

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF CONNECTICUT

BARNHARTSTED
10.8
#35440

UNITED STATES OF AMERICA
and STATE OF CONNECTICUT

Plaintiffs,

v.

Regional Refuse Disposal District
No. 1., et. al.

Defendants.

CIVIL ACTION NO. _____

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I. BACKGROUND

A. The United States of America (“United States”), on behalf of the Administrator of the United States Environmental Protection Agency (“EPA”), and the State of Connecticut (“State”) filed a complaint in this matter pursuant to Sections 106 and 107 of the Comprehensive Environmental Response, Compensation, and Liability Act (“CERCLA”), 42 U.S.C. §§ 9606, 9607.

B. The United States and the State in their complaints seek, inter alia: (1) reimbursement of costs incurred by EPA, the Department of Justice and the State for response actions at the Barkhamsted-New Hartford Landfill Superfund Site (“Site”) in the Towns of Barkhamsted and New Hartford, Litchfield County, Connecticut, together with accrued interest; and (2) performance of studies and response work by the defendants at the Site consistent with the National Contingency Plan, 40 C.F.R. Part 300 (as amended) (“NCP”).

C. In accordance with the NCP and Section 121(f)(1)(F) of CERCLA, 42 U.S.C. § 9621(f)(1)(F), EPA notified the State of Connecticut (the “State”) on November 20, 2001 of negotiations with potentially responsible parties regarding the implementation of the remedial design and remedial action for the Site, and EPA has provided the State with an opportunity to participate in such negotiations and be a party to this Consent Decree.

D. The State of Connecticut (the “State”) has also filed a complaint against the defendants in this Court alleging that the defendants are liable to the State under Section 107 of CERCLA, 42 U.S.C. § 9607, and Conn. Gen. Stat. §§22a-133g and 22a-451, seeking, inter alia: 1) reimbursement of costs incurred and to be incurred by the State for response actions with regard to the Site, together with accrued interest; and 2) performance of studies and response work by the defendants at the Site. The State’s action has been consolidated with the action of the United States.

E. In accordance with Section 122(j)(1) of CERCLA, 42 U.S.C. § 9622(j)(1), EPA notified the U.S. National Oceanic and Atmospheric Administration and the Department of Interior on November 20, 2001 of negotiations with potentially responsible parties regarding the release of hazardous substances that may have resulted in injury to the natural resources under Federal trusteeship and encouraged the trustee(s) to participate in the negotiation of this Consent Decree.

F. The defendants that have entered into this Consent Decree (“Performing Settling Defendant and Contributing Settling Defendants” collectively the “Settling Defendants”) do not admit any liability to the Plaintiffs arising out of the transactions or occurrences alleged in the complaints, nor do they acknowledge that the release or threatened release of hazardous substance(s) at or from the Site constitutes an imminent or substantial endangerment to the public health or welfare or the environment.

G. Pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, EPA placed the Site on the National Priorities List, set forth at 40 C.F.R. Part 300, Appendix E, by publication in the Federal Register on October 4, 1989, 54 Fed. Reg. 41015.

H. In response to a release or a substantial threat of a release of a hazardous substance(s) at or from the Site, the Settling Parties (“Settling Parties”) listed in Administrative Order by Consent, U.S. EPA Docket No. I-91-1128, (“1991 AOC”), conducted a Remedial

Investigation and Feasibility Study (“RI/FS”) for the Site pursuant to 40 C.F.R. § 300.430.

I. The Settling Parties completed a Remedial Investigation (“RI”) Report on February 20, 1996, and the Settling Parties completed a Feasibility Study (“FS”) Report on June 19, 2001.

J. Pursuant to Section 117 of CERCLA, 42 U.S.C. § 9617, EPA published notice of the completion of the FS and of the proposed plan for remedial action on June 21, 2001, in a major local newspaper of general circulation. EPA provided an opportunity for written and oral comments from the public on the proposed plan for remedial action. A copy of the transcript of the public meeting is available to the public as part of the administrative record upon which the designee of the Regional Administrator based the selection of the response action.

