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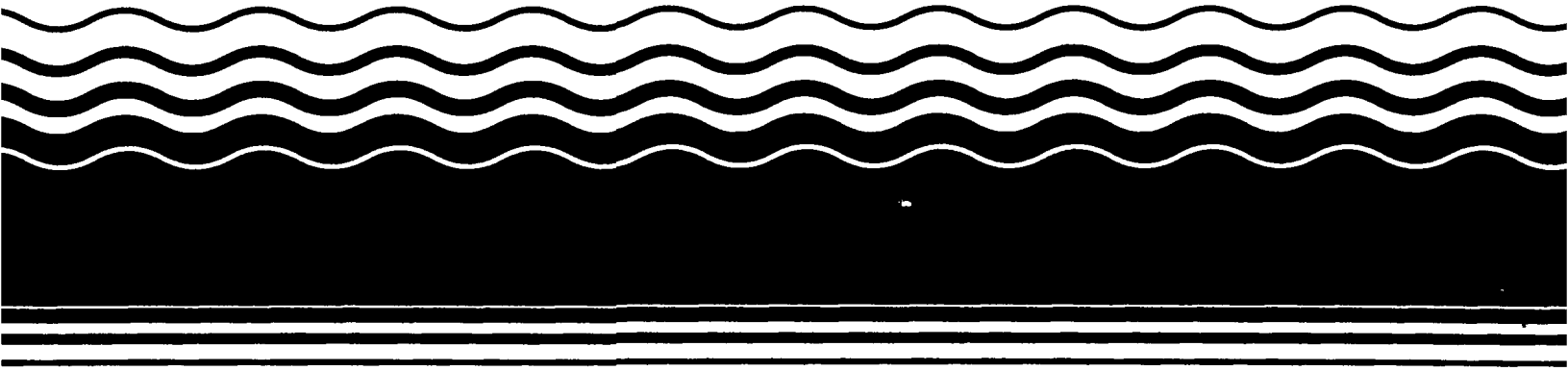
EPA Superfund Explanation of Significant Difference for the Record of Decision:

Groveland Wells (No. 1 & 2 Site), (O.U. 1), (Management of Migration Operable Unit) Groveland, MA 11/15/1996



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FINAL EXPLANATION OF SIGNIFICANT DIFFERENCES

I. INTRODUCTION

This document constitutes a Final Explanation of Significant Differences ("ESD") between the remedial actions as specified in the Record of Decision ("ROD") and those now planned under this ESD. It also documents the conditions that give rise to its need.

Site Name, Location, and Description

Site: Management of Migration Operable Unit (OU 1)
Groveland Wells Nos. 1 & 2 Site

Site Location: Groveland, Massachusetts

Site Description: The Groveland Wells Nos. 1 and 2 Site contains nearly 850 acres mostly located in the western part of the Town of Groveland. Both of the town's municipal wells, i.e., Stations Nos 1 & 2, were closed in 1979 when high concentrations of trichloroethene ("TCE"), a volatile organic compound ("VOC"), were discovered.

The closure of the wells resulted in investigations that revealed the presence of an extensive groundwater contaminant plume, containing principally TCE, that is migrating toward the Merrimack River. Highest TCE contaminant concentrations have been found near the Valley Manufactured Products Company/Groveland Resources Corporation ("Valley/GRC") property which is located at 64 Washington Street, Groveland, Massachusetts.

In addressing the cleanup of the groundwater contamination, the Groveland Site was divided into operable units. The apparent source of the groundwater contamination is the Valley/GRC property, hence the property is considered the Source Control Operable Unit for the Groveland Site. Remediation of the remainder of the migrating contaminant plume is being addressed under the Management of Migration ("MOM")Operable Unit. This Final ESD is for the MOM Operable Unit.

The apparent source of the groundwater contamination at the Groveland site is the Valley Manufactured Products Co., Inc. facility. This facility is located at the southern end of the site on land owned by the Groveland Resources Corporation, and contains a metal and plastic parts manufacturing business. Between 1969 and 1984, contaminants were released at the Valley site as a result of discharges and spills.

Starting in 1982, Valley conducted studies of the site under legal agreements with the EPA and the Massachusetts Department of Environmental Protection ("MA DEP").

