approximately 0.1 to 0.3 gallons per hour are achieved. In addition to an observed decrease within a given test period, an overall reduction in DNAPL recovery was also observed during the program. This finding is generally consistent with the results of DNAPL recovery over the last few years, which show a steady decrease in the total annual volume of DNAPL that has been recovered. Collectively, these findings suggest that the volume of DNAPL available for recovery is decreasing and that the current GE practice of routine monitoring and manual recovery (as needed) is sufficient to recover DNAPL and minimize its migration. As a result, it is concluded that an automated DNAPL recovery system is not warranted and would not be cost-effective.

However, based on the results of the recent testing, it appears that increasing the manual recovery operations may be warranted. It is recommended that once per week, GE conduct manual removal on an hourly basis until DNAPL accumulation in the standpipe reaches a thickness of less than 0.25 feet after a 1-hour recovery period.

Tables

Table 1
F.T. Rose Disposal Pit Superfund Site
Lunenburgh, Massachusetts
Daily DNAPL Removal Test Results

Summary of DNAPL Thickness and Recovery Data

Date	Elapsed Time of Daily Test (hours)	Thickness of DNAPL in Standpipe (feet)	Incremental Volume of DNAPL Removed from Standpipe (gallons)	Total Daily DNAPL Removal Volume (gallons)
03/10/98	0	1.17	7	
	1	0.48	2	
	2	0.45	2	
	3	0.40	1.15	
	4	0.35	0.9	
	5	0.35	0.9	
	6	0.32	0.9	14.85
03/11/98	0	0.70	2.8	
	1	0.30	0.8	
	2	0.28	0.8	
	3	0.31	0.9	
	4	0.20	0.65	
	5	0.31	0.8	
	6	0.30	0.9	
	7	0.15	0.5	7.95
03/12/98	0	0.62	2.6	
	1	0.21	0.8	
	2	0.21	0.8	
	3	0.21	0.8	
	4	0.19	0.65	
	5	0.18	0.65	6.30
03/13/98	0	0.86	2.1	
	1	0.28	0.75	
	2	0.25	0.5	
	3	0.31	0.7	
	4	0.22	0.5	
	5	0.24	0.5	
	6	0.22	0.5	
	7	0.24	0.6	6.15
03/14/98	0	0.43	1.8	
	1	0.28	0.6	
	2	0.23	0.5	
	3	0.25	0.4	
	4	0.23	0.4	
	5	0.21	0.4	
	6	0.22	0.4	
	7	0.20	0.35	4.85
03/15/98	0	0.39	1.7	
	1	0.25	0.6	
	2	0.20	0.3	
	3	0.20	0.3	
	4	0.20	0.3	
	5	0.17	0.3	
	6	0.15	0.3	
	7	0.15	0.3	4.10
03/16/98	0	0.45	1.5	
	1	0.15	0.3	
	2	0.25	0.3	
	3	0.21	0.3	
	4	0.21	0.3	
	5	0.21	0.3	
	6	0.20	0.25	
	7	0.19	0.25	3.50
03/17/98	0	0.45	1.65	
	2	0.23	0.72	
	3	0.13	0.36	2.73
03/26/98	0	0.39	1.15	
	1	0.25	0.53	
	2	0.21	0.29	1.97
04/09/98	0	0.38	1.00	
	1	0.21	0.35	
	2	0.19	0.30	
	3	0.15	0.20	
	4	0.18	0.20	
	5	0.15	0.15	2.20
05/08/98	0	0.51	1.00	
	1	0.23	0.30	
	2	0.16	0.15	
	3	0.10	0.10	1.55

Notes:
1. Data for March 10, 11, 12, 13, 14, 15, 16, and 17 represent the results of an 8-day-long DNAPL recovery test.
2. Data for March 26, April 9, and May 8 represent results of three independent DNAPL recovery tests.
3. All data was collected by General Electric Company

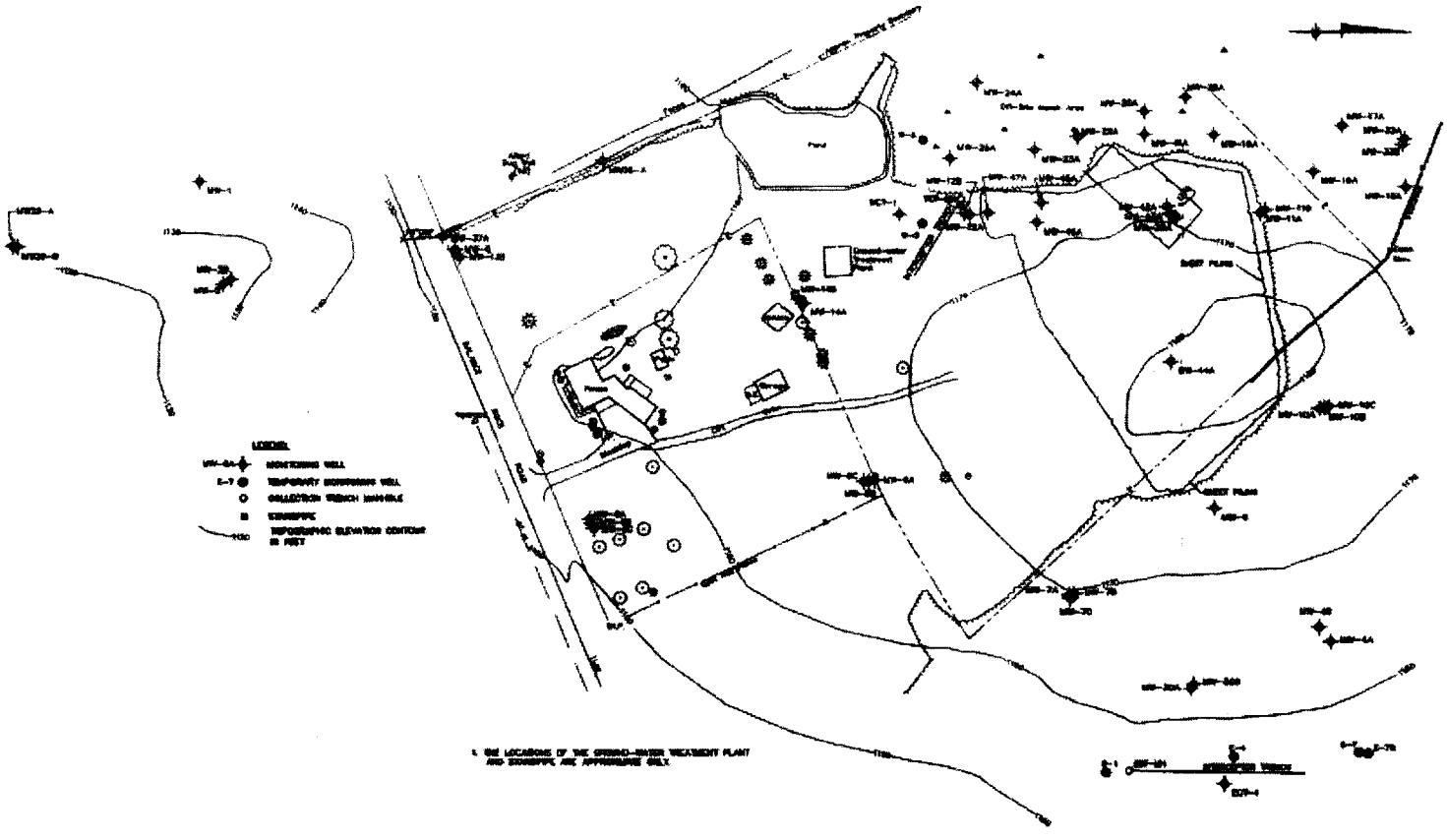
Table 2
F.T. Rose Disposal Pit Superfund Site
Lunenburgh, Massachusetts
8-Day DNAPL Removal Test Results

Summary of DNAPL Incremental Thickness and Cumulative Recovery Data

Date	Elapsed Time of Test (hours)	Thickness of DNAPL in Standpipe (feet)	Incremental Volume of DNAPL Removed from Standpipe (gallons)	Cumulative Volume of DNAPL Removed from Standpipe (gallons)
03/10/98	0.00	1.11	7.00	7.00
	1.00	0.48	2.00	9.00
	2.00	0.43	2.00	11.00
	3.00	0.40	1.15	12.15
	4.00	0.35	0.90	13.05
	5.00	0.35	0.90	13.95
	6.00	0.32	0.90	14.85
03/11/98	23.50	0.70	2.60	17.45
	24.50	0.30	0.80	18.25
	25.50	0.28	0.80	19.05
	26.50	0.31	0.90	19.95
	27.50	0.20	0.65	20.60
	28.50	0.31	0.80	21.40
	29.50	0.30	0.90	22.30
	30.00	0.15	0.50	22.80
03/12/98	47.25	0.62	2.60	25.40
	48.25	0.21	0.80	26.20
	49.25	0.21	0.80	27.00
	50.25	0.21	0.80	27.80
	51.25	0.19	0.65	28.45
	52.25	0.18	0.65	29.10
03/13/98	71.00	0.46	2.10	31.20
	72.00	0.28	0.75	31.95
	73.00	0.25	0.50	32.45
	74.00	0.31	0.70	33.15
	75.00	0.22	0.50	33.65
	76.00	0.24	0.50	34.15
	77.00	0.22	0.50	34.65
	78.00	0.24	0.60	35.25
03/14/98	94.25	0.43	1.80	37.05
	95.25	0.28	0.60	37.65
	96.25	0.23	0.50	38.15
	97.25	0.25	0.40	38.55
	98.25	0.23	0.40	38.95
	99.25	0.21	0.40	39.35
	100.25	0.22	0.40	39.75
	101.25	0.20	0.35	40.10
03/15/98	119.25	0.39	1.70	41.80
	120.25	0.25	0.60	42.40
	121.25	0.20	0.30	42.70
	122.25	0.20	0.30	43.00
	123.25	0.20	0.30	43.30
	124.25	0.17	0.30	43.60
	125.25	0.15	0.30	43.90
	126.25	0.15	0.30	44.20
03/16/98	142.75	0.45	1.50	45.70
	143.75	0.15	0.30	46.00
	144.75	0.25	0.30	46.30
	145.75	0.21	0.30	46.60
	146.75	0.21	0.30	46.90
	147.75	0.21	0.30	47.20
	148.75	0.20	0.25	47.45
	149.75	0.19	0.25	47.70
03/17/98	167.50	0.45	1.65	49.35
	169.50	0.23	0.72	50.07
	170.50	0.13	0.36	50.43

Notes:
1. See Table 1 for additional data.
2. Data shown represents the results of an 8-day-long DNAPL recovery test performed from March 10 to March 17.
3. The elapsed time represents the total time from the beginning of the recovery test on March 10
4. The total volume of DNAPL removed from the standpipe represents the cumulative DNAPL recovery volume over the duration of the 8-day-long recovery test.
5. All data was collected by General Electric Company.