K. The decision by EPA on the remedial action to be implemented at the Site is embodied in a final Record of Decision (“ROD”), executed on September 28, 2001, on which the State has given its concurrence following its review and comment. The ROD includes a responsiveness summary to the public comments. Notice of the final plan was published in accordance with Section 117(b) of CERCLA.

L. Based on the information presently available to EPA and the State, EPA and the State believe that the Work will be properly and promptly conducted by the Settling Defendants if conducted in accordance with the requirements of this Consent Decree and its appendices.

M. Solely for the purposes of Section 113(j) of CERCLA, the Remedial Action selected by the ROD and the Work to be performed by the Performing Settling Defendant shall constitute a response action taken or ordered by the President.

N. The Parties recognize, and the Court by entering this Consent Decree finds, that this Consent Decree has been negotiated by the Parties in good faith and implementation of this Consent Decree will expedite the cleanup of the Site and will avoid prolonged and complicated litigation between the Parties, and that this Consent Decree is fair, reasonable, and in the public interest.

NOW, THEREFORE, it is hereby Ordered, Adjudged, and Decreed:

II. JURISDICTION

1. This Court has jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§ 1331 and 1345, and 42 U.S.C. §§ 9606, 9607, and 9613(b). This Court also has personal jurisdiction over the Settling Defendants. Solely for the purposes of this Consent Decree and the underlying complaints, Settling Defendants waive all objections and defenses that they may have to jurisdiction of the Court or to venue in this District. Settling Defendants shall not challenge the terms of this Consent Decree or this Court's jurisdiction to enter and enforce this Consent Decree.

III. PARTIES BOUND

2. This Consent Decree applies to and is binding upon the United States and the State and upon Settling Defendants and their heirs, successors and assigns. Any change in ownership or corporate status of a Settling Defendant including, but not limited to, any transfer of assets or real or personal property, shall in no way alter such Settling Defendant's responsibilities under this Consent Decree.

3. Performing Settling Defendant shall provide a copy of this Consent Decree to each contractor hired to perform the Work (as defined below) required by this Consent Decree and to each person representing Performing Settling Defendant with respect to the Site or the Work and shall condition all contracts entered into hereunder upon performance of the Work in conformity with the terms of this Consent Decree. Performing Settling Defendant or its contractors shall provide written notice of the Consent Decree to all subcontractors hired to perform any portion of the Work required by this Consent Decree. Performing Settling Defendant shall nonetheless be responsible for ensuring that its contractors and subcontractors perform the Work contemplated herein in accordance with this Consent Decree. With regard to the activities undertaken pursuant to this Consent Decree, each contractor and subcontractor shall be deemed to be in a contractual relationship with the Performing Settling Defendant within the meaning of Section 107(b)(3) of CERCLA, 42 U.S.C. § 9607(b)(3).

IV. DEFINITIONS

4. Unless otherwise expressly provided herein, terms used in this Consent Decree which are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Consent Decree or in the appendices attached hereto and incorporated hereunder, the following definitions shall apply:

“Barkhamsted-New Hartford Landfill Superfund Site Special Account” shall mean the special account established at the Site by EPA pursuant to Section 122(b)(3) of CERCLA, 42 U.S.C. §9622(b)(3).

“CERCLA” shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601 *et seq.*

“CTDEP” shall mean the Connecticut Department of Environmental Protection and any successor departments or agencies of the State.

“Consent Decree” shall mean this Decree and all appendices attached hereto (listed in Section XXIX). In the event of conflict between this Decree and any appendix, this Decree shall control.

“Contributing Settling Defendants” shall mean the corporations, individuals or other legal entities listed on Appendix D to this Consent Decree who have signed this Consent Decree and who have agreed to provide a part of the funding required for Performing Settling Defendant to meet its obligations under this Consent Decree.

“Day” shall mean a calendar day unless expressly stated to be a working day. “Working day” shall mean a day other than a Saturday, Sunday, or Federal holiday. In computing any period of time under this Consent Decree, where the last day would fall on a Saturday, Sunday, or Federal holiday, the period shall run until the close of business of the next working day.

“Effective Date” shall be the effective date of this Consent Decree as provided in Paragraph 107.

“EPA” shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States.