The EPA also conducted its own studies of the groundwater in the vicinity of the municipal wells between 1984 and 1991. A summary of the results of these studies can be found in the March 1991 Fact Sheet for the Groveland site, and also in the 1994 Revised Community Relations Plan for the site. These documents can be found at the Langley Adams Library in Groveland or at the EPA Records Center in Boston.

In September 1988, the EPA signed a Record of Decision that presented a plan to address the source of contamination at the Valley Manufactured Products Company/Groveland Resources Corporation ("Valley/GRC") property. The plan called for treating contaminated soil and groundwater on the Valley/GRC property. A second Record of Decision in September 1991 (for the MOM Operable Unit) called for a separate system to extract and treat contaminated groundwater that has moved off the Valley/GRC property toward the Merrimack River.

A more complete description of the Groveland site, the Valley/GRC property, and remediation systems proposed for both operable units, can be found in the "ROD Decision Summary, Groveland Wells Nos. 1 & 2 Site, Valley Site Organics Source-Control Operable Unit, Groveland, Massachusetts" dated September 30, 1988 and in the "Management of Migration Record of Decision Summary, Groveland Wells Nos. 1 & 2 Site" dated September, 1991.

Identification Of Lead And Support Agencies

Lead Agency:	United States Environmental Protection Agency (EPA)
Contact:	Robert J. Leger Remedial Project Manager (617) 573-5734
Support Agency:	Massachusetts Department of Environmental Protection (MA DEP)
Contact:	Jay Naparstek Assistant Deputy Division Director (617) 292-5697

Citation Of The Comprehensive Environmental Response, Compensation And Liability Act Of 1980 ("CERCLA") Section 117© That Requires The ESD

Section 117© of CERCLA sets forth the circumstances for which an ESD is required. Specifically, Section 117© provides: "After adoption of a final remedial action plan: - (1) if any remedial action is taken, (2) if any enforcement action under section 106 of this title is taken, or (3) if any settlement or consent decree under section 106 of this title or section 122 of this title is entered into, and if such action, settlement or decree differs in any significant respects from the final plan, the President or the State shall publish an explanation of the significant differences and the reasons such changes were made."

The EPA has determined that certain changes in the remedial action significantly differ from the remedial action originally selected in the September 30, 1991 Record of Decision for the management of contaminant migration for the Site. This document describes these differences and the reasons why these changes to the remedy described in the ROD are necessary.

Summary Of The Changes In The Selected Remedy Which Require An ESD

EPA's issuance of this ESD is necessary because of changes in the remedy for the cleanup of contamination in groundwater, as originally specified in the ROD. The changes involve eliminating the need to pump and treat the less-concentrated portions of contaminated groundwater that is found north of Mill Pond. This portion of the groundwater contaminant plume will be addressed by natural attenuation and periodic groundwater monitoring.

As anticipated in the ROD, a groundwater recovery system will be designed, installed, operated and maintained on the Groveland site. However, the recovery system will address the more-concentrated portions of the groundwater contaminant plume found south of Mill Pond. This includes extracting and treating contaminated groundwater from the Valley/GRC property. The changes discussed in this ESD significantly reduces the amount of groundwater that will need to be treated. Also, the groundwater treatment plant will be re-located from the property near municipal Well No.2 (as shown in the 1991 MOM ROD), to the property location adjacent to the Valley Manufactured Products Company on Washington Street.

These changes do not fundamentally alter the remedy selected in the ROD.

Public Information Meeting, Comment Period And Announcement Of Statement That The ESD Will Become Part Of The Administrative Record File

The EPA held a public information meeting on the proposed ESD on August 13, 1996 in the Groveland Town Hall, at 183 Main Street, Groveland, Massachusetts. The EPA also provided a public comment period pursuant to Section 300.825(b) of the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"), in order to ensure full community involvement. The comment period on the proposed ESD lasted 14 days, commencing August 13, 1996, and ending August 27, 1996. The proposed ESD, this final ESD, a transcript of the public meeting, significant public comments, and responses to comments, are included in the Administrative Record File for the Site.

Addresses Of Locations Where The Files Are Available And Hours Of Availability Of The Files

Information pertinent to EPA's decision making process in publishing this ESD is available for public review at information repositories at the following locations:

EPA Records Center
90 Canal Street, First Floor
Boston, Massachusetts
(617) 573-5729
Hours:
Mon-Fri: 10:00 a.m. - 1:00 p.m.
2:00 p.m. - 5:00 p.m.
Closed 1st Friday of each month.