Figures



GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS

F.T. ROSE DISPOSAL PIT SUPERFUND SITE

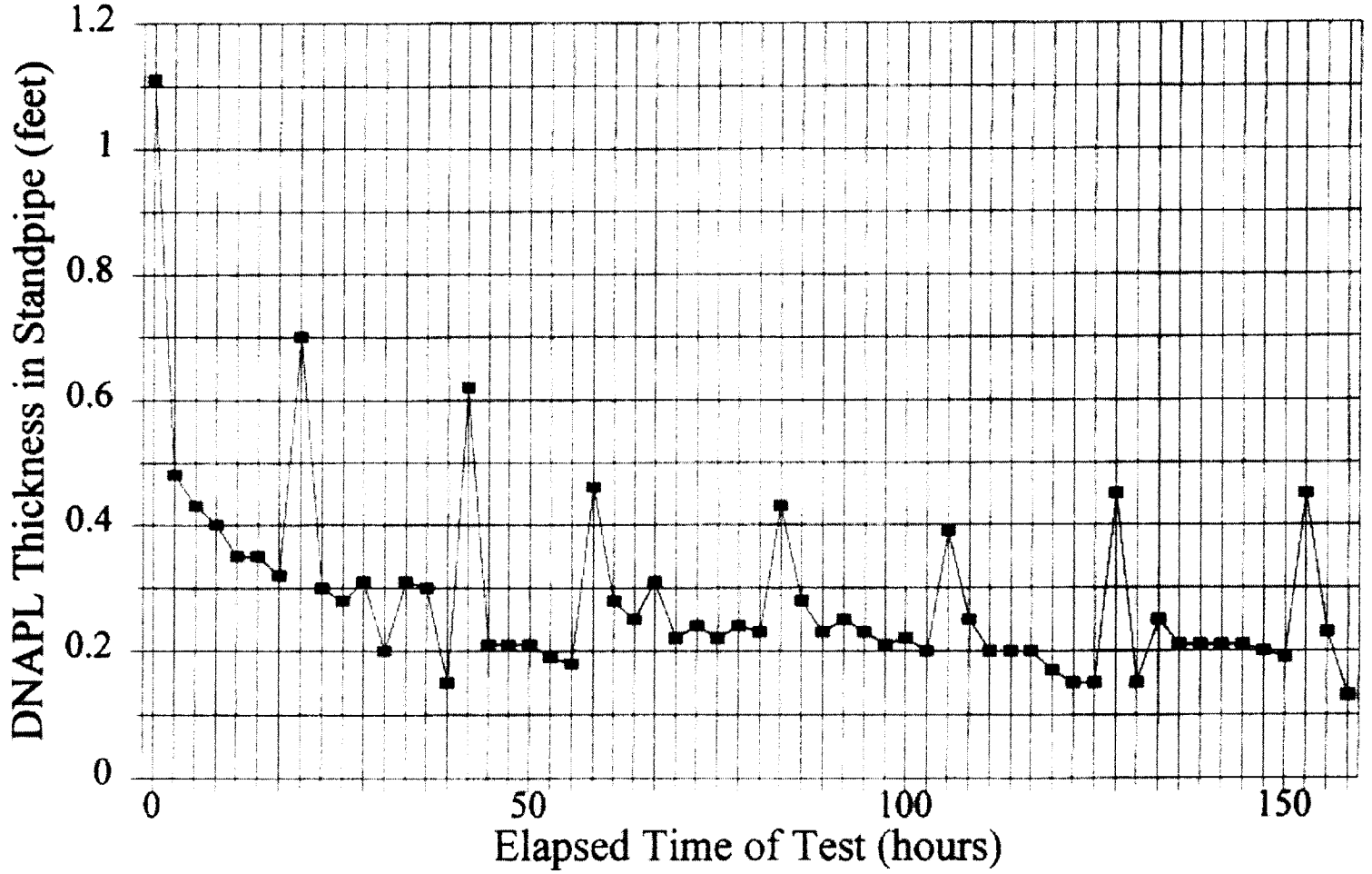
SITE MAP

BBL

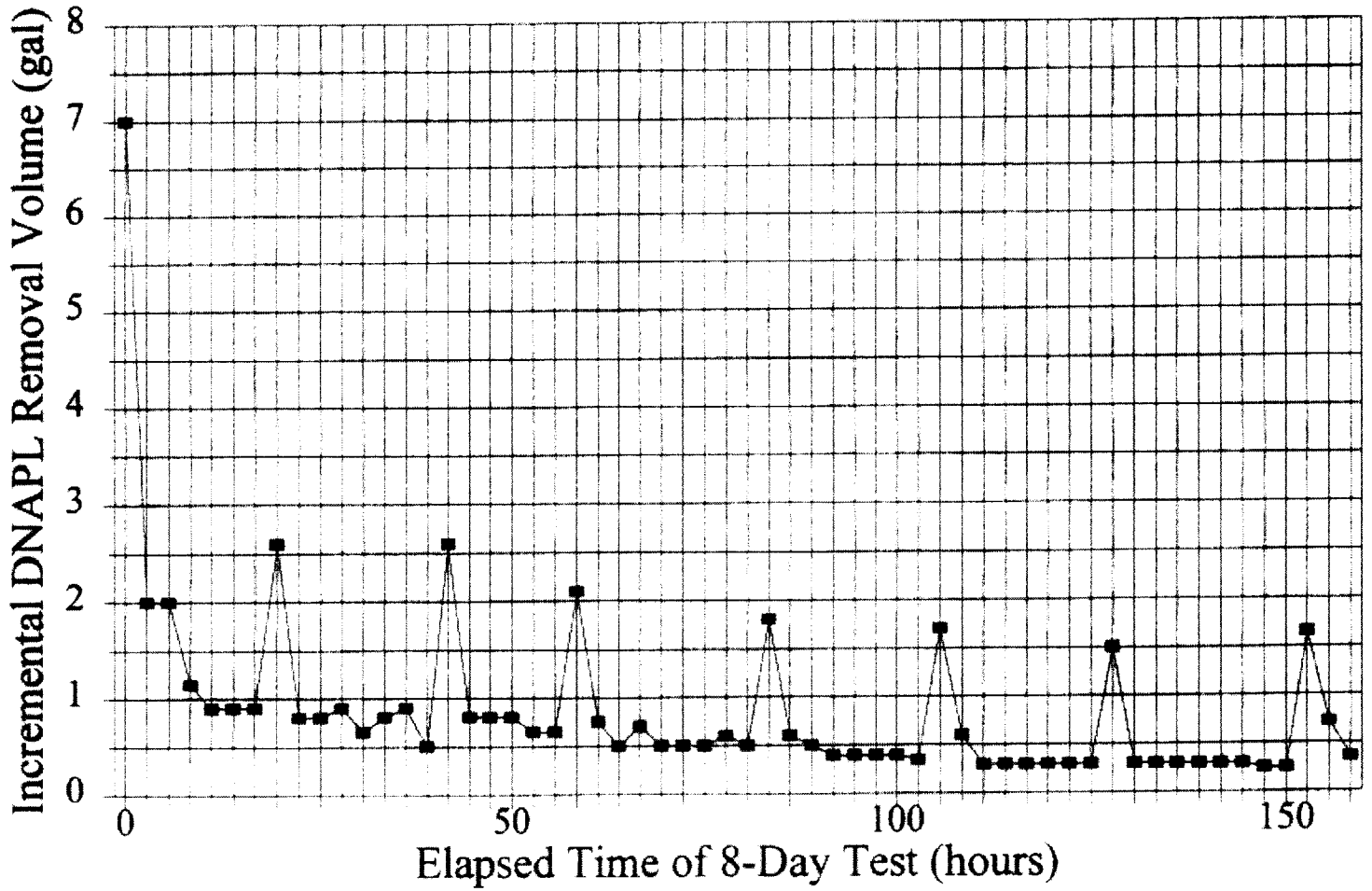
FIGURE 1

Cumulative Results for the 8-Day Recovery Test
Performed form 3/10/98 to 3/17/98

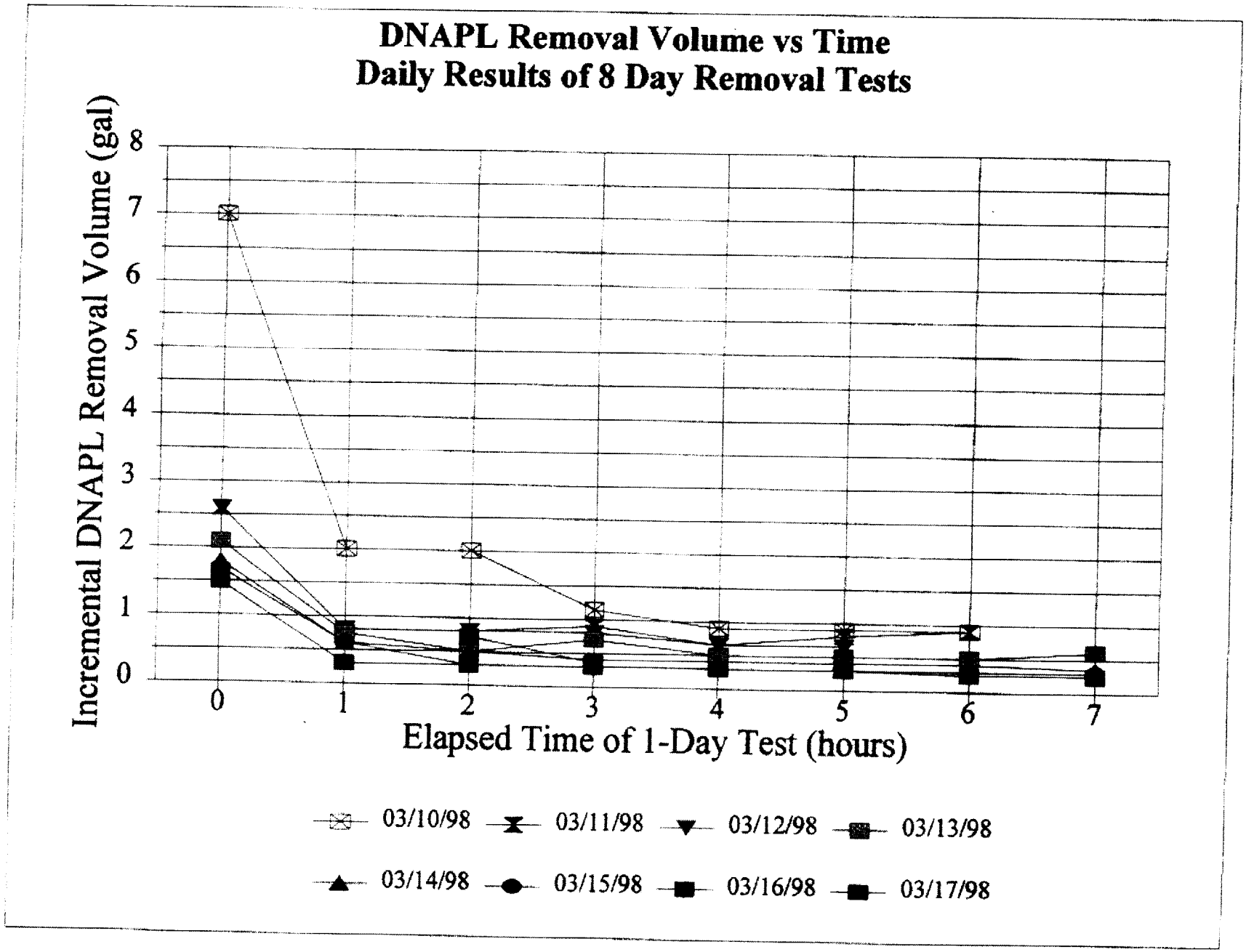
Effect of Removal on DNAPL Thickness
Results of an 8-Day Removal Test

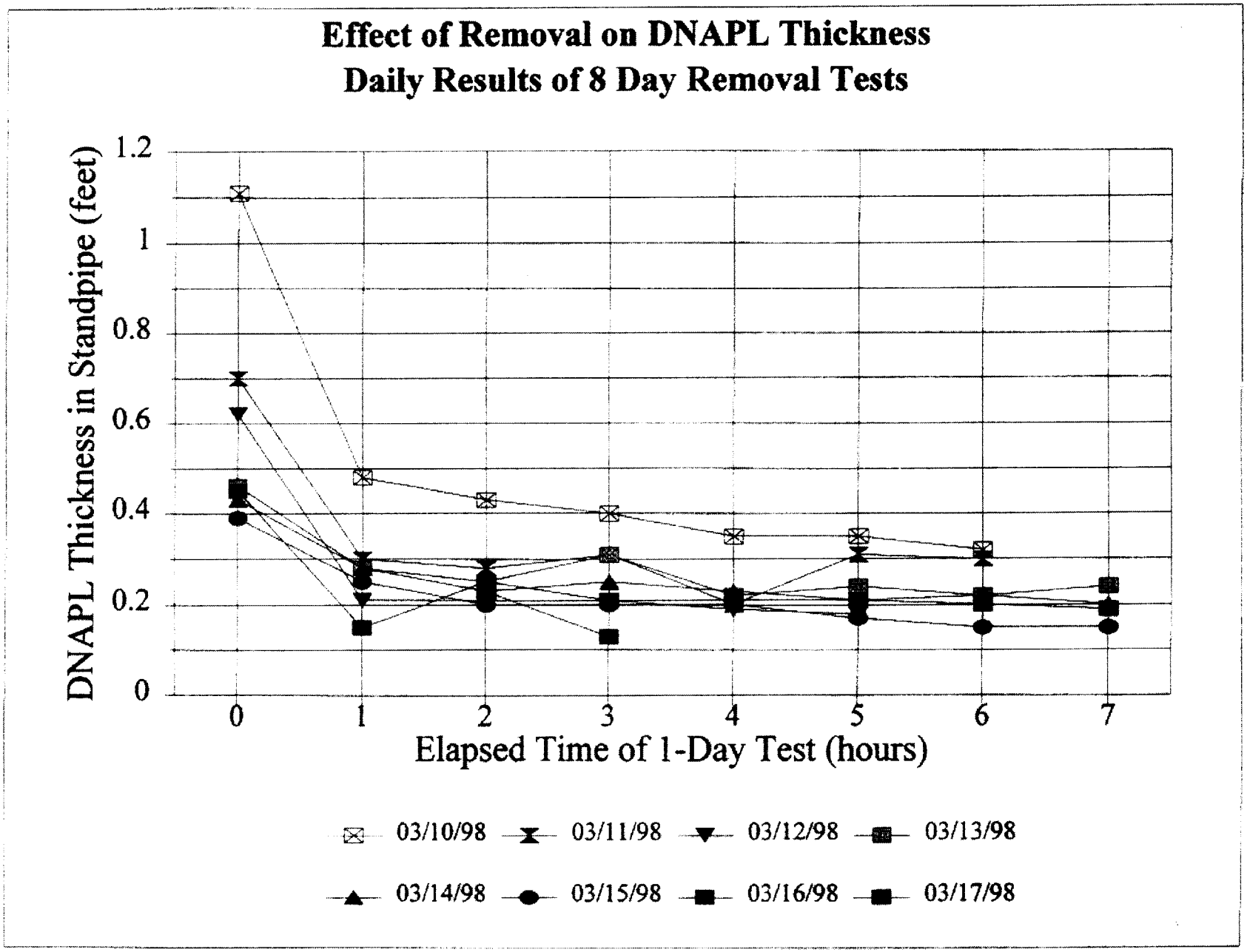


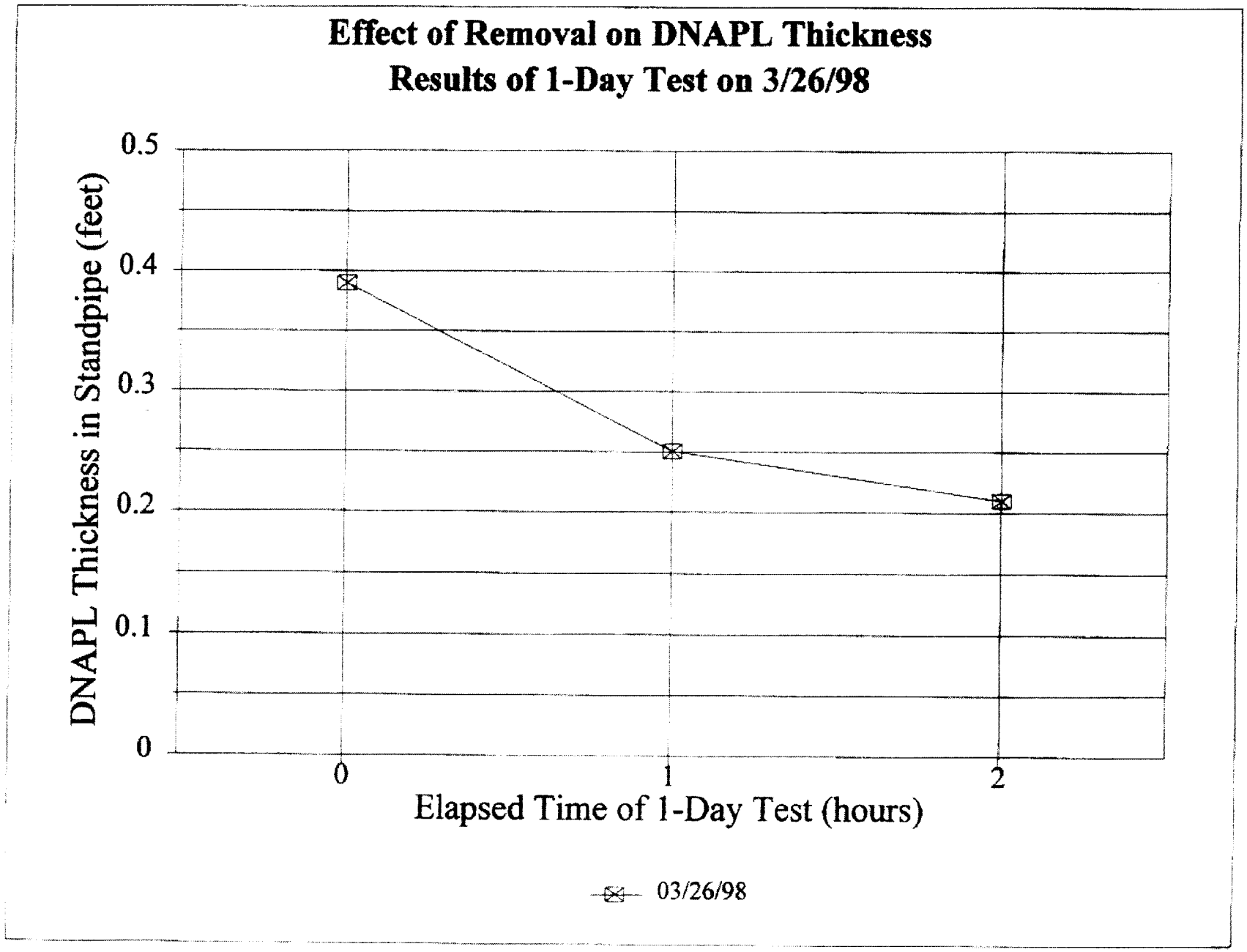
DNAPL Removal Volume vs Time
Results of an 8-Day Removal Test