“Future Response Costs” shall mean all costs paid by the United States or the State after

the Effective Date, including, but not limited to, direct and indirect costs, that the United States or the State incurs in reviewing or developing plans, reports and other items pursuant to this Consent Decree, verifying the Work, or otherwise implementing, overseeing, or enforcing this Consent Decree, including, but not limited to, payroll costs, contractor costs, travel costs, laboratory costs, the costs incurred pursuant to Sections VII, IX (including, but not limited to, the cost of attorney time and any monies paid to secure access and/or to secure or implement institutional controls including, but not limited to, the amount of just compensation), XV, and Paragraph 89 of Section XXI. Future Response Costs shall also include all Interim Response Costs, and all Interest on the Past Response Costs that has accrued pursuant to 42 U.S.C. § 9607(a) during the period from February 28, 2002 to the date of entry of this Consent Decree.

“Interim Response Costs” shall mean all costs, including direct and indirect costs, (a) paid by the United States or the State in connection with the Site between February 28, 2002 and the Effective Date, or incurred by the United States or the State between February 28, 2002 and the Effective Date but paid after that date.

“Interest” shall mean interest at the rate specified for interest on investments of the EPA Hazardous Substance Superfund established by 26 U.S.C. § 9507, compounded annually on October 1 of each year, in accordance with 42 U.S.C. § 9607(a). The applicable rate of interest shall be the rate in effect at the time the interest accrues. The rate of interest is subject to change on October 1 of each year.

“National Contingency Plan” or “NCP” shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.

“Operation and Maintenance” or “O & M” shall mean all activities required to maintain the effectiveness of the Remedial Action as required under the Operation and Maintenance Plan approved or developed by EPA pursuant to this Consent Decree and the Statement of Work (“SOW”).

“Paragraph” shall mean a portion of this Consent Decree identified by an arabic numeral or an upper case letter.

“Parties” shall mean the United States, the State of Connecticut and the Settling Defendants.

“Past Response Costs” shall mean all costs, not previously reimbursed to the United States or the State by Settling Parties pursuant to the 1991 AOC, the claim for which is not barred by any applicable statute of limitations for such claims, including, but not limited to, direct and indirect costs, that the United States or the State paid at or in connection with the Site after March 21, 1991 through February 28, 2002, plus Interest on all such costs which has accrued pursuant to 42 U.S.C. § 9607(a) through such date.

“Performance Standards” shall mean the cleanup standards and other measures of achievement of the goals of the Remedial Action, set forth in Section L of the ROD and Section IV of the SOW.

“Performing Settling Defendant” shall mean the Regional Refuse Disposal District No. 1 (“RRDD #1”) which is now and has been the Site owner and operator since the inception of operations at the Site. The Performing Settling Defendant shall be responsible for performing all

the Work required by this Consent Decree and for the payment of all sums due pursuant to the terms of the Consent Decree, with funding contributed by the Contributing Settling Defendants.

“Plaintiffs” shall mean the United States and the State of Connecticut.

“RCRA” shall mean the Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901 et seq. (also known as the Resource Conservation and Recovery Act).

“Record of Decision” or “ROD” shall mean the EPA Record of Decision relating to the Site signed on September 28, 2001, by the Regional Administrator, EPA Region 1, or his/her delegate, and all attachments thereto. The ROD is attached as Appendix A.

“Remedial Action” shall mean those activities, except for Operation and Maintenance, to be undertaken by the Performing Settling Defendant to implement the ROD, in accordance with the SOW and the final Remedial Design and Remedial Action Work Plans and other plans approved by EPA.

“Remedial Action Work Plan” shall mean the document developed pursuant to Paragraph 11 of this Consent Decree and approved by EPA, and any amendments thereto.

“Remedial Design” shall mean those activities to be undertaken by the Performing Settling Defendant to develop the final plans and specifications for the Remedial Action pursuant to the Remedial Design Work Plan.

“Remedial Design Work Plan” shall mean the document developed pursuant to Paragraph 10.c of this Consent Decree and approved by EPA, and any amendments thereto.

“Section” shall mean a portion of this Consent Decree identified by a roman numeral.

“Settling Defendants” shall mean Performing Settling Defendant and Contributing Settling Defendants.