Langley-Adams Library
185 Main Street
Groveland, Massachusetts
(508) 372-1732
Hours:
Mon & Wed: 12:00 p.m. - 5:00 p.m.
6:30 p.m. - 8:30 p.m.
Tues & Thurs: 10:00 p.m. - 5:30 p.m.
Fri: 12:00 a.m. - 5:00 p.m.

II. SUMMARY OF SITE HISTORY, CONTAMINATION PROBLEMS, RESPONSE HISTORY, AND SELECTED REMEDY

Site History and Contamination Problems

The EPA placed the Groveland Site on the National Priorities List ("NPL") in 1982 because the contamination in the municipal wells constituted a threat to public health and the environment. The NPL listing resulted in the initiation of studies that investigated the nature and extent of groundwater contamination, potential sources of the contamination and the pathways by which the municipal wells were contaminated. These investigations identified three possible sources of contamination in the Groveland Site area: (1) the A. W. Chesterton Company; (2) the Haverhill Municipal Landfill; and (3) the Valley/GRC property.

1. A remedial investigation ("RI") was performed on the Chesterton property in 1984 and 1985 pursuant to a Resource Conservation and Recovery Act ("RCRA") Administrative Order. The RI determined that contamination was confined to the Chesterton property boundary and appeared not currently connected to

groundwater contaminant plume area or the Stations Nos. 1 & 2 area. Remediation of contamination on the Chesterton property is being dealt with using corrective action and closure activities under RCRA authority.

2. The Haverhill Landfill was originally named as a potential source of contamination which forced closure of Station Nos. 1 & 2. The Landfill was subsequently placed on the NPL in October 1984 as a separate site from the Groveland Wells site. Cleanup of the Haverhill site is being addressed under a separate CERCLA action.

3. The EPA performed aquifer-wide Management of Migration ("MOM") RI work in 1984 and 1985 and completed supplemental MOM RI work in 1990 and 1991. The RIs investigated the nature and extent of groundwater contamination, potential sources of the contamination and the pathways by which the municipal wells were contaminated. The results of these activities revealed that an extensive groundwater plume, containing principally TCE and 1,2-Dichloroethene ("1,2-DCE"), is migrating toward the Merrimack River. The groundwater contaminant plume extends approximately 3,900 feet north from the Valley/GRC property, paralleling Johnson Creek. Highest contaminant concentrations were found near the Valley/GRC property, with concentrations decreasing with increased distance from Valley/GRC.

4. The Valley/GRC property is considered the Source Control Operable Unit for the Groveland Site. According to Valley employee accounts, as much as 3000 gallons of waste oil and solvent (including TCE) were released on the Valley/GRC property during the period 1963 to 1974. Of this amount, five to seven hundred gallons of TCE escaped from an underground storage tank. The balance of the releases came from spills or leaks into the subsurface disposal systems and use of waste oil containing TCE as a defoliant.

   Studies at the Groveland Site have shown that TCE released at the Valley/GRC property has migrated into the aquifer below the property and has extended beyond the boundary of the property to other areas of the Groveland Site.

Response History

1. **Source Control Operable Unit** To remediate contamination within the boundary of the Valley/GRC property, the EPA issued a first Record of Decision (the "Source Control ROD") for the Groveland Site in September of 1988. The Source Control ROD required cleanup of the organic chemical contamination source at the Valley/GRC property and approved an innovative technology consisting of soil vapor vacuum extraction system ("VES") to treat VOC-contaminated soil. The ROD also approved the installation of a groundwater recovery, treatment and

reinjection system to treat VOC-contaminated groundwater located directly under the Valley/GRC property.

Pursuant to a Second Amended Administrative Order issued on March 11, 1992, under CERCLA § 106(a), Valley designed a full scale VES system and a groundwater recovery, treatment and reinjection system for use on its property. The EPA approved the Final (100%) Remedial Design submission on August 24, 1992. However, on October 8, 1992, Valley informed the EPA that they would no longer be able to comply with the Administrative Order. On November 2, 1992, the EPA issued a Notice of Failure to Comply with the Administrative Order.