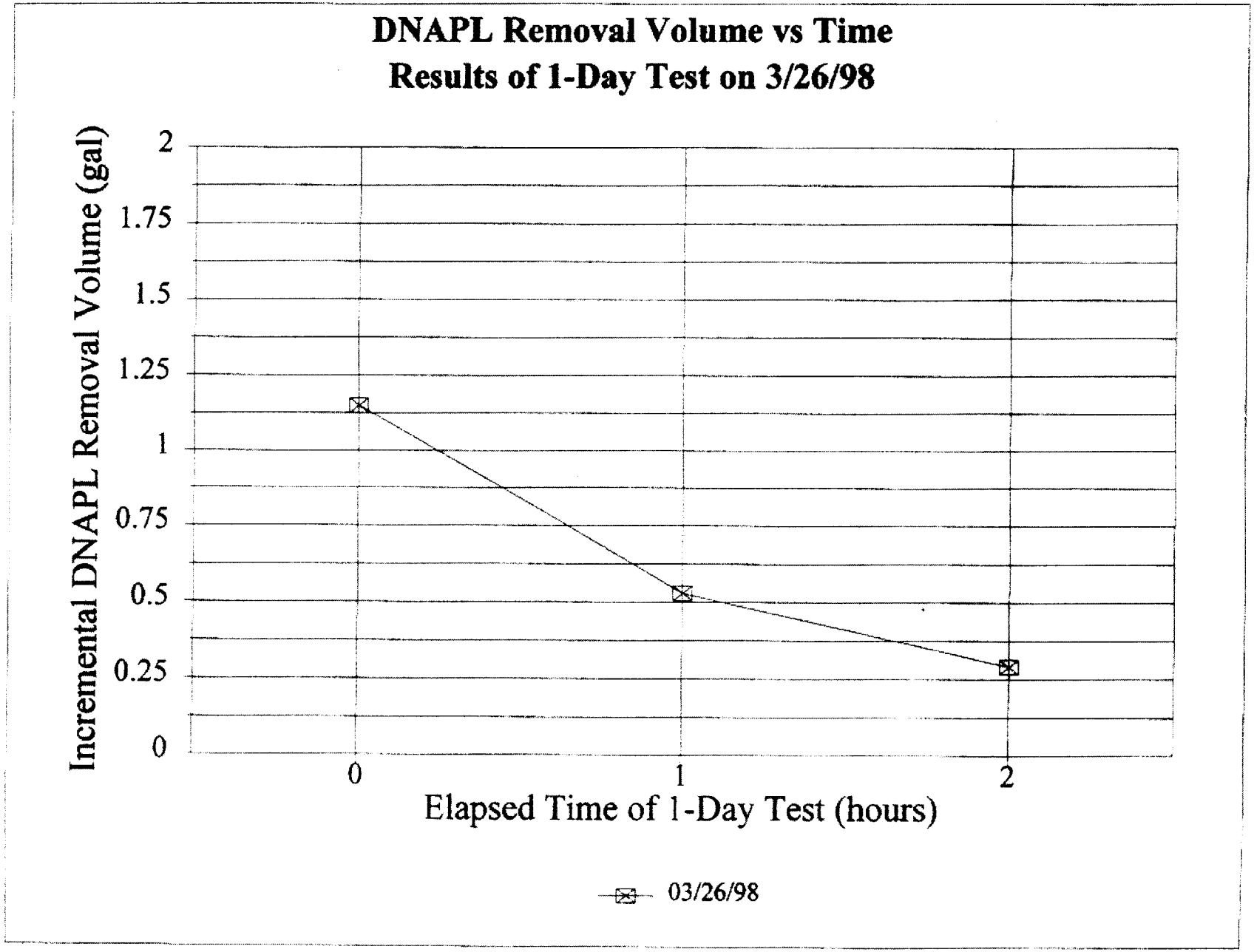


Daily Results for the 8-Day Recovery Test
Performed form 3/10/98 to 3/17/98

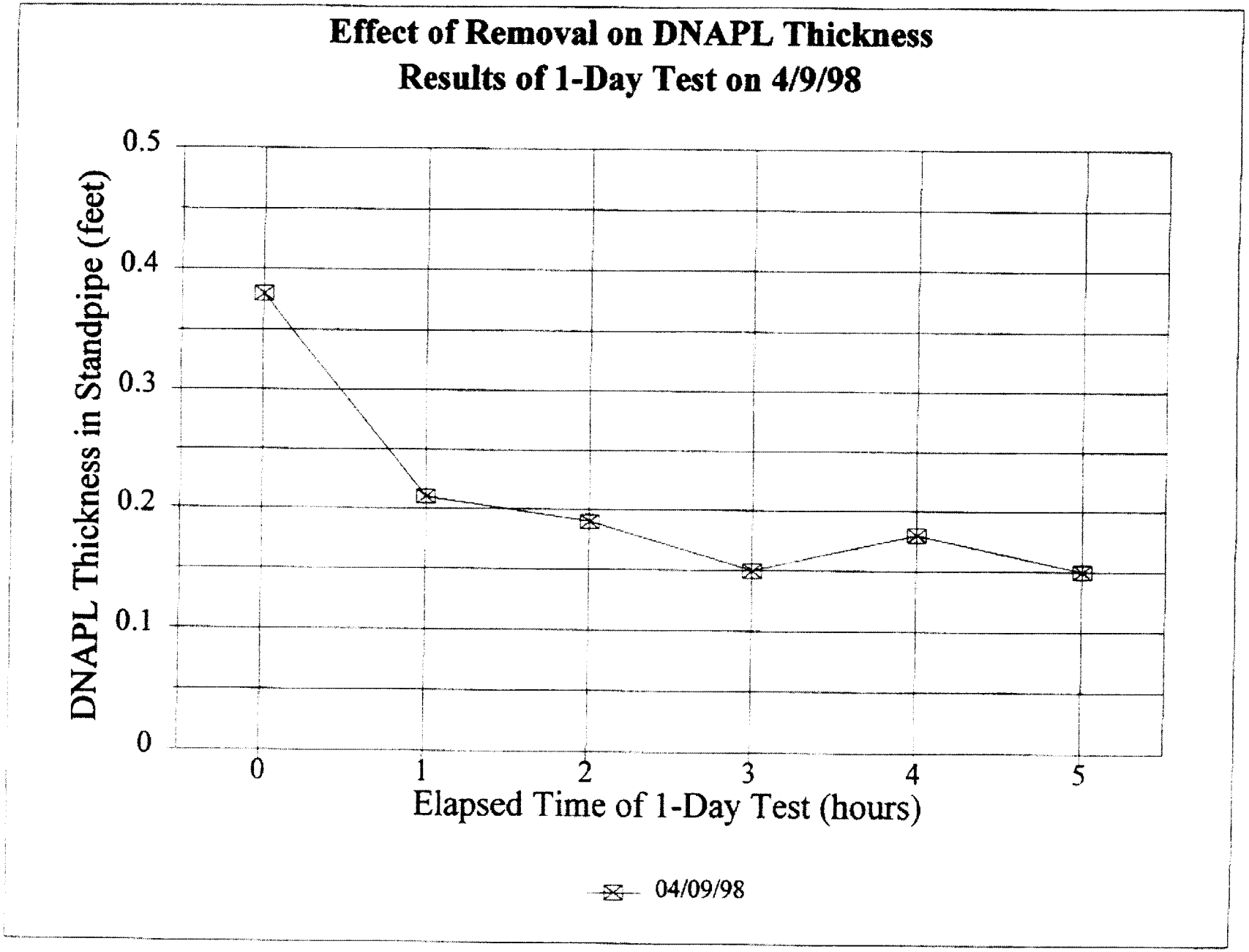

DNAPL Removal Volume vs Time
Daily Results of 8 Day Removal Tests
Incremental DNAPL Removal Volume (gal)
0
1
2
3
4
5
6
7
8
Elapsed Time of 1-Day Test (hours)
03/10/98
03/11/98
03/12/98
03/13/98
03/14/98
03/15/98
03/16/98
03/17/98

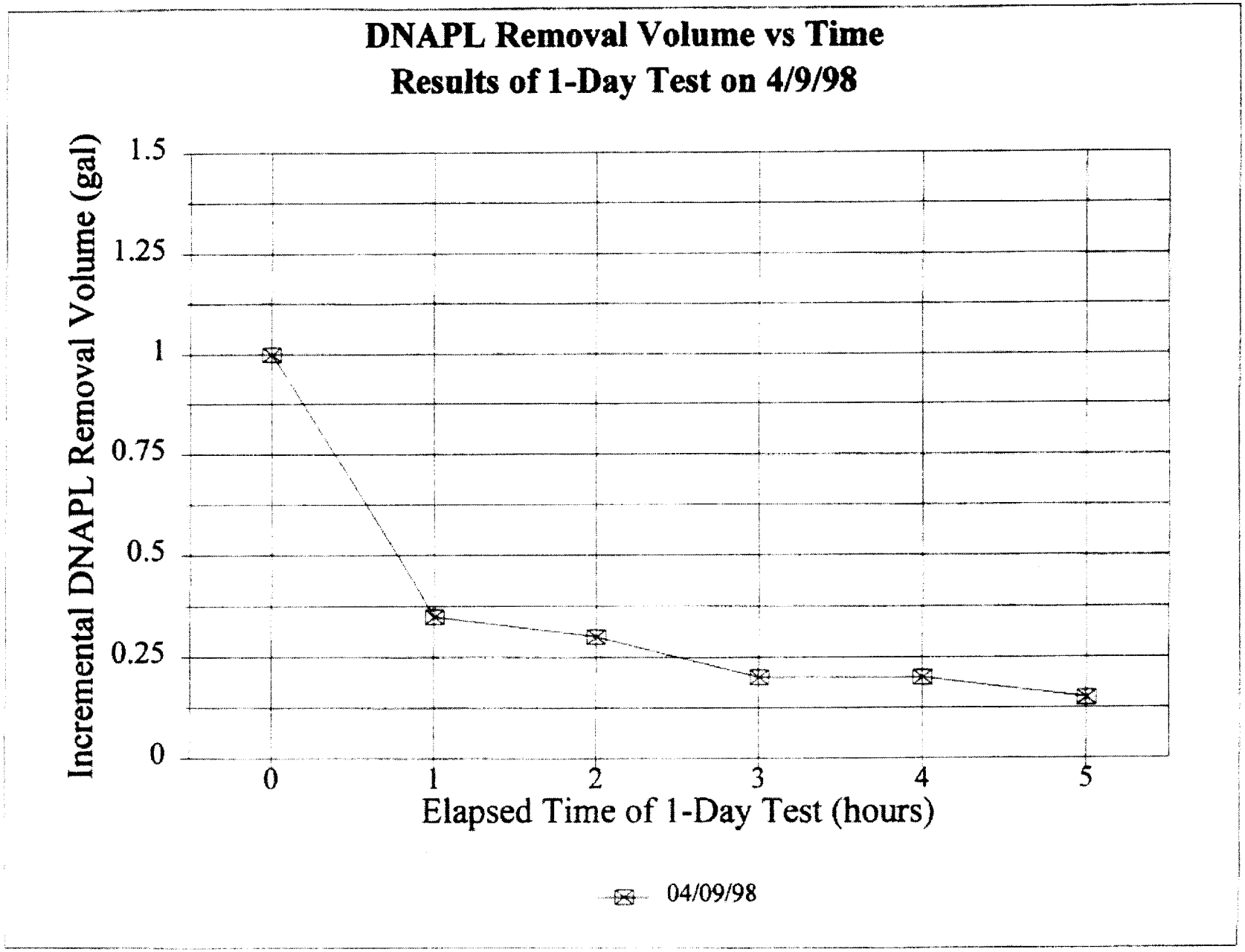

Effect of Removal on DNAPL Thickness
Daily Results of 8 Day Removal Tests
DNAPL Thickness in Standpipe (feet)
1.2
1
0.8
0.6
0.4
0.2
0
0
1
2
3
4
5
6
7
Elapsed Time of 1-Day Test (hours)
03/10/98
03/11/98
03/12/98
03/13/98
03/14/98
03/15/98
03/16/98
03/17/98


Effect of Removal on DNAPL Thickness
Results of 1-Day Test on 3/26/98
DNAPL Thickness in Standpipe (feet)
0.5
0.4
0.3
0.2
0.1
0
0
1
2
Elapsed Time of 1-Day Test (hours)
03/26/98

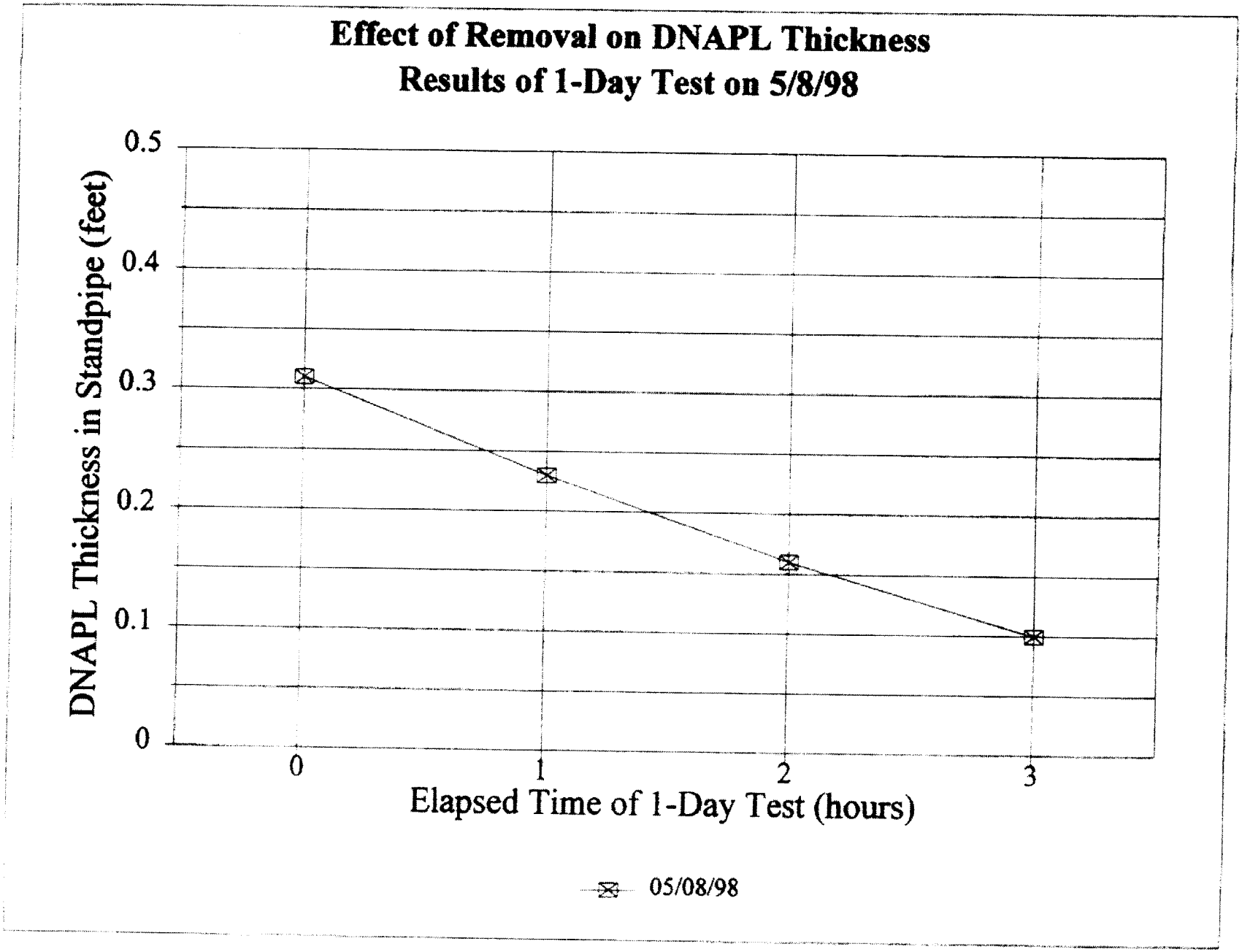

DNAPL Removal Volume vs Time
Results of 1-Day Test on 3/26/98
Incremental DNAPL Removal Volume (gal)
2
1.75
1.5
1.25
1
0.75
0.5
0.25
0
0
1
2
Elapsed Time of 1-Day Test (hours)
03/26/98

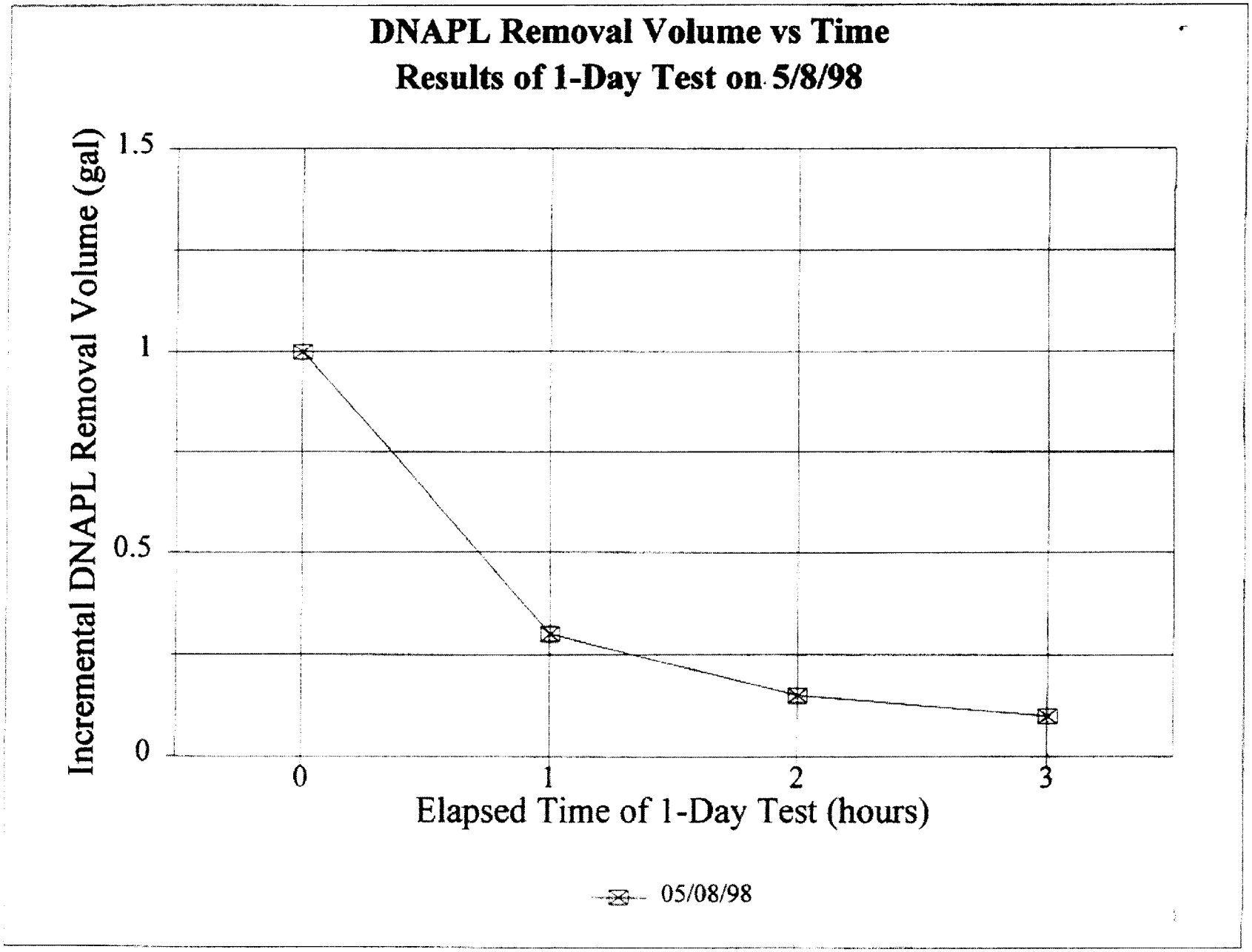
1-Day Recovery Test Results for 4/9/98


Effect of Removal on DNAPL Thickness
Results of 1-Day Test on 4/9/98
DNAPL Thickness in Standpipe (feet)
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
4
5
Elapsed Time of 1-Day Test (hours)
04/09/98


DNAPL Removal Volume vs Time
Results of 1-Day Test on 4/9/98
Incremental DNAPL Removal Volume (gal)
1.5
1.25
1
0.75
0.5
0.25
0
0
1
2
3
4
5
Elapsed Time of 1-Day Test (hours)
04/09/98

1-Day Recovery Test Results for 5/8/98


Effect of Removal on DNAPL Thickness
Results of 1-Day Test on 5/8/98
DNAPL Thickness in Standpipe (feet)
0.5
0.4
0.3
0.2
0.1
0
0
1
2
3
Elapsed Time of 1-Day Test (hours)
05/08/98


DNAPL Removal Volume vs Time
Results of 1-Day Test on 5/8/98
Incremental DNAPL Removal Volume (gal)
1.5
1
0.5
0
0
1
2
3
Elapsed Time of 1-Day Test (hours)
05/08/98

ATTACHMENT 3
CORRESPONDENCE RELATED TO INSTITUTIONAL CONTROLS

department of
Conservation and Recreation

dcr

August 23, 2004

Mr. John F. Novotny, P.E.
Manager – Facilities and Brownfields Programs
Corporate Environmental Programs
General Electric Company
100 Woodlawn Ave. – Bldg. 11-250
Pittsfield, MA 01201

Re: Balance Rock State Park – General Electric (GE) Environmental Remediation Activities

Dear Mr. Novotny:

In response to a request from Spectra Environmental, I am writing regarding your continued groundwater monitoring operations on the F.T. Rose Superfund Site.

As you are aware, GE previously received permission from the Massachusetts Department of Environmental Management (DEM), currently the Department of Conservation and Recreation (DCR), to conduct activities in connection with the environmental remediation of the F.T. Rose Superfund Site. GE currently pumps water from a groundwater collection trench on State property (near the eastern border of the F.T. Rose Site), and transfers that water through underground pipes to a treatment facility on GE property. Additionally, GE measures the groundwater levels and water quality from several existing monitoring wells that are on State property, near the collection trench. This letter serves to confirm that GE has continued permission to operate and maintain the collection trench, and to perform periodic sampling activities at the existing groundwater monitoring wells.

With regard to groundwater usage, this Department does not currently have or operate any groundwater supply wells in this vicinity and I am not aware of any plans for such an installation. In the event a groundwater supply well becomes necessary in the future, we will contact your office and the U.S. Environmental Protection Agency Superfund program office in Boston.