“Site” shall mean the Barkhamsted-New Hartford Landfill Superfund Site, which is on a 97.84 acre parcel of land located adjacent to and southwest of Route 44 in a rural/residential area in the towns of Barkhamsted and New Hartford, Litchfield County, Connecticut and depicted generally on the map attached as Appendix C.

“State” shall mean the State of Connecticut.

“Statement of Work” or “SOW” shall mean the statement of work for implementation of the Remedial Design, Remedial Action, and Operation and Maintenance at the Site, as set forth in Appendix B to this Consent Decree and any modifications made in accordance with this Consent Decree.

“Supervising Contractor” shall mean the principal contractor retained by the Performing Settling Defendant to supervise and direct the implementation of the Work under this Consent Decree.

“United States” shall mean the United States of America.

“Waste Material” shall mean (1) any “hazardous substance” under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); (2) any pollutant or contaminant under Section 101(33), 42 U.S.C. § 9601(33); (3) any “solid waste” under Section 1004(27) of RCRA, 42 U.S.C. § 6903(27); and (4) any “hazardous waste” under Section 22a-115 of the Connecticut General

Statutes, CGS § 22a-115.

“Work” shall mean all activities Performing Settling Defendant is required to perform under this Consent Decree, except those required by Section XXV (Retention of Records).

V. GENERAL PROVISIONS

5. Objectives of the Parties. The objectives of the Parties in entering into this Consent Decree are to protect public health or welfare or the environment at the Site by the design and implementation of response actions at the Site by the Performing Settling Defendant, to reimburse response costs of the Plaintiffs, and to resolve the claims of Plaintiffs against Settling Defendants as provided in this Consent Decree.

6. Commitments by Settling Defendants.

a. Settling Defendants (Performing Settling Defendant and Contributing Settling Defendants) shall provide financing for, and Performing Settling Defendant shall perform, the Work in accordance with this Consent Decree, the ROD, the SOW, and all work plans and other plans, standards, specifications, and schedules set forth herein or developed by Performing Settling Defendant and approved by EPA pursuant to this Consent Decree. Performing Settling Defendant shall also reimburse the United States and the State for Past Response Costs, Interim Response Costs and Future Response Costs as provided in this Consent Decree.

b. The obligations of Settling Defendants to finance and perform the Work and to pay amounts owed the United States and the State under this Consent Decree are joint and several. In the event of the insolvency or other failure of Performing Settling Defendant to implement the requirements of this Consent Decree, the Contributing Settling Defendants shall complete all such requirements.

7. Compliance With Applicable Law. All activities undertaken by Settling Defendants pursuant to this Consent Decree shall be performed in accordance with the requirements of all applicable federal and state laws and regulations. Performing Settling Defendant, in performing Work under this Consent Decree, must also comply with all applicable or relevant and appropriate requirements of all Federal and state environmental laws as set forth in the ROD and the SOW. The activities conducted pursuant to this Consent Decree, if approved by EPA, shall be considered to be consistent with the NCP.

8. Permits.

a. As provided in Section 121(e) of CERCLA and Section 300.400(e) of the NCP, no permit shall be required for any portion of the Work conducted entirely on-site (i.e., within the areal extent of contamination or in very close proximity to the contamination and necessary for implementation of the Work). Where any portion of the Work that is not on-site requires a federal or state permit or approval, Performing Settling Defendant shall submit timely and complete applications and take all other actions necessary to obtain all such permits or approvals.

b. The Performing Settling Defendant may seek relief under the provisions of Section XVIII (Force Majeure) of this Consent Decree for any delay in the performance of the Work resulting from a failure to obtain, or a delay in obtaining, any permit required for the Work.

c. This Consent Decree is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.