During a site visit to the Valley/GRC property on December 17, 1992, Valley informed the EPA that all of the necessary soil vapor vacuum extraction wells and vapor probes had been installed in accordance with the approved 100% design, and that the VES system is presently operating continuously 24-hours a day. On January 20, 1993, the EPA issued a Second Notice of Failure to Comply with the Administrative Order for failure to submit monthly progress reports concerning the VES system's progress to date in terms of sampling, monitoring, and performance data; the amount of contaminants removed to date; and estimates of contaminants remaining in the soil. However, the EPA is assuming that the PRP will continue to address subsurface soil contamination until subsurface soil cleanup goals are achieved.

Because of non-compliance with the Administrative Order, further remedial design/remedial action activities related to groundwater remediation at the Valley Site is being accomplished by the EPA using Fund monies. The EPA has engaged a contractor to perform the remedial design work for the groundwater recovery and treatment system.

The Source Control ROD also required that all drains and lines to the Brite-dip subsurface disposal system be effectively sealed and disconnected. In a letter dated March 21, 1991, Valley/GRC certified to the EPA that all drains and lines to the Brite-dip surface disposal system had been sealed.

2. **MOM Operable Unit** In September 1991, the EPA signed a Record of Decision requiring cleanup of the groundwater contaminant plume and on May 15, 1992 the EPA issued an Administrative Order requiring the potentially responsible parties ("PRPs", i.e., Valley/GRC) to remediate the groundwater contamination.

On June 22, 1992 the PRPs responded that they would not be able to comply to the requirements of the Order and on August 19, 1992 the EPA issued a Notice of Failure to Comply with the Administrative Order. The EPA is now using

Superfund monies and has engaged Metcalf and Eddy to perform the remedial design work.

ESD for the Source Control Operable Unit ROD

Attached to this document is a summary of information on the Valley/GRC property. The information recently gathered on this property has given rise to the selection of a remedy which is significantly different from the remedy that was originally selected in the Source Control ROD, dated September 1988. The attached Source Control ESD discusses activities that were taken to obtain data for the aquifer beneath the Valley/GRC property in the vicinity of a proposed extraction system. The results of these studies show that there is not enough groundwater beneath the Valley/GRC property to effectively operate a separate treatment plant(as specified in the Source Control ROD).

Although there appears to be insufficient water to justify building a groundwater treatment facility on the Valley/GRC property, the EPA has decided to pursue extracting contaminated groundwater at this location. The extracted groundwater from the Valley/GRC property will be remediated as part of the Management of Migration Operable Unit, which is the subject of this particular ESD.

Summary Of The Remedy As Originally Described In The MOM ROD

The Record of Decision for the MOM Operable Unit, which was signed on September 30, 1991, describes each of the alternatives evaluated in remediating the groundwater contamination on the Site and describes in detail the remedial alternative chosen.

The remedial alternative chosen consists of a groundwater extraction well network which would be located to intercept the plume of contaminated groundwater flowing beyond the Valley/GRC property. The well extraction network would intercept the groundwater contaminant plume along its entire width and depth. The contaminated groundwater would be pumped to a water treatment plant to be located near the former municipal well Station No. 2. The water would initially be subjected to an inorganics treatment process. The filtered water would then be subjected to a process involving ultraviolet ("UV") light and oxidation to destroy TCE and other volatile organics. The treated groundwater would be discharged to Johnson Creek near Station No. 2.

100% Remedial Design Approval

By letter dated January 9, 1995 the EPA approved a submission from its remedial design contractor, of the 100% design plans for the groundwater extraction and treatment system at the Groveland site.

The major components of the remedy, as described in the approved final (100%) design plans, were as follows:

a. Install a groundwater extraction well network consisting of six (6) pairs of wells located throughout the contaminated plume area which would extract groundwater in both the overburden and bedrock;

b. Install extraction wells at the Valley/GRC facility;

c. Connect extraction wells at the Valley/GRC facility to the extraction well network, and also connect existing extraction wells from the air stripper located adjacent to Mill Pond;

d. Transport all contaminated groundwater via underground piping to a treatment facility located near the former municipal well, Station No. 2;

e. Discharge treated water to Johnson Creek.

Construction of the approved 100% remedial design for the remediation system was to begin in the Spring of 1995. However, due to budget constraints, remedial action for this site has yet to be funded.