740 South Street
P.O. Box 1433
Pittsfield, MA 01202
413-442-8928
413-442-5860 FAX
www.mass.gov/dcr

Please contact me with any questions or if you have a need for any additional information.

Yours truly,

Robert S. Mellace

Robert S. Mellace
Regional Director

cc: Nicholas Vontzalides, DCR Legal
John Ciampa, Spectra Environmental ✓
Anthony Massimiano, Attorney
Paul Adams, DCR Asst. Regional Director
Mark Todd, Pittsfield SF Park Supervisor
Ken Neary, DCR Engineer

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Corporate Environmental Programs
General Electric Company
100 Woodlawn Avenue, Pittsfield, MA 01201

September 24, 2004

Ms. Melissa Taylor
United States Environmental Protection Agency
Mail Code: HBO
One Congress Street, Suite 1100
Boston, MA 02114-2023

RE: F.T. Rose Disposal Site – Lanesborough, MA
Institutional Controls

Dear Ms. Taylor:

As you are aware, General Electric Company (GE) is in the process of establishing further institutional controls for the F.T. Rose Disposal Site in Lanesborough, Massachusetts. GE already has purchased the majority of the site and has enclosed its property with a security fence that is routinely inspected and maintained. The Consent Decree for the Site provides that if total source remediation is not achieved, restrictions shall be sought to limit the future use of the disposal area, including the groundwater thereunder. Restrictions on future use are to include:

- no intrusive earthwork activities except for superficial regrading;
- no off-site trucking of on-site soils;
- all plans for development to be approved by the United States Environmental Protection Agency (EPA); and
- restrictions to prohibit the use of groundwater or installation of wells for that purpose.

GE completed soil remediation activities, as prescribed in the Record of Decision for the Site, between November 1993 and July 1994. Since that time, GE continues to operate two groundwater recovery systems and a groundwater treatment facility at the site, and conducts a semi-annual groundwater monitoring program.

As you are aware, the site was originally composed of a single parcel owned by Frank and Florence Rose. Under an October 18, 1989 sales agreement, GE purchased the majority of the site (9.746 acres), including the former disposal pit. Ownership of the southeastern portion of the site (2.697 acres) was retained by the Rose family (see attached figure). In that sales agreement, it was also agreed that GE would purchase the 2.697 acre portion of the site when the Roses desire to sell or otherwise transfer that parcel. GE understands that Mr. Rose is now deceased and that the parcel is currently owned by a trust controlled by Mrs. Rose (Rose Trust).

To establish further institutional controls at the site, GE proposes to adopt a deed restriction for the portion of the site that it currently owns. A preliminary draft of such a deed restriction, still under review by GE, is attached for your review. GE also proposes, for the portion of the site now owned by the Rose Trust, to attempt to secure a deed restriction on groundwater usage. No soil related deed restrictions are

proposed for that parcel, because soil remediation was not necessary for that part of the site. Of course, imposition of a deed restriction on the Rose parcel would require the Rose Trust's consent. Although GE has no reason to believe that consent would not be granted, if for some reason the Rose Trust is not willing to impose a deed restriction at the present time, GE would be able to impose that restriction once it assumes ownership of the parcel.

In addition to the proposed deed restrictions, EPA has expressed an interest in another form of institutional controls. GE proposes to pursue obtaining a Grant of Environmental Restriction (GER) with the State of Massachusetts, pursuant to the Massachusetts Contingency Plan (MCP), 310 CMR 40.1071. As the Rose Disposal Site is being addressed under the federal Superfund program and is also a listed MCP Site (Release Tracking Number 1-0000107), GE intends to pursue discussions with EPA and the Massachusetts Department of Environmental Protection (MDEP) concerning the grant. A GER could restrict soil disturbance and groundwater usage for the GE-owned parcel, consistent with the language in the proposed deed restriction. Similarly, GE will also pursue discussions with EPA and MDEP, and with the Rose Trust, to establish a GER for groundwater usage on the parcel owned by the Rose Trust. As with a deed restriction, obtaining a GER on the Rose-owned parcel will be subject to the willingness of the current owner to impose such a restriction. As is the case with regard to the deed restriction discussed in the paragraph above, if the Rose Trust is not currently willing to impose a GER, GE would be able to impose that restriction once it assumes ownership of the 2.697 acre parcel. Again, a GER for the Rose parcel would not need to impose soil restrictions, as no soil cleanup was necessary on that parcel.

GE would appreciate receiving comments from EPA and MDEP on this approach. Once those comments are received and an approach agreed upon, GE will proceed to implement that approach. Please contact me at (413)494-3177 if you have any questions on this matter.

Yours truly,

John F. Novotny, P.E. /gdc

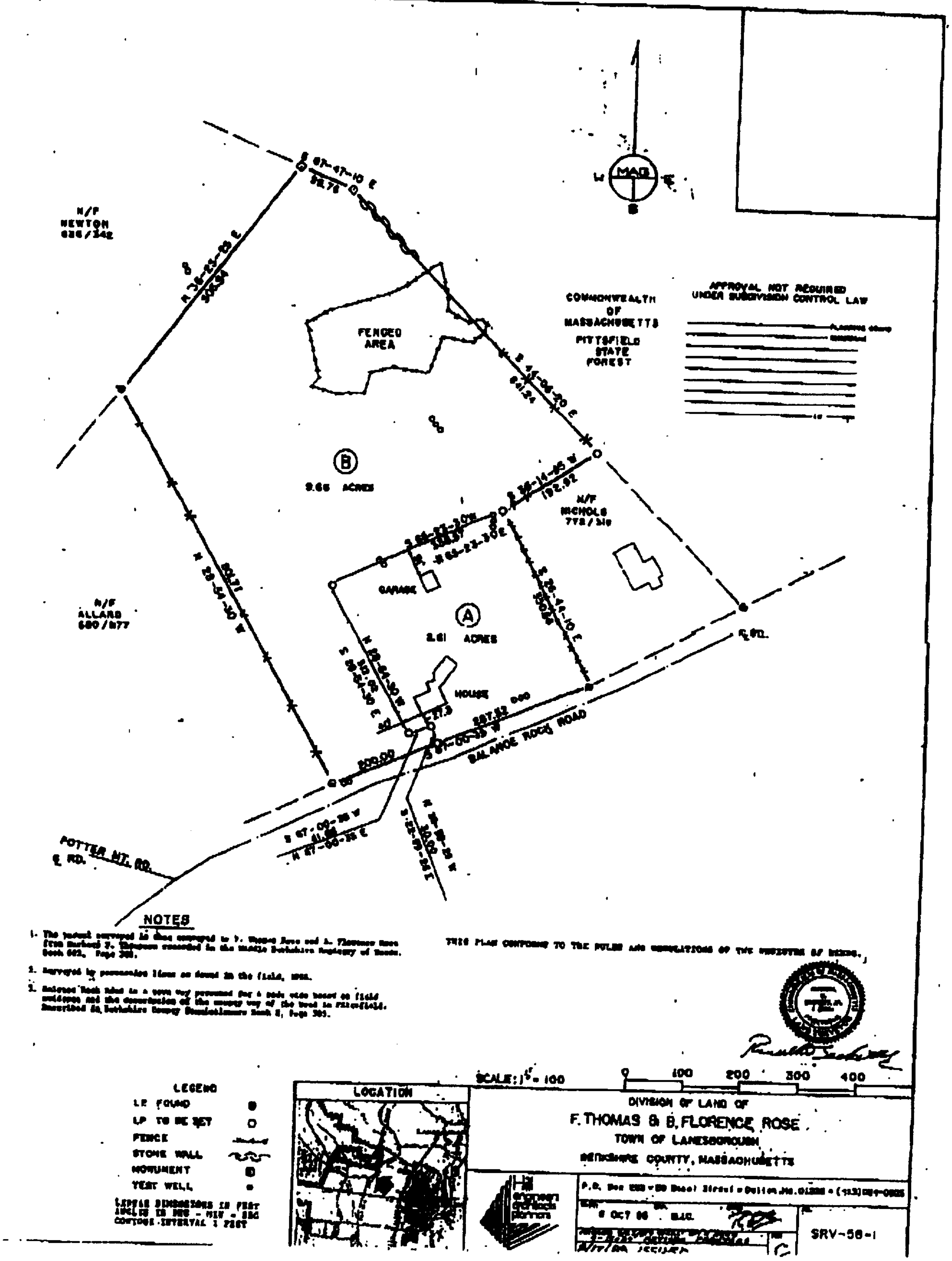
John F. Novotny, P.E.
Manager – Facilities and Brownfields Program

JFN/tcj

Attachments
cc: N. Korkatti, DEP
A. Symington, DEP
R. McLaren, Esq., GE
M. Carroll, GE
GE Internal Repository
J. Nuss, P.E., LSP, BBL
J. Ciampa, LSP, SPECTRA
B. Weir, M&E

C:\Documents\General Electric\Rose Site\FT Rose Disposal Site S&G Comments.doc

EXHIBIT A


MAG
N/F NEWTON
FENCED AREA
COMMONWEALTH OF MASSACHUSETTS
PITTSFIELD STATE FOREST
APPROVAL NOT REQUIRED UNDER SUBDIVISION CONTROL LAW
B
A
N/F NICHOLS
N/F ALLARD
GARAGE
HOUSE
BALANCE ROCK ROAD
POTTER MT. RD.
NOTES
LEGEND
LP FOUND
LP TO BE SET
FENCE
STONE WALL
MONUMENT
TEST WELL
LOCATION
SCALE: 1" = 100
DIVISION OF LAND OF
F. THOMAS & B. FLORENCE ROSE
TOWN OF LANESBOROUGH
BERKSHIRE COUNTY, MASSACHUSETTS
SRV-58-1

PRELIMINARY DRAFT UNDER REVIEW

DECLARATION OF RESTRICTIVE COVENANTS [FOR GE-OWNED PARCEL]

THIS INDENTURE made this _____ day of _____, 2004, by GENERAL ELECTRIC COMPANY ("GE"), a corporation duly organized under the laws of New York and having a place of business at 100 Woodlawn Avenue, Pittsfield, Berkshire County, Massachusetts, being the owner of certain real estate situated in Lanesboro, Berkshire County, Massachusetts, and being the same premises conveyed to it by deed of F. Thomas Rose and B. Florence Rose, dated November 10, 1989 and recorded with the Berkshire Northern District Registry of Deeds in Book 810, Page 151, and by corrective deed of F. Thomas Rose and B. Florence Rose, dated August 20, 1993 and recorded in said Registry of Deeds in Book 869, Page 655 (the "Property").

WHEREAS, GE has entered into a certain Consent Decree, dated March 4, 1991 (the "Consent Decree") with the United States Environmental Protection Agency ("EPA"); and

WHEREAS, the terms of the Consent Decree now require GE to impose certain covenants and restrictions upon the Property.

NOW, THEREFORE, GE does hereby impose and charge the Property with covenants and restrictions hereinafter set forth.

1. Superficial regrading is permitted, but no intrusive earthwork activities beyond six inches shall be conducted.

2. Removal of any soils from the Property in a non-de minimis quantity is prohibited except in conformance with a plan for removal that is submitted and, following reasonable opportunity for review and comment by EPA. Such plan shall specify the proposed locations and proposed use of the materials.

3. No structures shall be erected, no improvements or alterations made and no development of the Property shall be undertaken without the prior approval in writing of EPA of the plans for such structures, improvements, alterations or development.

4. Groundwater from the Property shall not be used or extracted from the Property for any purpose whatsoever without the prior approval in writing of EPA, other than the collection, containment, treatment, monitoring and discharge of groundwater permitted or required by EPA under the Consent Decree or otherwise, or by the Commonwealth of Massachusetts Department of Environment Protection or other governmental authority of competent jurisdiction. No wells for the extraction of groundwater from the property shall be permitted upon or in the Property without the prior approval in writing of EPA. Groundwater supply wells shall not be installed on any part of the Property.

5. Attached hereto is a plan which shows the nature and location of certain equipment and materials which have been used in the remediation of the Property. Said equipment and materials shall remain in the locations shown on said plan and shall not be used, disposed of, or otherwise disturbed without the prior approval in writing of EPA, except in case of an emergency.

6. The above covenants and restrictions shall run with the land and shall be enforceable only by EPA, its successors and assigns, and shall be binding upon any and all persons who subsequently acquire any interest or portion thereof, to the extent permitted under federal or Massachusetts law. In the event that (a) a Grant of Environmental Restriction ("GER") or other comparable restriction is recorded on the Property with the approval of EPA and (b) said GER or other comparable restriction provides that it supersedes this Declaration of Restrictive Covenants (in whole or in part), then the covenants and restrictions set forth in this Declaration of Restrictive Covenants (or those particular covenants or restrictions set forth herein that are to be

superseded pursuant to the GER or other comparable restriction subsequently recorded) shall be null and void. Other than as stated in the preceding sentence, the covenants and restrictions created by this Declaration of Restrictive Covenants may be altered, amended, released, discharged or canceled by GE only with the prior approval in writing of EPA.

IN WITNESS WHEREOF, GE has caused its corporate seal to be affixed and these presents to be signed, acknowledged, delivered in its name and behalf by _____, its _____ on the date first above written.

GENERAL ELECTRIC COMPANY

By: _____

Its: _____

COMMONWEALTH OF MASSACHUSETTS

Berkshire, ss.

On this _____ day of _____, 2004, before me, the undersigned notary public, personally appeared _____, as _____ of GENERAL ELECTRIC COMPANY, a corporation, proved to me through satisfactory evidence of identification, which was_____, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that (he) (she) signed it voluntarily for its stated purpose.

_____

NOTARY PUBLIC

My Commission Expires: _____

ATTACHMENT 4
INTERVIEW FORMS AND SITE INSPECTION CHECKLIST

INTERVIEW DOCUMENTATION FORM - PRP Representatives

The following is a list of PRP Representatives interviewed for this five-year review. See the attached contact record(s) for a detailed summary of the interviews. See also the Site Inspection Checklist. The Site Inspection was performed concurrently with the interviews in a group setting.

John Levesque	Mgr. Environmental Operations	GE	6/3/04
Name	Title/Position	Organization	Date
John Novotny	Mgr, Facilities and Brownfields Programs	GE	6/3/04
Name	Title/Position	Organization	Date
John Ciampa	Consultant for GE	Spectra	6/3/04
Name	Title/Position	Organization	Date
John Powers	Chief Operator	O'Brien & Gere (O&M contractor for GE)	6/3/04
Name	Title/Position	Organization	Date
Jeremy Youngs	Intern	GE	6/3/04
Name	Title/Position	Organization	Date
Nick Smith	Sr. Project Geologist	BBL (consultant to GE)	6/3/04
Name	Title/Position	Organization	Date

INTERVIEW RECORD - PRP Representatives

Site Name: F.T. Rose Disposal Pit, Lanesborough, MA	**EPA ID No.:** MAD980524169	
Subject: PRP Representatives Interview and Site Inspection (group interview was performed)	**Time:** 11 am to 3 pm (includes site visit and break for lunch)	**Date:** 6/3/04
Type: ☐ Telephone ■ Visit ☐ Other **Location of Visit: GE Pittsfield offices and the Rose Site**	☐ Incoming ☐ Outgoing	

Contact Made By:

Name:	Title:	Organization:
Melissa Taylor	**Remedial Project Manager**	**EPA Region I**
Nikki Korkatti	**Project Manager**	**MADEP**
Barbara Weir	**Work Assignment Mgr.**	**M&E (EPA contractor)**
Tony Rodolakis	**Project Scientist - Ecological Risk Assessment**	**M&E (EPA contractor)**

Individuals Contacted: Please see list for "PRP Representatives" preceding this page for individuals present at the interview/site inspection.

Summary Of Conversation

1. What is your overall impression of the project? (general sentiment)
The project is running smoothly. The GWTP operation is routine, DNAPL recovery is still effective (but less is being generated), and VOC contamination seems to be decreasing.

2. Is the remedy functioning as expected? How well is the remedy performing?
The remedy is functioning as expected and performing well.

3. What does the monitoring data show? Are there any trends that show contaminant levels are decreasing?
VOCs in groundwater are decreasing, as is the rate of DNAPL generation. PCB concentrations do not show a discernable trend as of yet.

4. Is there a continuous on-site O&M presence? If so, please describe staff and activities. If there is not a continuous on-site presence, describe staff and frequency of site inspections and activities.
The plant is visited once a day but is not continuously manned. Staff is local (24-7) and can respond very quickly to an alarm. Security perimeter checks are done monthly.

INTERVIEW RECORD - PRP Representatives

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Contact Made By:

Name:	Title:	Organization:
Melissa Taylor	Remedial Project Manager	EPA Region I
Nikki Korkatti	Project Manager	MADEP
Barbara Weir	Work Assignment Mgr.	M&E (EPA contractor)
Tony Rodolakis	Project Scientist - Ecological Risk Assessment	M&E (EPA contractor)

Individuals Contacted: Please see list for "PRP Representatives" preceding this page for individuals present at the interview/site inspection.

Summary Of Conversation

5. Have there been any significant changes in the O&M requirements, maintenance schedules, or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.

O&M activities have been consistent over the last 5 years. Carbon changeouts are required less frequently since the carbon system was upgraded so that all 3 vessels do not need to be changed at once. Air stripper fouling has also become less frequent.

6. Have there been unexpected O&M difficulties or costs at the site since start-up or in the last five years? If so, please give details.

There have been no unexpected incidents. Y2K upgrades were needed but that was anticipated. A generator was added at this time as a back up.