9. Notice to Successors-in-Title.

a. With respect to any property owned or controlled by the Performing Settling Defendant that is located within the Site, within 30 days after the entry of this Consent Decree, the Performing Settling Defendant shall submit to EPA for review and approval a notice to be filed with the Recorder's Office or Registry of Deeds or other appropriate office, Litchfield County, State of Connecticut, which shall provide notice to all successors-in-title that the property is part of the Site, that EPA selected a remedy for the Site on September 28, 2001, and that potentially responsible parties have entered into a Consent Decree requiring implementation of the remedy. Such notice(s) shall identify the United States District Court in which the Consent Decree was filed, the name and civil action number of this case, and the date the Consent Decree was entered by the Court. The Performing Settling Defendant shall record the notice(s) within 10 days of EPA's approval of the notice(s). The Performing Settling Defendant shall provide EPA with a certified copy of the recorded notice(s) within 10 days of recording such notice(s).

b. At least 30 days prior to the conveyance of any interest in property located within the Site including, but not limited to, fee interests, leasehold interests, and mortgage interests, the Performing Settling Defendant shall give the grantee written notice of (i) this Consent Decree, (ii) any instrument by which an interest in real property has been conveyed that confers a right of access to the Site (hereinafter referred to as "access easements") pursuant to Section IX (Access and Institutional Controls), and (iii) any instrument by which an interest in real property has been conveyed that confers a right to enforce restrictions on the use of such property (hereinafter referred to as "restrictive easements") pursuant to Section IX (Access and Institutional Controls). At least 30 days prior to such conveyance, the Performing Settling Defendant conveying the interest shall also give written notice to EPA and the State of the proposed conveyance, including the name and address of the grantee, and the date on which notice of the Consent Decree, access easements, and/or restrictive easements was given to the grantee.

c. In the event of any such conveyance, the Performing Settling Defendant's obligations under this Consent Decree, including, but not limited to, its obligation to provide or secure access and institutional controls, as well as to abide by such institutional controls, pursuant to Section IX (Access and Institutional Controls) of this Consent Decree, shall continue to be met by the Performing Settling Defendant. In no event shall the conveyance release or otherwise affect the liability of the Performing Settling Defendant to comply with all provisions of this Consent Decree, absent the prior written consent of EPA. If the United States approves, the grantee may perform some or all of the Work under this Consent Decree.

VI. PERFORMANCE OF THE WORK BY PERFORMING SETTLING DEFENDANT

10. Selection of Supervising Contractor.

a. All aspects of the Work to be performed by Performing Settling Defendant pursuant to Sections VI (Performance of the Work by Performing Settling Defendant), VII (Remedy Review), VIII (Quality Assurance, Sampling and Data Analysis), and XV (Emergency Response) of this Consent Decree shall be under the direction and supervision of the Supervising

Contractor, the selection of which shall be subject to disapproval by EPA after a reasonable opportunity for review and comment by the State. Within 45 days after the lodging of this Consent Decree, Performing Settling Defendant shall notify EPA and the State in writing of the name, title, and qualifications of any contractor proposed to be the Supervising Contractor. With respect to any contractor proposed to be Supervising Contractor, Performing Settling Defendant shall demonstrate that the proposed contractor has a quality system that complies with ANSI/ASQC E4-1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs," (American National Standard, January 5, 1995), by submitting a copy of the proposed contractor's Quality Management Plan ("QMP"). The QMP should be prepared in accordance with "EPA Requirements for Quality Management Plans (QA/R-2)" (EPA/240/B-01/002, March 2001) or equivalent documentation as determined by EPA. EPA will issue a notice of disapproval or an authorization to proceed. If at any time thereafter, Performing Settling Defendant proposes to change a Supervising Contractor, Performing Settling Defendant shall give such notice to EPA and the State and must obtain an authorization to proceed from EPA, after a reasonable opportunity for review and comment by the State, before the new Supervising Contractor performs, directs, or supervises any Work under this Consent Decree.

b. If EPA disapproves a proposed Supervising Contractor, EPA will notify Performing Settling Defendant in writing stating the basis for disapproval. Performing Settling Defendant shall submit to EPA and the State a list of contractors, including the qualifications of each contractor, that would be acceptable to them within 45 days of receipt of EPA's disapproval of the contractor previously proposed. EPA will provide written notice of the names of any contractor(s) that it disapproves, the reasons for disapproval and an authorization to proceed with respect to any of the other contractors. Performing Settling Defendant may select any contractor from that list that is not disapproved and shall notify EPA and the State of the name of the contractor selected within 30 days of EPA's authorization to proceed.

c. If EPA fails to provide written notice of its authorization to proceed or disapproval as provided in this Paragraph and this failure prevents the Performing Settling Defendant from meeting one or more deadlines in a plan approved by the EPA pursuant to this Consent Decree, Performing Settling Defendant may seek relief under the provisions of Section XVIII (Force Majeure) hereof.