III. DESCRIPTION OF SIGNIFICANT DIFFERENCES AND THE BASIS FOR THOSE DIFFERENCES

Summary Of The Information That Gave Rise To Significant Differences From The Selected Remedy As It Was Originally Specified

In March 1996, the EPA conducted sampling at 22 groundwater monitoring wells located throughout the groundwater contaminant plume area. Seven of these twenty-two wells were located north of Main Street. Six out of these seven wells, which had previously showed exceedences in the drinking water standard for trichloroethylene ("TCE") when they were sampled in 1990, were now showing TCE levels below the TCE drinking water standard. Also, reductions in the TCE level (when compared with the 1990 sampling results), were observed in some of the other wells that were sampled south of Main Street. However, other groundwater monitoring wells in the Mill Pond area, and hence closer to the source of the TCE contamination, have shown virtually no significant change in TCE concentrations over the many years that they have been sampled.

It appears that the reduced TCE levels in some areas of the contaminant plume may be due to: (1) the operation of the Mill Pond Intercept System; and (2) natural attenuation.

Mill Pond Intercept System

The Commonwealth of Massachusetts has required Valley/GRC to construct and operate a groundwater extraction and air stripping treatment system to intercept and treat the VOC plume at Mill Pond. The system is currently in place and operating at the north end of Mill Pond. It consists of two extraction wells, G-1 and G-2, pumping at an aggregate rate of about 80 gpm currently, and an air stripping unit used for removal of VOCs from the pumped water. This system has been operating since April 1988.

Natural Attenuation

Natural attenuation is the product of all the various biotic and abiotic processes that act to reduce concentrations of various inorganic and organic compounds (including hazardous contaminants) without man-made intervention or assistance. Biotic processes include naturally occurring micro-organisms which degrade compounds without the artificial addition of nutrients or other amendments. Abiotic processes include dilution, dispersion, adsorption and diffusion to reduce chemical concentrations naturally. To some degree these processes are always at work, but in portions of the Groveland site, these natural processes provide a sufficient degree of contaminant remediation such that additional engineering actions are not warranted.

Change in Technology

Declines in TCE-contaminant levels in some of the wells sampled has caused the EPA to consider reducing the amount of groundwater that will need to be extracted and treated. The EPA has decided to re-design the extraction system and to treat the more highly contaminated portion of the groundwater contaminant plume located at Mill Pond and south of Mill Pond. The remainder of the groundwater contaminant plume will be remediated by natural attenuation.

Natural attenuation is a recognized remedy for groundwater remediation and has been used at other Superfund sites along with active remedial measures, i.e., measures to address the treatment of higher concentrated areas of groundwater contaminant plumes. It can be used to attain the required groundwater cleanup standards provided that the remediation occurs within a reasonable timeframe, i.e., a timeframe comparable to that of active remediation.

The Feasibility Study ("FS"), which was used to examine the remedial alternatives for the MOM ROD, states that pumping and treating of groundwater from the entire contaminant plume area would achieve cleanup standards in approximately 30 years. For comparison, the FS estimated that 50 years would be required to achieve the cleanup goals through natural flushing of the aquifer. If natural flushing were to be supplemented by natural

attenuation, then the remediation timeframe would more closely approximate the pump-and-treat scenario.

Natural attenuation is not a "default option" or a "walk-away" approach to groundwater remediation; it is a managed remediation approach. As stated in the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"), "the selection of natural attenuation by the EPA does not mean that ground water has been written off and not cleaned up but rather that biodegredation, dispersion, dilution, and adsorption will effectively reduce contaminants in the ground water to concentrations protective of human health in a timeframe comparable to that which could be achieved through active restoration" (Page 8734).

The use of natural attenuation is consistent with the Groveland ROD. For example, the ROD states that modifications (including discontinuation) can be made to the pump-and-treat system at locations "where cleanup levels have been achieved" (Page 43). As mentioned above, most of the previously TCE-contaminated area north of Main Street appears to have achieved TCE-cleanup levels, and thus modifications to the pump-and-treat system can be made at this location.

Also, one of the evaluation criteria of the NCP that is mentioned in the Groveland ROD, includes reducing the mobility or toxicity through treatment. The effect of the Mill Pond Intercept System combined with natural attenuation appears to have reduced the mobility of the TCE-contaminant plume. The groundwater extraction wells, G1 and G2, which are part of Mill Pond Intercept System, will continue to be operated under the newly proposed system (see description of revised extraction system below).

At the Groveland site, additional groundwater monitoring will be developed and implemented as part of the remedy to evaluate migration of the contaminant plume, the progress of natural attenuation, and the success of the remedy. If natural attenuation fails to meet the desired goals within a reasonable timeframe, then other measures may be necessary, including the implementation of additional wells to extract and treat the groundwater.