7. Have there been opportunities to optimize O&M, or sampling efforts? Please describe changes and resultant or desired cost savings or improved efficiency.

Upgrades included the Y2K upgrades (including generator), carbon system upgrade, and the change to the EPA low-flow sampling procedure for groundwater monitoring. Automation of DNAPL collection was considered but it was determined that manual collection was just as effective, given the current slow rate of DNAPL accumulation. (The PRP declined to discuss O&M costs).

8. Do you have any comments, suggestions, or recommendations regarding the project?

Automating the GWTP so that it can be operated remotely is under consideration.

Five-Year Review Site Inspection Checklist

I. SITE INFORMATION	
Site name: F. T. Rose Disposal Pit	**Date of inspection:** June 3, 2004
Location and Region: Lanesborough, MA/Region I	**EPA ID:** MAD980524169
Agency, office, or company leading the five-year review: EPA Region I, support from Metcalf & Eddy	**Weather/temperature:** Sunny, approx 70 degrees

Remedy Includes: (Check all that apply)

- ☐ Landfill cover/containment
- ■ Access controls
- ■ Institutional controls
- ■ Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ☐ Other_____
- ☐ Monitored natural attenuation
- ☐ Groundwater containment
- ☐ Vertical barrier walls

Attachments: ☐ Inspection team roster attached ☐ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** __John Levesque_____ Mgr, Environmental Operations_ _6/3/04____
   Name Title Date
   Interviewed ■ at site ■ at office ☐ by phone Phone no. _____
   Problems, suggestions; ☐ Report attached __***Note: A group interview took place at GE Pittsfield, then continued during site visit with followup back at the GE offices. Other PRP reps also in attendance include John Novotny (GE), John Ciampa (Spectra, consultant to GE), Jeremy Youngs (GE), and Nick Smith (BBL, consultant to GE). EPA RPM Melissa Taylor, MADEP manager Nikki Korkatti, and two M&E staff (Barbara Weir, Tony Rodolakis) participated for the Government Parties.***____

2. **O&M staff** _John Powers_____ _Chief Operator (O'Brien & Gere) _6/3/04____
   Name Title Date
   Interviewed ■ at site ■ at office ☐ by phone Phone no. _____
   Problems, suggestions; ☐ 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 __MADEP_____

Contact _Nikki Korkatti_____	___Project Manager___	_6/3/04___	_____
Name	Title	Date	Phone no.

Problems; suggestions; ☐ Report attached __N. Korkatti participated in site inspection._____

Agency ___N/A_____

Contact _____	_____	_____	_____
Name	Title	Date	Phone no.

Problems; suggestions; ☐ Report attached _____

Agency ___N/A_____

Contact _____	_____	_____	_____
Name	Title	Date	Phone no.

Problems; suggestions; ☐ Report attached _____

Agency __N/A_____

Contact _____	_____	_____	_____
Name	Title	Date	Phone no.

Problems; suggestions; ☐ Report attached _____

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

EPA RPM attempted to contact town representatives on 6/3/04 but offices were closed.

EPA RPM, M&E, and MADEP attempted to interview site neighbors, if persons appeared to be at home, on 6/3/04. One person was found home who had no knowledge of site (a young man, who said his family had lived there less than one year). He provided his mother's name and phone number for later possible follow up by EPA RPM.

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

1. **O&M Documents**
   - ■ O&M manual — ■ Readily available — ☐ Up to date — ☐ N/A
   - ■ As-built drawings — ■ Readily available — ☐ Up to date — ☐ N/A
   - ■ Maintenance logs — ■ Readily available — ■ Up to date — ☐ N/A

   Remarks_Carbon manifold upgrade and generator upgrade need to be added to get O&M manual and as-builts up to date. GE stated they would do so. **NOTE: GE submitted a revised O&M manual in July 2004.**

2. **Site-Specific Health and Safety Plan** — ■ Readily available — ■ Up to date — ☐ N/A
   - ☐ Contingency plan/emergency response plan — ☐ Readily available — ☐ Up to date — ☐ N/A

   Remarks: One figure was inadvertently missing from SSHP (GE will add); SSHP copies should be placed in the GWTP. The route to hospital is posted in the GWTP The SSHP is an "umbrella plan" for all the GE plants OBG is operating, and is not just specific to the Rose GTWP. **NOTE: Corrrections were made by GE and confirmed in July 2, 2004 correspondence.**

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

   Remarks: Operator licenses up to date, and grade (4) is high enough to operate Rose plant (which requires at least Grade 3 license)

4. **Permits and Service Agreements**
   - ☐ Air discharge permit — ☐ Readily available — ☐ Up to date — ■☐ N/A
   - ☐ Effluent discharge — ☐ Readily available — ☐ Up to date — ■☐ N/A
   - ■ Waste disposal, POTW — ■ Readily available — ■ Up to date — ☐ N/A
   - ■ Other permits_RCRA Part B_____ — ■ Readily available — ■ Up to date — ☐ N/A

   Remarks: RCRA permit is for the GE facility (not the Rose site in particular). Wastes from Rose (spent carbon, DNAPL) are stored at GE facility prior to off-site disposal at Model City or Port Arthur, TX facilities. Manifests for waste disposal were available and up to date.

5. **Gas Generation Records** — ☐ Readily available — ☐ Up to date — ■ N/A

   Remarks_____

6. **Settlement Monument Records** — ☐ Readily available — ☐ Up to date — ■ N/A

   Remarks_____

7. **Groundwater Monitoring Records** — ■ Readily available — ■ Up to date — ☐ N/A

   Remarks: See 2003 Annual GW Monitoring Report.

8. **Leachate Extraction Records** — ☐ Readily available — ☐ Up to date — ■ N/A

   Remarks_____

9. **Discharge Compliance Records**
   - ■ Air — ■ Readily available — ■ Up to date — ☐ N/A
   - ■ Water (effluent) — ■ Readily available — ■ Up to date — ☐ N/A

   Remarks__See O&M Reports and 2003 Annual Report_____

10. **Daily Access/Security Logs** — ■ Readily available — ■ Up to date — ☐ N/A

    Remarks: Reviewed on site at GWTP.

IV. O&M COSTS

1. **O&M Organization**

☐ State in-house ☐ Contractor for State
☐ PRP in-house ■ Contractor for PRP
☐ Federal Facility in-house ☐ Contractor for Federal Facility
☐ Other_____

2. **O&M Cost Records**

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

NOTE: O&M costs are not available because PRP prefers not to disclose this information.

Total annual cost by year for review period if available

From_____ To_____ _____ ☐ Breakdown attached
Date Date Total cost

From_____ To_____ _____ ☐ Breakdown attached
Date Date Total cost

From_____ To_____ _____ ☐ Breakdown attached
Date Date Total cost

From_____ To_____ _____ ☐ Breakdown attached
Date Date Total cost

From_____ To_____ _____ ☐ Breakdown attached
Date Date Total cost

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

Describe costs and reasons: __**N/A - PRP prefers not to disclose or discuss O&M costs.**____

V. ACCESS AND INSTITUTIONAL CONTROLS ■ Applicable ☐ N/A

A. Fencing

1. **Fencing damage?** ☐ Location shown on site map ■ Gates secured ☐ N/A

Remarks_____No fence damage noted_____

B. Other Access Restrictions

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

Remarks: Signage needs update to correct EPA and GE contact phone numbers. **NOTE: Since the site inspection, the signs have been updated as confirmed in GE's July 2, 2004 correspondence.**

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☐ No ☐ N/A

Site conditions imply ICs not being fully enforced ☐ Yes ☐ No ☐ N/A

NOTE: Institutional controls have not been fully implemented yet. They are not in place yet for soil or groundwater; however, PRP is working towards deed restrictions preventing soil excavation and groundwater use, and is in discussions with the town of Lanesborough regarding implementing a groundwater use restriction ordinance for the Site property. The PRP owns the property where the soil is located and access is controlled by a fence. The PRP does not plan to transfer property until groundwater remedy is completed, which is expected to take quite some time due to DNAPL presence (DNAPL is still being recovered).

Type of monitoring (*e.g.*, self-reporting, drive by) _____

Frequency _____

Responsible party/agency _____

Contact _____ _____ _____ _____

Name Title Date Phone no.

Reporting is up-to-date ☐ Yes ☐ No ☐ N/A

Reports are verified by the lead agency ☐ Yes ☐ No ☐ N/A

Specific requirements in deed or decision documents have been met ☐ Yes ■ No ☐ N/A

Violations have been reported ☐ Yes ■ No ☐ N/A

Other problems or suggestions: ☐ Report attached

See above; Institutional controls not yet fully implemented, although site access is controlled.

2. **Adequacy** ■ ICs are adequate* ☐ ICs are inadequate ☐ N/A

Remarks: * IC are expected to be adequate when fully implemented. Complete implementation is a priority issue for this five year review.

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map ■ No vandalism evident

Remarks No evidence of trespassing or vandalism noted

2. **Land use changes on site** ■ N/A

Remarks No changes

3. **Land use changes off site** ■ N/A

Remarks: No changes, except that a former business (Balance Rock Café) is no longer in operation.

VI. GENERAL SITE CONDITIONS

A. Roads ■ Applicable ☐ N/A

1. **Roads damaged** ☐ Location shown on site map ■ Roads adequate ☐ N/A

Remarks

B. Other Site Conditions

Remarks: Site access is through the Rose property. PRP reports no problems with Mrs. Rose. They plow the access road, per agreement with Mrs. Rose.

VII. LANDFILL COVERS ☐ Applicable ■ N/A

A. Landfill Surface

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

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

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

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

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

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

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

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

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

B. Benches ☐ Applicable ☐ 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** ☐ Location shown on site map ☐ N/A or okay
   Remarks_____

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

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

C. Letdown Channels ☐ Applicable ☐ 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** ☐ Location shown on site map ☐ No evidence of settlement
   Areal extent_____ Depth_____
   Remarks_____

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

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

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

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

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

D. Cover Penetrations ☐ Applicable ☐ N/A

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

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

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

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

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

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

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

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

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

F. Cover Drainage Layer ☐ Applicable ☐ N/A

1. **Outlet Pipes Inspected** ☐ Functioning ☐ N/A
Remarks_____

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A
Remarks_____

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

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

2. **Erosion** Areal extent_____ Depth_____
   ☐ Erosion not evident
   Remarks_____

3. **Outlet Works** ☐ Functioning ☐ N/A
   Remarks_____

4. **Dam** ☐ Functioning ☐ N/A
   Remarks_____

H. Retaining Walls ☐ Applicable ☐ N/A

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

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

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

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

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

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

4. **Discharge Structure** ☐ Functioning ☐ N/A
   Remarks_____

VIII. VERTICAL BARRIER WALLS ☐ Applicable ■ N/A

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

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

IX. GROUNDWATER/SURFACE WATER REMEDIES ■ Applicable ☐ N/A

A. Groundwater Extraction Wells, Pumps, and Pipelines ■ Applicable ☐ N/A

1. **Pumps, Wellhead Plumbing, and Electrical**
■ Good condition ■ All required wells properly operating ☐ Needs Maintenance ☐ N/A
Remarks_____

2. **Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances**
■ Good condition ☐ Needs Maintenance
Remarks: One monitoring well (W-3) apparently has been destroyed; could not be located during the site inspection. GE to revise site plan to indicate any wells that are no longer present. **NOTE: A revised site plan was submitted in the Spring 2004 Monitoring Report (Spectra and BBL, August 2004).**

3. **Spare Parts and Equipment**
■ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
Remarks: Spare parts list is present; dual systems in place for pumps and blower. Spare fresh carbon is stored at GE Pittsfield.

B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable ■ N/A

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

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

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

C. Treatment System ■ Applicable ☐ N/A

1. **Treatment Train** (Check components that apply)

☐ Metals removal ☐ Oil/water separation ☐ Bioremediation

■ Air stripping ■ Carbon adsorbers (both vapor and liquid phase carbon)

☐ Filters_____

☐ Additive (*e.g.*, chelation agent, flocculent)_____

■ Others: air stripper acid wash system; manual DNAPL collection from west collection trench standpipe.

■ Good condition ☐ Needs Maintenance

■ Sampling ports properly marked and functional

■ Sampling/maintenance log displayed and up to date

■ Equipment properly identified

■ Quantity of groundwater treated annually: 70 gpm continuous = 36.8 million gallons per year

■ Quantity of surface water treated annually_____not applicable_____

Remarks: Automated DNAPL collection was evaluated but found not to be worthwhile because of slow rate of DNAPL accumulation.

2. **Electrical Enclosures and Panels** (properly rated and functional)

☐ N/A ■ Good condition ☐ Needs Maintenance

Remarks_____

3. **Tanks, Vaults, Storage Vessels**

☐ N/A ■ Good condition ☐ Proper secondary containment ☐ Needs Maintenance

Remarks_____

4. **Discharge Structure and Appurtenances**

☐ N/A ■ Good condition ☐ Needs Maintenance

Remarks: 150 foot long above-ground poly pipe. Previously had a leak that has since been repaired.

5. **Treatment Building(s)**

☐ N/A ■ Good condition (esp. roof and doorways) ☐ Needs repair

■ Chemicals and equipment properly stored

Remarks: East collection trench is located on state property (Balance Rock State Park), not GE property. GE will check into whether institutional control is needed for the state property. **NOTE: GE submitted an updated State Park access letter, dated 8/23/04 (see Attachment 3).**

6. **Monitoring Wells** (pump and treatment remedy)

■ Properly secured/locked ☐ Functioning ■ Routinely sampled ☐ Good condition

☐ All required wells located ☐ Needs Maintenance ☐ N/A

Remarks: One well (W-3) could not be located and is presumed to have been destroyed. Site plans will be revised by GE. A subset of 8 wells is routinely sampled with results presented in annual monitoring reports.

D. Monitoring Data

1. Monitoring Data

■ Is routinely submitted on time ■ Is of acceptable quality

2. Monitoring data suggests:

■ Groundwater plume is effectively contained ■ Contaminant concentrations are declining

D. Monitored Natural Attenuation

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

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ All required wells located ☐ Needs Maintenance ☐ 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.).

Soil remedy has been completed and groundwater is ongoing. Objective is to remediate groundwater to MCLs. DNAPL presence continues, suggesting the remedy will need to remain in operation for a long time. However some contaminant concentrations (VOCs) have been dropping. Trends for PCBs are not evident. Some of the variability in PCB data may be from the recent switch to low-flow sampling methods. The quantity of DNAPL collected appears to be declining. The GWTP is in good condition. Institutional controls are not fully implemented. This is a priority issue to be completed before the next five year review.

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.

No issues noted. Facility is well-run and some process improvements have been put in place over the years (3 carbon vessels in series, Y2K improvements). PRP is considering more plant automation so it can be operated remotely from Pittsfield facility, but no decision has been reached yet. Plant is visited daily and is alarmed. Plant is uncomplicated in terms of process and daily visits are sufficient to allow for smooth operation. Major routine maintenance items are changeout of carbon, acid washing of air stripper packing, and replacement of packing.

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.

None noted.

PRP prefers not to disclose cost information.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

PRP is considering automating plant for remote operation. Improvements in the vapor-phase carbon system have been made (upgrade to 3 vessels in series with lead-lag switching possible, to better utilize the carbon). Low-flow sampling methods have been implemented for groundwater monitoring.

ATTACHMENT 5
ARARS REVIEW

TABLE A5-1.
POTENTIAL CHEMICAL-SPECIFIC ARARS AND CRITERIA, ADVISORIES, AND GUIDANCE
F. T. ROSE DISPOSAL PIT, LANESBOROUGH, MASSACHUSETTS

MEDIA and AUTHORITY	REQUIREMENT	ROD STATUS	ROD REQUIREMENT SYNOPSIS and CONSIDERATION IN RI/FS	FIVE-YEAR REVIEW
Groundwater				
Federal Regulatory Requirements	SDWA - Maximum Contaminant Levels (MCLs) (40 CFR 141.11 - 141.16)	Relevant and Appropriate	MCLs have been promulgated for a number of common organic and inorganic analytes. These levels regulate the concentration of analytes in public drinking water supplies, but may also be considered relevant and appropriate for groundwater aquifers used for drinking water. When risks to public health due to consumption of groundwater were assessed, concentrations of contaminants of concern, including Polychlorinated biphenyls, tetrachloroethylene, trichloroethylene, and vinyl chloride, were compared to their MCLs. SDWA MCLs also were used in setting discharge requirements.	MCLs and non-zero MCLGs have the status of ARARs for areas not directly overlain by waste. Some MCLs and MCLGs have changed since ROD completion. A comparison of changes to MCL/MCLG from those used for the ROD is provided in Table A6-2. Polychlorinated biphenyls, tetrachloroethylene, trichloroethylene, methylene chloride, benzene, and vinyl chloride still exceed their respective MCL/MCLGs. Groundwater still requires remediation under this rule.
	RCRA - Subpart F, Groundwater Protection Standards, Concentration Limits (40 CFR 264.94(a))	Relevant and Appropriate	Standards for 14 toxic compounds have been adopted as part of RCRA groundwater protection standards. These limits were originally set at MCLs.	RCRA sets the limit for organic constituents at background levels. Constituents in site groundwater exceed background levels. Groundwater still requires remediation under this rule.
Massachusetts Regulatory Requirements	Massachusetts Groundwater Quality Standards (314 CMR 6.00)	Applicable	Massachusetts Groundwater Quality Standards have been promulgated for a number of contaminants. When state levels are more stringent than federal levels, the state levels will be used. MADEP Groundwater Standards were considered when determining discharge levels.	Groundwater underlying the site is designated Class I. The GWTP discharge is monitored for compliance with the discharge limits established for the Site.

TABLE A5-1 (Continued).
POTENTIAL CHEMICAL-SPECIFIC ARARS AND CRITERIA, ADVISORIES, AND GUIDANCE
F. T. ROSE DISPOSAL PIT, LANESBOROUGH, MASSACHUSETTS

MEDIA and AUTHORITY	REQUIREMENT	ROD STATUS	ROD REQUIREMENT SYNOPSIS and CONSIDERATION IN RI/FS	FIVE-YEAR REVIEW
	Massachusetts Drinking Water Requirements (310 CMR 22.05 to 22.09)	Relevant and Appropriate	Massachusetts MCLs (MMCLs) have been promulgated for a number of common organic and inorganic analytes. These levels regulate the concentration of analytes in public drinking water supplies, but may also be considered relevant and appropriate for groundwater aquifers used for drinking water.	Current Massachusetts drinking water standards are provided in Table A6-2. Polychlorinated biphenyls, tetrachloroethylene, trichloroethylene, methylene chloride, benzene, and vinyl chloride still exceed their respective MMCLs. Site groundwater still requires remediation under this rule.
Federal Criteria, Advisories, and Guidance	SDWA - Maximum Contaminant Level Goals (MCLGs)	Relevant and Appropriate/ To Be Considered	MCLGs are health-based criteria that are to be considered for drinking water sources as a result of SARA. These goals are available for a number of organic and inorganic contaminants. Projected groundwater concentrations of trans-1,2-dichloroethylene, toluene, benzene, and TCE were compared to their MCLGs. For benzene, vinyl chloride and TCE, MCLGs are set at zero.	Non-zero MCLGs have the status of ARAR for areas not directly overlain by waste. Zero MCLGs cannot have the status of ARARs but are, however, to be considered in developing site remedies. Some of the MCLGs have changed since ROD completion. A comparison of MCLG changes to those used for the ROD is provided in Table A5-2. Polychlorinated biphenyls, tetrachloroethylene, trichloroethylene, methylene chloride, benzene, and vinyl chloride still exceed their respective MCL/MCLGs. Groundwater still requires remediation under this rule.
	Health Advisories (EPA Office of Drinking Water)	To Be Considered	Health Advisories are estimates of risk due to consumption of contaminated drinking water; they consider non-carcinogenic effects only. Health Advisories were considered for contaminants in groundwater that may be used for drinking water.	Contaminated groundwater at the site is not being used as a drinking water source.

TABLE A5-1 (Continued).
POTENTIAL CHEMICAL-SPECIFIC ARARS AND CRITERIA, ADVISORIES, AND GUIDANCE
F. T. ROSE DISPOSAL PIT, LANESBOROUGH, MASSACHUSETTS

MEDIA and AUTHORITY	REQUIREMENT	ROD STATUS	ROD REQUIREMENT SYNOPSIS and CONSIDERATION IN RI/FS	FIVE-YEAR REVIEW
	EPA Office of Water Guidance - Water-related Fate of 129 Priority Pollutants (1979)	To Be Considered	This guidance manual gives transport and fate information for 129 priority pollutants. The manual was used to assess the transport and fate of a variety of contaminants.	There is no change from the ROD presentation for this ARAR.
Massachusetts Criteria, Advisories, and Guidance	Massachusetts Office of Research and Standards Guidelines (ORSGs)	To Be Considered	MADEP Health Advisories are guidance criteria for drinking water. MADEP Health Advisories were used to develop discharge levels for surface water and groundwater.	The Massachusetts DEP Office of Research and Standards issues guidelines for chemicals for which state MCLs have not yet been promulgated. These guidelines apply to non-chlorinated water supplies and represent a level at or below which adverse, non-cancer health effects are not expected to occur, and which generally has associated with it an excess lifetime cancer risk of less than or equal to one in one million. Current ORSGs for site contaminants are identified in Table A6-2.
Discharge to Surface Water				
Massachusetts Regulatory Requirements	Massachusetts Surface Water Quality Standards (314 CMR 4.05)	Applicable	DEP Surface Water Quality Standards are given for dissolved oxygen, temperature increase, pH, and total coliform and there is a narrative requirement for toxicants in toxic amounts. In the absence of a state standard for a compound, federal AWQC would be appropriate. Requirements were considered; however, no numerical standards exist for contaminants found in site groundwater which would be discharged to surface water. Federal AWQC will be used in the absence of narrative standards.	These regulations classify the surface waters of the Commonwealth according to the uses of those waters. The wetland has a Class A waterway classification. Class B waters are designated as habitat for fish, other aquatic and wildlife , and for primary and secondary contact recreation. The state surface water minimum criteria for Class B waters are consistent with federal AWQC. These rules are applicable to Secum Brook and Pontoosuc Lake.
	Massachusetts Surface Water Discharge Permit Program (314 CMR 3.00)	Applicable	These regulations identify the list of toxic pollutants to be controlled with effluent limitations and are applicable to any current or planned discharge to Secum Brook and Pontoosuc Lake.	Pollutant discharges to surface water must comply with NPDES permit requirements. Permit conditions and standards for different classes of water are specified.

TABLE A5-1 (Continued).
POTENTIAL CHEMICAL-SPECIFIC ARARS AND CRITERIA, ADVISORIES, AND GUIDANCE
F. T. ROSE DISPOSAL PIT, LANESBOROUGH, MASSACHUSETTS

MEDIA and AUTHORITY	REQUIREMENT	ROD STATUS	ROD REQUIREMENT SYNOPSIS and CONSIDERATION IN RI/FS	FIVE-YEAR REVIEW
Surface Water				
Federal Criteria, Advisories, and Guidance	Federal Ambient Water Quality Criteria (AWQC)	Relevant and Appropriate	Federal AWQC are health-based and ecologically based criteria which have been developed for 95 carcinogenic and non-carcinogenic compounds. AWQC were considered in characterizing public health risks to aquatic organisms due to contaminant concentrations in surface water. Because this water is not used as a drinking water source, the criteria developed for aquatic organism protection and ingestion of contaminant aquatic organisms were considered.	CERCLA Sec. 121 (d)(2)(A) specifically states that remedial actions shall at least attain federal AWQC established under the Clean Water Act if they are relevant and appropriate. The AWQC for PCBs has not changed since the ROD, as illustrated by Table A6-3. Where AWQC are not available, the appropriate ecological benchmark is provided in Table A6-3.
Air				
Massachusetts Regulatory Requirements	Massachusetts - Air Quality, Air Pollution (310 CMR 6.00 - 8.00)	Relevant and Appropriate	These standards were primarily developed to regulate stack and automobile emissions.	310 CMR 6.00 provide ambient air quality standards for the Commonwealth, standards for dust are contained in 310 CMR 7.09, and 310 CMR 7.08 provides incinerator standards. These standards were used in establishing discharge limits from the incinerator, which has been dismantled. These standards remain relevant and appropriate for air emissions from ongoing air stripping operations.
Federal Criteria, Advisories, and Guidance	Threshold Limit Values (TLVs)	Formerly To Be Considered	These standards were issued as consensus standards for controlling air quality in workplace environments. TLVs could be used to assess site inhalation risks for soil removal operations.	The incinerator has been dismantled and these requirements are no longer applicable, relevant or appropriate.
Massachusetts Criteria, Advisories, and Guidance	Massachusetts Guidance on Acceptable Ambient Air Levels (AALs)	Formerly To Be Considered now Not ARAR	These are guidelines in emission permit writing. AALs were considered when assessing the significance of monitored and modeled residential contamination from air emissions.	The incinerator has been dismantled and these requirements are no longer applicable, relevant or appropriate.
Soil/Sediment				

TABLE A5-1 (Continued).
POTENTIAL CHEMICAL-SPECIFIC ARARS AND CRITERIA, ADVISORIES, AND GUIDANCE
F. T. ROSE DISPOSAL PIT, LANESBOROUGH, MASSACHUSETTS

MEDIA and AUTHORITY	REQUIREMENT	ROD STATUS	ROD REQUIREMENT SYNOPSIS and CONSIDERATION IN RI/FS	FIVE-YEAR REVIEW
National Oceanic and Atmospheric Administration (NOAA)	Effects Range-Low and Range- Median (ERL and ERM) values for Marine and Estuarine Sediments (Long et al., 1995; Long and Morgan, 1990)	Not identified in ROD - Add as To be Considered in the 1999 Five-Year Review	None.	To be considered. Used to evaluate sediment sampling results.
Ontario Ministry of Environment and Energy (OMEE)	Lowest and Severe Effect levels (LELs and SELs) for Freshwater Sediments (Persaud et al., 1993)	Not identified in ROD - Add as To be Considered in the 1999 Five-Year Review	None.	To be considered. Used to evaluate sediment sampling results.

TABLE A5-2. COMPARISON OF 1988 AND 2004 ROD-SPECIFIED NUMERICAL, CHEMICAL-SPECIFIC ARARS AND CRITERIA[A] FOR GROUNDWATER COMPOUNDS OF CONCERN WITH CURRENT STANDARDS AND CRITERIA, F. T. ROSE DISPOSAL PIT, LANESBOROUGH, MASSACHUSETTS
(All Criteria in mg/L)

CHEMICAL	SDWA[C]				Mass ORSGs[D]		Mass Drinking Water Stds. (310 CMR 22.0)[E]	
	MCL		MCLG					
	1988	2004	1988	2004	1988	2004	1988	2004
COCs[A]								
t-1,2-Dichloroethylene	--	0.1	0.070	0.1	#	na	#	0.1
Ethylbenzene	--	0.7	0.68	0.7	#	na	#	0.7
PCBs	--	0.0005	--	0	#	na	#	0.0005
Tetrachloroethylene	--	0.005	0	0	#	na	#	0.005
Toluene	--	1	2.0	1	#	na	#	1
Trichloroethylene	0.005	0.005	--	0	#	na	#	0.005
Vinyl chloride	0.002	0.002	--	0	#	na	#	0.002
Other Site Contaminants[F]								
Benzene	0.005	0.005	--	0	#	na	#	0.005
Carbon Disulfide	#	na	#	na	#	na	#	na
Chlorobenzene	--	0.1	0.06	0.1	#	na	#	0.1
o-Dichlorobenzene	--	0.6	--	0.6	#	na	#	0.6
p-Dichlorobenzene	0.075	0.075	--	0.075	#	na	#	0.005
m-Dichlorobenzene	--	na	--	na	#	na	#	na
1,2 - Dichloroethane	#	0.005	#	0	#	na	#	0.005
1,1-Dichloroethylene	0.007	0.007	--	0.007	#	na	#	0.007
cis-1,2-Dichloroethylene	#	0.07	#	0.07	#	na	#	0.07
2,4-Dimethylphenol	#	na	#	na	#	na	#	na
Methylene chloride	--	0.005	--	0	#	na	#	0.005
Naphthalene	#	na	#	na	#	0.140	#	na
1,2,4-Trichlorobenzene	#	0.07	#	0.07	#	na	#	0.07
1,1,2-Trichloroethane	--	0.005	--	0.003	#	na	#	0.005
Xylenes	--	10	0.44	10	#	na	#	10

Footnotes

[A] This table provides an update of the regulations and criteria identified in Table 5 of the 1988 Record of Decision.

[B] Chemicals of Concern (COCs) drawn from 1988 Record of Decision, Table 62 entitled *Site Contaminants and Contaminants of Concern* .

[C] Federal Safe Drinking Water Act, Maximum Contaminant Levels (MCLs) and Maximum Contaminant Level Goals (MCLGs). 40 CFR 141, National Primary Drinking Water Standards.

[D] Massachusetts Department of Environmental Protection, Office of Research and Standards Guidelines, drinking water guidelines. Spring 2004.

[E] Massachusetts Department of Environmental Protection, 310 CMR 22.00, Drinking Water Regulations, Massachusetts maximum contaminant levels.

[F] Other chemicals detected as site contaminants, but not selected as contaminants of concern.

na Not available (Standards have not been generated)

Not identified in the 1988 ROD.

TABLE A5-3. COMPARISON OF 1988 AND 2004 ROD-SPECIFIED NUMERICAL, CHEMICAL-SPECIFIC ARARS AND CRITERIA FOR SURFACE WATER AND SEDIMENT CHEMICALS OF CONCERN, F.T. ROSE DISPOSAL PIT, LANESBOROUGH, MASSACHUSETTS [A]

(All criteria in µg/L)

	Water Quality Criteria Aquatic Life - Chronic		
Chemical	1988 [D]	2004[E]	2004 Source
COCs [B]			
t-1,2-Dichloroethylene	na	590	SCV
Ethylbenzene	na	290	ET Tier II
PCBs	0.014	0.014	AWQC
Tetrachloroethylene	840	120	ET Tier II
Toluene	na	130	ET Tier II
Trichloroethylene	21,900	350	ET Tier II
Vinyl chloride	na	na	na
Other Site Contaminants[C]			
Benzene	#	46	ET Tier II
Carbon Disulfide	#	0.92	SCV
Chlorobenzene	#	130	ET Tier II
o-Dichlorobenzene	#	14	ET Tier II
p-Dichlorobenzene	#	15	ET Tier II
m-Dichlorobenzene	#	71	ET Tier II
1,2-Dichloroethane	#	910	SCV
1,1-Dichloroethylene	#	25	SCV
cis-1,2-Dichloroethylene	#	590	SCV
2,4-Dimethylphenol	#	na	na
Methylene chloride	#	2,200	SCV
Naphthalene	#	24	ET Tier II
1,2,4-Trichlorobenzene	#	110	ET Tier II
1,1,2-Trichloroethane	#	1,200	ET Tier II
Xylenes	#	13	SCV

na - not available

[A] PCBs are COCs in sediment. As in 1988, there are currently no human health screening benchmarks or criteria available for evaluating PCBs. Sets of ecological screening benchmarks for PCBs which were not available in 1988 include NOAA ERLs and ERMs (Long et al., 1995; Long and Morgan, 1991) and Ontario Ministry of Environment and Energy LELs and SELs (Persaud et al., 1993). PCB concentrations in sediment samples collected are compared to these benchmarks in Section 7.2.2.

[B] Chemicals of concern were drawn from the 1988 Record of Decision

[C] and # - Other chemicals detected as site contaminants, but not selected as Chemicals of Concern.

[D] US Environmental Protection Agency Water Quality Criteria or Lowest Observed Effects Levels

[E] Current ecological screening benchmarks:

1) USEPA Ambient Water Quality Criteria (AWQC) (USEPA, 2002)
2) USEPA Ecotox Thresholds (ET) for Surface Water (USEPA, 1996)
3) Secondary Chronic Values (SCVs) for aquatic biota developed by Oak Ridge National Laboratory (Suter and Tsao, 1996).

TABLE A5-4
POTENTIAL LOCATION-SPECIFIC ARARS AND CRITERIA, ADVISORIES, AND GUIDANCE
F.T. ROSE DISPOSAL PIT, MASSACHUSETTS

SITE FEATURE and AUTHORITY	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS and CONSIDERATION IN RI/FS	FIVE-YEAR REVIEW
Wetlands				
Federal Regulatory Requirements	Clean Water Act (CWA) - (40 CFR Part 230)	Applicable	Under these requirements, no activity that adversely affects a wetland shall be permitted if a practicable alternative that has less effect is available. During identification, screening, and evaluation of alternatives, the effects on wetlands are evaluated.	This ARAR has been met. Adversely impacted wetlands were remediated according to the plan.
	Fish and Wildlife Coordination Act (16 U.S.C. 661)	Applicable	This regulation requires that any federal agency proposing to modify a body of water must consult with the U.S. Fish and Wildlife Service. This requirement is addressed under CWA Section 404 requirements.	This ARAR was met; consultation occurred as part of the RI/FS process.
State Regulatory Requirements	Massachusetts - Wetlands Protection (310 CMR 10.00)	Applicable	These requirements are promulgated under Wetlands Protection Laws, which regulate dredging, filling, altering, or polluting inland wetlands. Work within 100 feet of a wetland is regulated under this requirement. The requirement also defines wetlands based on vegetation type and requires that effects on wetlands be mitigated. If alternatives require that work be completed within 100 feet of a defined wetland, these regulations are to be considered. Mitigation of impacts on wetlands are addressed under CWA 404.	This ARAR has been met. Adversely impacted wetlands were remediated according to the plan.
	Hazardous Waste Facility Siting Regulations (990 CMR 1.00)	Relevant and Appropriate	These regulations outline the criteria for the construction, operation, and maintenance of a new facility or increase in an existing facility for the storage, treatment, or disposal of hazardous waste. Specifically, no portion of the site may be located within a wetland or bordering a vegetated wetland.	This ARAR was met. These regulations were addressed during the design phase of the treatment facility construction. The facility was designed to meet needs of project.
Federal Requirements to be Considered	Wetlands Executive Order (EO 11990)	To Be Considered	Under this regulation, federal agencies are required to minimize the destruction, loss, or degradation of wetlands, and preserve and enhance natural and beneficial values of wetlands.	This ARAR has been met. Many of the requirements of this EO were addressed under CWA Section 404. Adversely impacted wetlands were remediated according to the plan.
Floodplains				
Federal Regulatory Requirements	RCRA Location Standards 40 CFR 264.18(b)	Relevant and Appropriate	RCRA-defined listed or characteristic hazardous waste (40 CFR 261) facility must be designed, constructed, operated, and maintained to prevent washout by 100-year flood.	This ARAR has been met.