Following implementation of the groundwater monitoring program, the program may be re-evaluated and sampling frequencies and location of monitoring wells may change. Additional wells may be installed or eliminated from the monitoring program if necessary. Groundwater monitoring will continue until such time as the EPA determines that chemical specific applicable or relevant and appropriate requirements ("ARARs") and groundwater cleanup levels established in the MOM ROD have been met.

Considering the new information that has been developed and the changes that have been made to the selected remedy, the EPA and the MA DEP believe that the remedy remains protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate to this remedial action, and is cost-effective. In addition, the revised remedy utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable for this site.

Also, the imposition of institutional controls is specified in the MOM ROD. Imposition of these controls is designed to prohibit the use of groundwater in the contaminated area until groundwater cleanup levels have been achieved. Such controls could include, for example, deed restrictions prohibiting installation of private wells in the contaminated plume. The institutional controls would be implemented to minimize future risks associated with the potential direct use of contaminated groundwater.

Change in Number of Extraction Wells, Flow, Location of Treatment Plant and Effluent Discharge

Extraction Wells As approved in the 100% design plans, the following wells will be retained as part of the groundwater extraction system. Some of the wells presently exist, and some wells are proposed to be constructed:

Wells Adjacent to the Valley Facility
EW - S1 (proposed)
EW - S2 (existing)
EW - S3 (proposed)

Wells Adjacent to Mill Pond
G1 (existing)
G2 (existing)
EW - M1 (proposed)

All other proposed extraction wells north of Mill Pond will not be constructed.

Flow The approved 100% design plans assumed that the maximum flow rate from the extraction well system would be 410 gpm. However, the total flow rate for the wells that will still be retained under the re-design (i.e., EW-S1, EW-S2 EW-S3; G1, G2; and EW-M1) is approximately 145 gpm. This represents an approximate 65% reduction in the amount of groundwater that will need to be treated.

Location The 1991 MOM ROD and 100% remedial design documents show the location of the groundwater treatment plant to be near municipal Well Station No.2 on property presently owned by Bardon-Trimount, Inc. However, the EPA has decided to locate the treatment plant closer to the location of the groundwater extraction wells and closer to the source of the groundwater contamination.

The Archdiocese of Boston owns property adjacent to the Valley Manufactured Products Company on Washington Street. The EPA is presently negotiating with the Archdiocese to locate the treatment plant on their property. This location should not be as visible from Washington Street as say, a location near the Mill Pond. Equally important is the fact that the elevation of the Archdiocese property is above the 100-year floodplain. Both the originally proposed site near the municipal well Station No. 2, and the Mill Pond site, are within the 100-year floodplain and would involve elevating the base of the treatment plant and the construction of compensatory flood storage.

Effluent Discharge The discharge point for the treated effluent will be re-located from near the municipal well Station No. 2, to a location upstream from the Mill Pond. However, this should not pose any water quality problems since the clean, treated water will be required to meet surface water discharge limits into Johnson Creek.

IV. SUPPORTING AGENCY COMMENTS

The Massachusetts Department of Environmental Protection ("MA DEP") believes that natural attenuation has the potential to remediate the groundwater contamination in a portion of the contaminant plume at the Groveland site. MA DEP encourages the combining of natural attenuation with active remedial measures, i.e., measures to address the treatment of higher concentrated areas of groundwater contaminant plumes. A final determination from the MA DEP, which concurs with the remedial activities outlined in this ESD, is found in the Administrative Record File.

V. AFFIRMATION OF THE STATUTORY REQUIREMENTS

Considering the new information that has been developed and the change that has been made to the selected remedy, the EPA and MA DEP believe that the remedy remains consistent with the requirements of the ROD in that it remains cost effective and mitigates and minimizes damage to and provides adequate protection of public health, welfare, or the environment.

VI. PUBLIC PARTICIPATION ACTIVITIES

Notice That Administrative Record Is Available For Review

In addition to the public information meeting which was held on August 13, 1996, the proposed ESD and this final ESD, accompanied by any supporting information and analysis, is available for public review and can be found in the Administrative Record File. See Section I of this ESD for the addresses of the locations where this ESD is kept and maintained.

By: Paula Lynn Fitzsimmons for 11/15/96

Linda M. Murphy, Director
Office of Site Remediation and Restoration

Date of Issuance