TABLE A5-4 (Continued)
POTENTIAL LOCATION-SPECIFIC ARARS AND CRITERIA, ADVISORIES, AND GUIDANCE
F.T. ROSE DISPOSAL PIT, MASSACHUSETTS

SITE FEATURE and AUTHORITY	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS and CONSIDERATION IN RI/FS	FIVE-YEAR REVIEW
	Executive Order 11988; Clean Water Act (40 CFR 6.302(b), Appendix A)	Applicable	Federal agencies shall take action to reduce the risk of flood loss, minimize the impact of floods on human safety, health and welfare, and restore and preserve the natural and beneficial values of floodplains. Federal agencies shall also evaluate potential effects of actions in floodplains and ensure consideration of flood hazards and floodplain management. If action is taken in floodplains, alternatives to avoid adverse effects, and minimize potential harm must be taken.	This ARAR has been met.
State Regulatory Requirements	Massachusetts Wetlands Protection (310 CMR 10.57 (2), 10.04)	Applicable	Actions in "bordering land subject to flooding" shall provide compensatory storage for flood storage volume lost as a result of the project, shall not restrict flows so as to cause an increase in flood stage or velocity, and shall not impair its capacity to provide important wildlife habitat functions or alter vernal pool habitat. Actions in "isolated land subject to flooding" shall not result in flood damage because of lateral displacement of water that would otherwise be confined within the area, adverse effects on water supply, adverse effects on the capacity of the area to prevent groundwater pollution, or adverse effects on vernal pool habitat.	This ARAR has been met

TABLE A5-5
POTENTIAL ACTION-SPECIFIC ARARS
F.T. ROSE DISPOSAL PIT, LANESBOROUGH, MASSACHUSETTS

ARAR	REQUIREMENT SYNOPSIS AND STATUS	ACTION TO BE TAKEN TO ATTAIN ARARS	FIVE-YEAR REVIEW
Federal Regulatory Requirements			
RCRA - Standards for Owners and Operators of Permitted Hazardous Waste Facilities (40 CFR 264.10 - 264.18)	General facility requirements outline general waste analysis, security measures, inspections, and training requirements - **Relevant and Appropriate**	All facilities on-site 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 requirements. Treatment residuals from wastewater treatment will be disposed of according to RCRA Subtitle C.	These requirements remain relevant and appropriate, and are being complied with.
RCRA - Preparedness and Prevention (40 CFR 264.30-264.37)	This regulation outlines safety equipment and spill control requirements for hazardous waste facilities. Part of the regulation includes a requirement that facilities be designed, maintained, constructed, and operated so that the possibility of an unplanned release which could threaten public health or the environment is minimized - **Relevant and Appropriate**.	Safety and communication equipment will be installed at the site; local authorities will be familiarized with site operations. RCRA requirements must be considered when evaluating extensions to the present landfill.	These requirements remain relevant and appropriate, and are being complied with.
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. This regulation also requires that threats to public health and the environment be minimized - **Relevant and Appropriate**.	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. RCRA requirements must be considered when evaluating extensions to the present landfill.	These requirements remain relevant and appropriate, and are being complied with.
RCRA - Manifesting, Recordkeeping, and Reporting (40 CFR 264.70-264.77)	This regulation specifies the recordkeeping and reporting requirements for RCRA facilities - **Relevant and Appropriate**.	Records of facility activities will be developed and maintained during remedial actions.	These requirements remain relevant and appropriate, and are being complied with.
RCRA - Groundwater Protection (40 CFR 264.90-264.109)	This regulation details requirements for a groundwater monitoring program to be installed at the site - **Relevant and Appropriate**.	A groundwater monitoring system must be installed as part of any alternative. During site characterization, the location and depth of monitoring wells will be evaluated for use in this monitoring program.	A groundwater monitoring program has been implemented at the site.
RCRA - Closure and Post-Closure (40 CFR 264.110-264.120)	This regulation details specific requirements for closure and post-closure of hazardous waste facilities - **Relevant and Appropriate**.	Those parts of the regulations concerned with long-term monitoring and maintenance of the site will be considered during remedial design. A post-closure plan will be developed.	A post closure plan is currently being managed by the EPA.

TABLE A5-5 (Continued)
POTENTIAL ACTION-SPECIFIC ARARS
F.T. ROSE DISPOSAL PIT, LANESBOROUGH, MASSACHUSETTS

ARAR	REQUIREMENT SYNOPSIS AND STATUS	ACTION TO BE TAKEN TO ATTAIN ARARS	FIVE-YEAR REVIEW
Clean Water Act - 40 CFR Parts 122, 125	Any point source discharges must meet NPDES permitting requirements, which include compliance with applicable water quality standards; establishment of a discharge monitoring system; and routine completion of discharge monitoring records. **Applicable.**	If groundwater that has been treated by on-site treatment processes is discharged to surface waters on-site, treated groundwater must be in compliance with applicable water quality standards. In addition, a discharge monitoring program must be implemented. Routine discharge monitoring records must be completed.	A groundwater collection, treatment and monitoring program is being implemented.
CWA - 40 CFR Part 230	This regulation outlines requirements for discharges of dredged or fill material. Under this requirement, no activity that impacts a wetland will be permitted if a practicable alternative that has less impact on the wetland is available. If there is no other practicable alternative, impacts must be mitigated - **Applicable**	During the identification, screening, and evaluation of alternatives, the effects on wetlands must be evaluated.	An evaluation of the effects of remedial actions on wetlands is on-going.
CAA - NAAQS for Total Suspended Particulates (40 CFR 129.105,750)	This regulation specifies maximum primary and secondary 24-hour concentrations for particulate matter - **Applicable.**	Fugitive dust emissions from site excavation activities will be maintained below 260 :g/m^3 (primary standard) by dust suppressants, if necessary.	These requirements are only applicable if land disturbing activities are conducted. No activities of the kind are currently anticipated.
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 transportation of hazardous materials - **Applicable**	Contaminated materials shipped off-site will be packaged, manifested, and transported to a licensed off-site disposal facility in compliance with these regulations.	DOT rules are still applicable because they must always be complied with for off-site shipments.

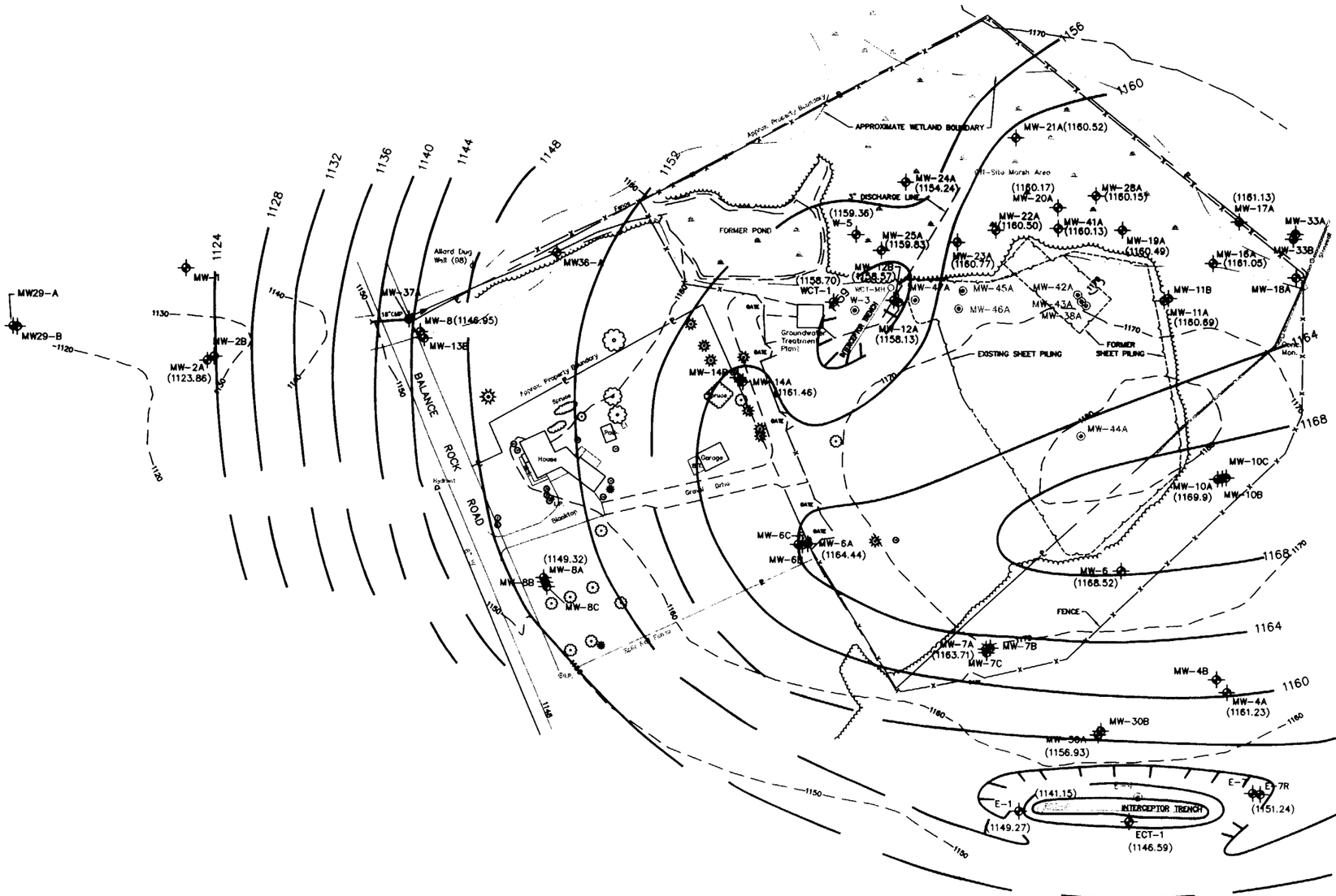
TABLE A5-5 (Continued)
POTENTIAL ACTION-SPECIFIC ARARS
F.T. ROSE DISPOSAL PIT, LANESBOROUGH, MASSACHUSETTS

ARAR	REQUIREMENT SYNOPSIS AND STATUS	ACTION TO BE TAKEN TO ATTAIN ARARS	FIVE-YEAR REVIEW
State Regulatory Requirements			
Massachusetts Hazardous Waste Regulations, Phase I and II (310 CMR 30.000, MGL Ch. 21C)	These regulations provide a comprehensive program for the handling, storage, and recordkeeping at hazardous waste facilities. They supplement RCRA regulations - **Relevant and Appropriate**	Because these requirements supplement RCRA hazardous waste regulations, they must also be considered at the site.	These requirements remain relevant and appropriate, and are being complied with.
Massachusetts General Laws, Ch. III, Sec. 150B	Under this regulation, the local board of health may require a local site assignment for hazardous waste treatment, storage, and/or disposal facilities - **Relevant and Appropriate**	The local board of health should be made aware of any hazardous waste activities.	The local board of health is made aware of alterations to any hazardous waste activities of which they are not currently aware. In the past, the local board of health was a participant in the incineration of soils component of remediation efforts.
Massachusetts Wetlands Protection (310 CMR 10.00)	This regulation outlines the requirements necessary to work within 100 feet of a coastal or inland wetland. The act sets forth a public review and decision-making process by which activities affecting waters of the state are to be regulated to contribute to their protection - **Applicable.**	Wetland remediation will comply with the substantive but not the administrative requirements for wetland protection.	Wetland remediation according to the plan was conducted.
Massachusetts Surface Water Discharge Permit Program (314 CMR 2.00 - 4.00)	This section outlines the requirements for obtaining an NPDES permit in Massachusetts - **Applicable.**	Pollutant discharges to surface water must comply with NPDES permit requirements. Permit conditions and standards for different classes of water are specified.	314 CMR 3.00 establishes the program whereby discharges of pollutants to surface waters are regulated. Outlets for such discharges and any associated treatment works are also regulated. Surface water at the site is classified "B - warm water, treated water supply" under 314 CMR 4.06. Since the groundwater treatment facility discharges to the wetland, these rules apply. Although a permit is not required, its substantive equivalent is.

TABLE A5-5 (Continued)
POTENTIAL ACTION-SPECIFIC ARARS
F.T. ROSE DISPOSAL PIT, LANESBOROUGH, MASSACHUSETTS

ARAR	REQUIREMENT SYNOPSIS AND STATUS	ACTION TO BE TAKEN TO ATTAIN ARARS	FIVE-YEAR REVIEW
Certification for Dredging, Dredged Material Disposal, and Filling in Waters (314 CMR 9.00, MGL Ch. 21, ss. 26-53)	This regulation is promulgated to establish procedures, criteria, and standards for the water quality certification of dredging and dredged material disposal - **Not ARAR.**	Applications for proposed dredging/fill work need to be submitted and approved before work commences. Three categories have been established for dredge or fill material based on the chemical constituents. Approved methods for dredging, handling, and disposal options for the three categories must be met.	No dredging, discharge of dredge material, or filling in of navigable waters is occurring or planned to occur. However, during remedial actions the discharge of pollutants into surface water bodies will occur; this situation triggers Wetlands Protection Act (MGL Ch. 131) and waterways (MGL ch. 91) requirements.
Implementation of MGL C.111F, Employee and Community "Right to Know" (310 CMR 33.00)	The regulations establish rules and requirements for the dissemination of information related to toxic and hazardous substances to the public - **Applicable**	Information applicable to site activities and characteristics will be made available to the public.	The EPA has implemented a community relations program to disseminate information about the site to the local community.

ATTACHMENT 6
SUPPLEMENTAL FIGURES
(From Spectra and BBL, August 2004)



LEGEND:

- MW-8A ⊕ MONITORING WELL
- E-7 ⊕ DECOMMISSIONED/FORMER MONITORING WELL LOCATION
- COLLECTION TRENCH MANHOLE
- ⊕ SEMI-ANNUAL GROUNDWATER QUALITY MONITORING LOCATION
- ⊕ SEMI-ANNUAL GROUNDWATER ELEVATION MONITORING LOCATION
- 1120 – – – TOPOGRAPHIC ELEVATION CONTOUR IN FEET
- 1164 —— GROUNDWATER ELEVATION CONTOUR IN FEET (DASHED WHERE INFERRED)
- (1160.52) GROUNDWATER ELEVATION IN FEET

NOTES:

1. BASE MAP CREATED FROM BLASLAND, BOUCK AND LEE, INC. DRAWING DATED 6/24/04, AND SITE PLAN BY HILL ENGINEERS, ARCHITECTS AND PLANNERS, DATED 10/15/92. APPROXIMATE LIMITS OF WETLANDS FROM SITE PLAN BY HMM ASSOCIATES, DATED AUGUST, 1992.
2. GROUNDWATER QUALITY MONITORING IS ALSO PERFORMED ON A SEMI-ANNUAL BASIS AT THE COLLECTION TRENCH MANHOLES AND WITHIN THE GROUNDWATER TREATMENT PLANT.
3. GROUNDWATER ELEVATION DATA IS ALSO MONITORED AT THE MONITORING WELLS AND MANHOLES AS PART OF SEMI-ANNUAL SAMPLING AND ANALYSIS.
4. SUPPLEMENTAL GROUNDWATER QUALITY MONITORING WAS PERFORMED AT WELLS MW-6A, MW-6B, MW-6C-R, MW-14A, AND MW-14B IN SPRING 2004.
5. GROUNDWATER ELEVATION MEASUREMENTS WERE OBTAINED ON MAY 17, 2004.

0 150' 300'

GRAPHIC SCALE

Originals in color

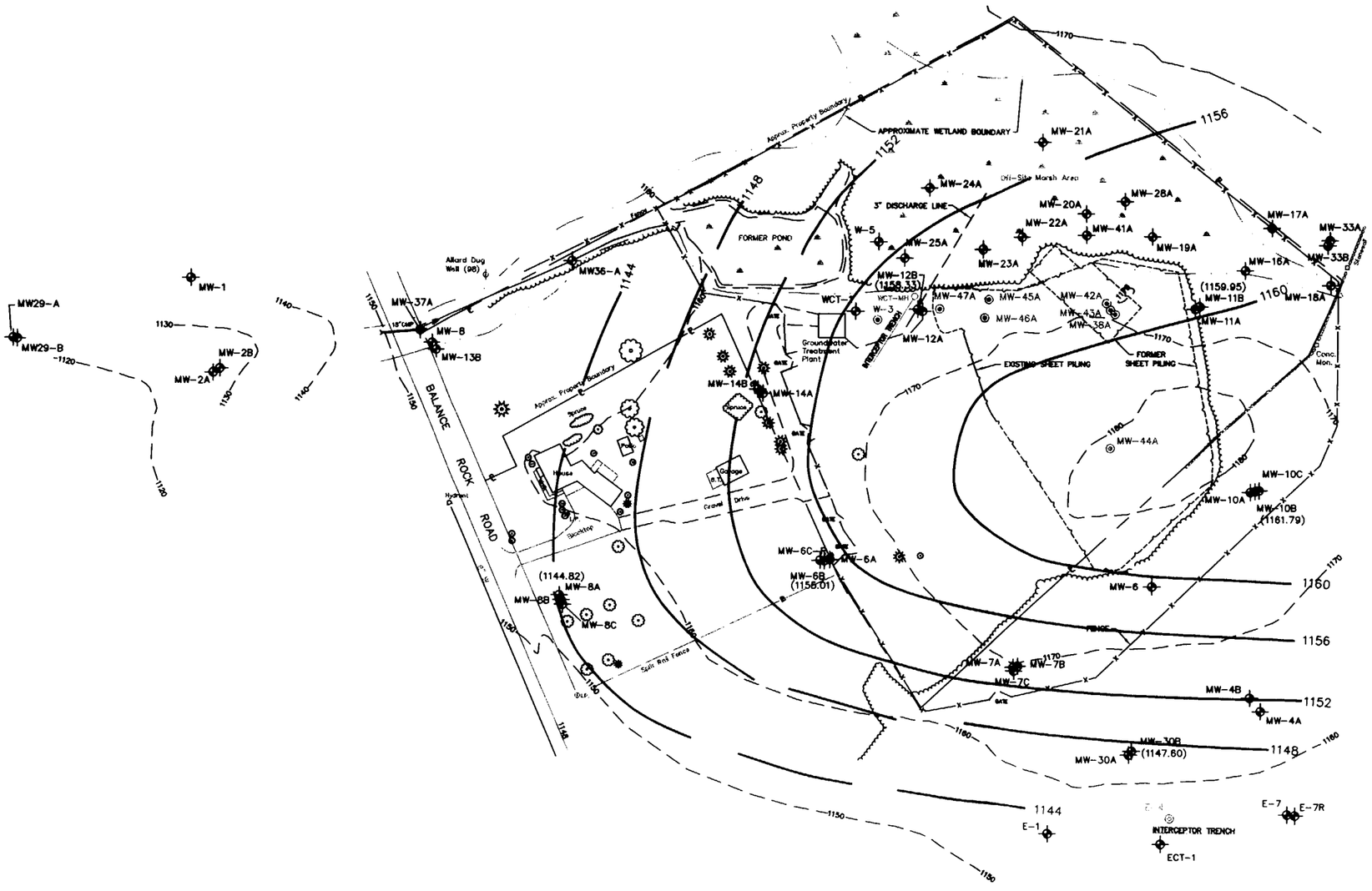
SPECTRA ENVIRONMENTAL GROUP, INC.
19 British American Blvd.
Latham, N.Y. 12110

F.T. ROSE DISPOSAL PIT SUPERFUND SITE

GROUNDWATER ELEVATION CONTOURS "A" ZONE – SPRING 2004

LANESBOROUGH MASSACHUSETTS

PROJ. NO.:	DATE:	SCALE:	DWG. NO.:	FIGURE
04179	7/20/04	1"=150'	04179002	2



LEGEND:

- MW-8A ⊕ MONITORING WELL
- E-7 ⊕ DECOMMISSIONED/FORMER MONITORING WELL LOCATION
- COLLECTION TRENCH MANHOLE
- SEMI-ANNUAL GROUNDWATER QUALITY MONITORING LOCATION
- SEMI-ANNUAL GROUNDWATER ELEVATION MONITORING LOCATION
- 1120 – – – TOPOGRAPHIC ELEVATION CONTOUR IN FEET
- 1160 ——— GROUNDWATER ELEVATION CONTOUR IN FEET (DASHED WHERE INFERRED)
- (1161.79) GROUNDWATER ELEVATION IN FEET

NOTES:

1. BASE MAP CREATED FROM BLASLAND, BOUCK AND LEE, INC. DRAWING DATED 6/24/04, AND SITE PLAN BY HILL ENGINEERS, ARCHITECTS AND PLANNERS, DATED 10/15/92. APPROXIMATE LIMITS OF WETLANDS FROM SITE PLAN BY HMM ASSOCIATES, DATED AUGUST, 1992.
2. GROUNDWATER QUALITY MONITORING IS ALSO PERFORMED ON A SEMI-ANNUAL BASIS AT THE COLLECTION TRENCH MANHOLES AND WITHIN THE GROUNDWATER TREATMENT PLANT.
3. GROUNDWATER ELEVATION DATA IS ALSO MONITORED AT THE MONITORING WELLS AND MANHOLES AS PART OF SEMI-ANNUAL SAMPLING AND ANALYSIS.
4. SUPPLEMENTAL GROUNDWATER QUALITY MONITORING WAS PERFORMED AT WELLS MW-6A, MW-6B, MW-6C-R, MW-14A, AND MW-14B IN SPRING 2004.
5. GROUNDWATER ELEVATION MEASUREMENTS WERE OBTAINED ON MAY 17, 2004.

0 150' 300'

GRAPHIC SCALE

Originals in color.

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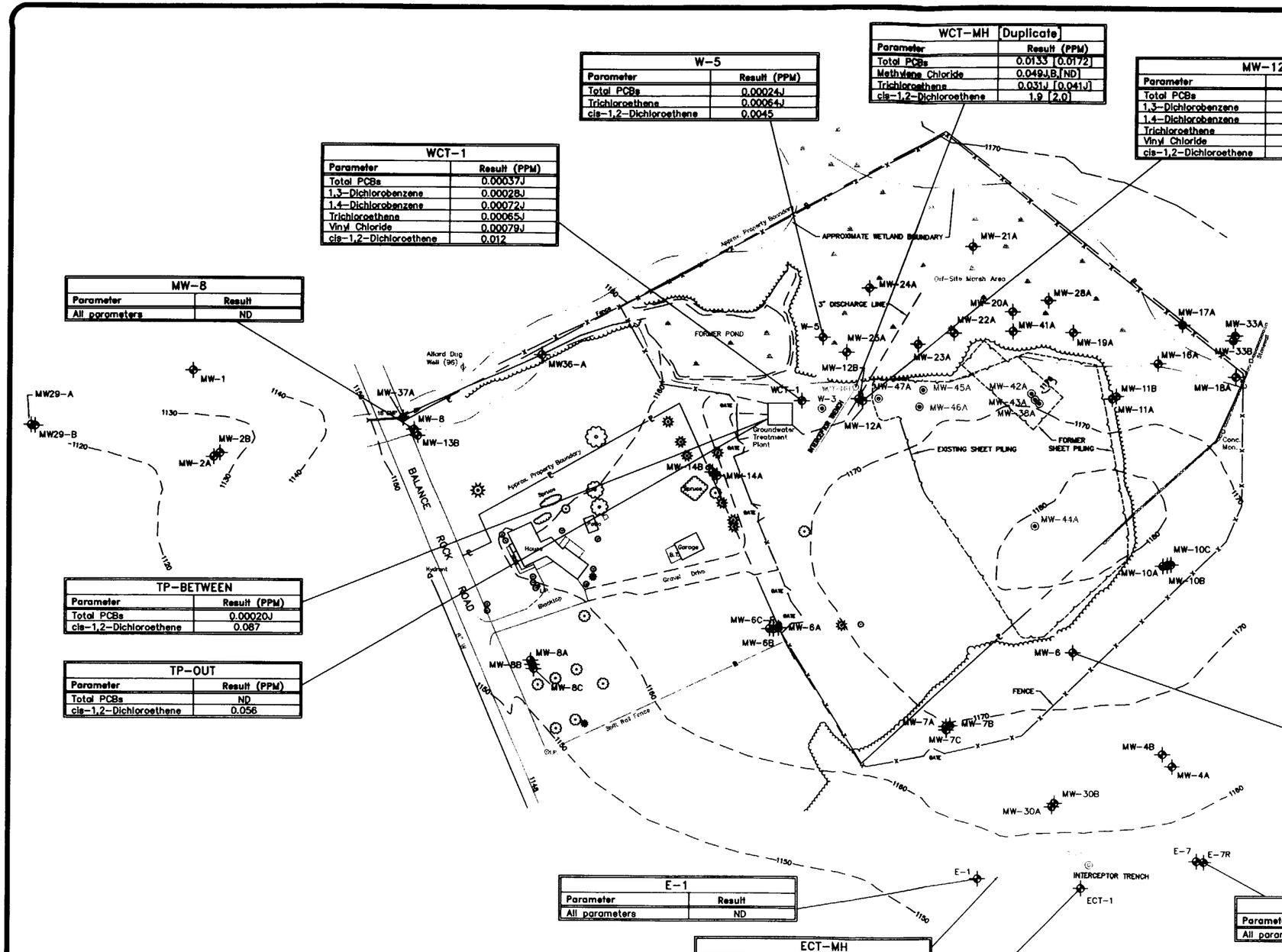
F.T. ROSE DISPOSAL PIT SUPERFUND SITE

GROUNDWATER ELEVATION CONTOURS "B" ZONE – SPRING 2004

LANESBOROUGH MASSACHUSETTS

PROJ. NO.:	DATE:	SCALE:	DWG. NO.:	FIGURE
04179	7/20/04	1"=150'	04179003	3



WCT-MH	Duplicate
Parameter	Result (PPM)
Total PCBs	0.0133 [0.0172]
Methylene Chloride	0.049JB [ND]
Trichloroethene	0.031J [0.041J]
cis-1,2-Dichloroethene	1.9 [2.0]

W-5	
Parameter	Result (PPM)
Total PCBs	0.00024J
Trichloroethene	0.00064J
cis-1,2-Dichloroethene	0.0045

MW-12A	
Parameter	Result (PPM)
Total PCBs	0.00049J
1,3-Dichlorobenzene	0.00053J
1,4-Dichlorobenzene	0.0014J
Trichloroethene	0.026
Vinyl Chloride	0.0037J
cis-1,2-Dichloroethene	0.060

WCT-1	
Parameter	Result (PPM)
Total PCBs	0.00037J
1,3-Dichlorobenzene	0.00028J
1,4-Dichlorobenzene	0.00072J
Trichloroethene	0.00065J
Vinyl Chloride	0.00079J
cis-1,2-Dichloroethene	0.012

MW-8	
Parameter	Result
All parameters	ND

TP-BETWEEN	
Parameter	Result (PPM)
Total PCBs	0.00020J
cis-1,2-Dichloroethene	0.087

TP-OUT	
Parameter	Result (PPM)
Total PCBs	ND
cis-1,2-Dichloroethene	0.056

MW-6	
Parameter	Result (PPM)
Total PCBs	ND
1,2-Dichlorobenzene	0.00058J
1,3-Dichlorobenzene	0.0018
1,4-Dichlorobenzene	0.0075
Chlorobenzene	0.00052J
Tetrachloroethene	0.0069
Trichloroethene	0.025
cis-1,2-Dichloroethene	0.0025

E-1	
Parameter	Result
All parameters	ND

ECT-MH	
Parameter	Result (PPM)
Total PCBs	ND
Trichloroethene	0.0019

ECT-1	
Parameter	Result
All parameters	ND

E-7R	
Parameter	Result
All parameters	ND

LEGEND:

- MW-8A ⊕ MONITORING WELL
- E-7 ⊕ DECOMMISSIONED/FORMER MONITORING WELL LOCATION
- COLLECTION TRENCH MANHOLE
- ⊕ SEMI-ANNUAL GROUNDWATER QUALITY MONITORING LOCATION
- ⊕ SEMI-ANNUAL GROUNDWATER ELEVATION MONITORING LOCATION
- 120 TOPOGRAPHIC ELEVATION CONTOUR IN FEET

NOTES:

1. BASE MAP CREATED FROM BLASLAND, BOUCK AND LEE, INC. DRAWING DATED 6/24/04, AND SITE PLAN BY HILL ENGINEERS, ARCHITECTS AND PLANNERS, DATED 10/15/92. APPROXIMATE LIMITS OF WETLANDS FROM SITE PLAN BY HMM ASSOCIATES, DATED AUGUST, 1992.
2. GROUNDWATER QUALITY MONITORING IS ALSO PERFORMED ON A SEMI-ANNUAL BASIS AT THE COLLECTION TRENCH MANHOLES AND WITHIN THE GROUNDWATER TREATMENT PLANT.
3. DATA QUALIFIERS:
   J: INDICATES AN ESTIMATED VALUE LESS THAN THE PRACTICAL QUANTITATION LIMIT (PQL).
   B: INDICATES DETECTION IN LABORATORY METHOD BLANK.
   ND: NOT DETECTED.

0 150' 300'

GRAPHIC SCALE

Originals in color

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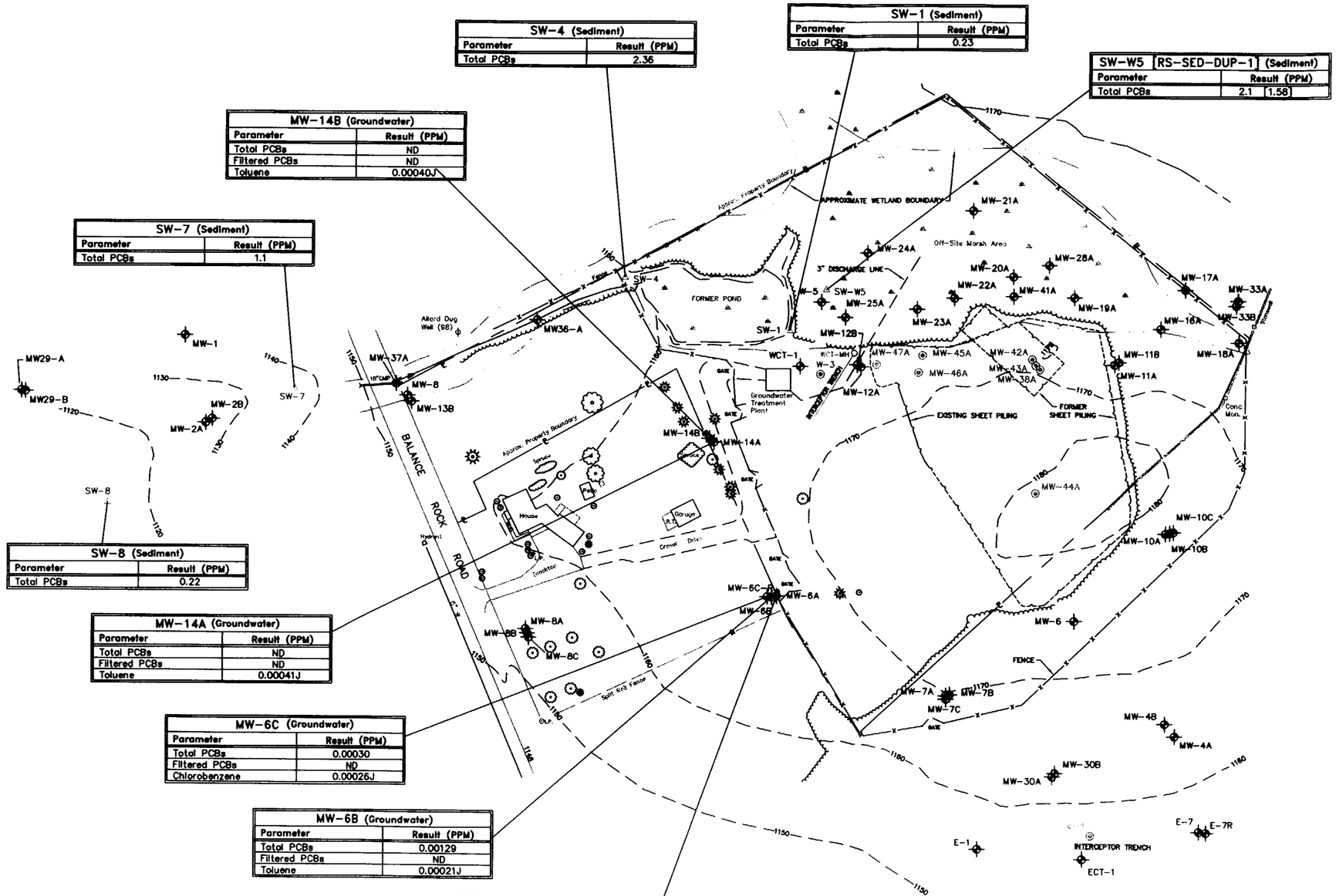
F.T. ROSE DISPOSAL PIT SUPERFUND SITE

SEMI-ANNUAL GROUNDWATER ANALYTICAL RESULTS

SPRING 2004

LANESBOROUGH MASSACHUSETTS

PROJ. NO.:	04179	DATE:	7/20/04	SCALE:	1"=150'	DWG. NO.:	04179005	FIGURE	4



LEGEND:

- MW-8A ⊕ MONITORING WELL
- E-7 ⊗ DECOMMISSIONED/FORMER MONITORING WELL LOCATION
- COLLECTION TRENCH MANHOLE
- ⊕ SEMI-ANNUAL GROUNDWATER QUALITY MONITORING LOCATION
- ⊕ SEMI-ANNUAL GROUNDWATER ELEVATION MONITORING LOCATION
- SW-1 SEDIMENT SAMPLING LOCATION
- 1120 TOPOGRAPHIC ELEVATION CONTOUR IN FEET

NOTES:

1. BASE MAP CREATED FROM BLASLAND, BOUCK AND LEE, INC. DRAWING DATED 6/24/04, AND SITE PLAN BY HILL ENGINEERS, ARCHITECTS AND PLANNERS, DATED 10/15/92. APPROXIMATE LIMITS OF WETLANDS FROM SITE PLAN BY HMM ASSOCIATES, DATED AUGUST, 1992.
2. SUPPLEMENTAL GROUNDWATER QUALITY MONITORING WAS PERFORMED AT WELLS MW-6A, MW-6B, MW-6C-R, MW-14A, AND MW-14B IN SPRING 2004.
3. SEDIMENT LOCATIONS ARE APPROXIMATE.
4. DATA QUALIFIERS:
   - J: INDICATES AN ESTIMATED VALUE LESS THAN THE PRACTICAL QUANTITATION LIMIT (PQL).
   - B: INDICATES DETECTION IN LABORATORY METHOD BLANK.
   - ND: NOT DETECTED.

0 150' 300'

GRAPHIC SCALE

Proposed in 2010?

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F.T. ROSE DISPOSAL PIT SUPERFUND SITE
SUPPLEMENTAL ANALYTICAL RESULTS
SPRING 2004

LANESBOROUGH MASSACHUSETTS

PROJ. NO.:	04179	DATE:	7/20/04	SCALE:	1"=150'	DWG. NO.:	04179006	FIGURE	5