11. Remedial Action.

a. Within 45 days after EPA's issuance of an authorization to proceed pursuant to Paragraph 10, Performing Settling Defendant shall submit to EPA and the State, a work plan for the performance of the Remedial Action at the Site ("Remedial Action Work Plan"). The Remedial Action Work Plan shall provide for achievement of the Performance Standards, in accordance with this Consent Decree, the ROD, and the SOW. Upon its approval by EPA, the Remedial Action Work Plan shall be incorporated into and become enforceable under this Consent Decree.

b. The Remedial Action Work Plan, which is required in the SOW, shall include the following: (1) the schedule for completion of the Remedial Action; and (2) schedule for developing and submitting the required Remedial Action plans as specified in Section V.A. of the SOW.

c. Upon approval of the Remedial Action Work Plan by EPA, after a

reasonable opportunity for review and comment by the State, Performing Settling Defendant shall implement the activities required under the Remedial Action Work Plan. The Performing Settling Defendant shall submit to EPA and the State all plans, submittals, or other deliverables required under the approved Remedial Action Work Plan in accordance with the approved schedule for review and approval pursuant to Section XI (EPA Approval of Plans and Other Submissions). Unless otherwise directed by EPA, Performing Settling Defendant shall not commence physical Remedial Action activities at the Site prior to approval of the Remedial Action Work Plan.

12. The Performing Settling Defendant shall continue to implement the Remedial Action and O&M until the Performance Standards are achieved and for so long thereafter as is otherwise required under this Consent Decree.

13. Modification of the SOW or Related Work Plans.

a. If EPA determines that modification to the work specified in the SOW and/or in work plans developed pursuant to the SOW is necessary to achieve and maintain the Performance Standards or to carry out and maintain the effectiveness of the remedy set forth in the ROD, EPA may require that such modification be incorporated in the SOW and/or such work plans. Provided, however, that a modification may only be required pursuant to this Paragraph to the extent that it is consistent with the scope of the remedy selected in the ROD.

b. For the purposes of this Paragraph 13 and Paragraph 49 only, the "scope of the remedy selected in the ROD" is: restoration of contaminated groundwater by monitored natural attenuation.

c. If Performing Settling Defendant objects to any modification determined by EPA to be necessary pursuant to this Paragraph, it may seek dispute resolution pursuant to Section XIX (Dispute Resolution), Paragraph 66 (record review). The SOW and/or related work plans shall be modified in accordance with final resolution of the dispute.

d. Performing Settling Defendant shall implement any work required by any modifications incorporated in the SOW and/or in work plans developed pursuant to the SOW in accordance with this Paragraph.

e. Nothing in this Paragraph shall be construed to limit EPA's authority to require performance of further response actions as otherwise provided in this Consent Decree.

14. Performing Settling Defendant acknowledges and agrees that nothing in this Consent Decree, the SOW, or Remedial Action Work Plans constitutes a warranty or representation of any kind by Plaintiffs that compliance with the work requirements set forth in the SOW and the Work Plans will achieve the Performance Standards.

15. a. Performing Settling Defendant shall, prior to any off-Site shipment of Waste Material from the Site to an out-of-state waste management facility, provide written notification to the appropriate state environmental official in the receiving facility's state and to the EPA Project Coordinator of such shipment of Waste Material. However, this notification requirement shall not apply to any off-Site shipments when the total volume of all such shipments will not exceed 10 cubic yards.

(1) The Performing Settling Defendant shall include in the written notification the following information, where available: (1) the name and location of the facility to which the

Waste Material is to be shipped; (2) the type and quantity of the Waste Material to be shipped; (3) the expected schedule for the shipment of the Waste Material; and (4) the method of transportation. The Performing Settling Defendant shall notify the state in which the planned receiving facility is located of major changes in the shipment plan, such as a decision to ship the Waste Material to another facility within the same state, or to a facility in another state.

(2) The identity of the receiving facility and state will be determined by the Performing Settling Defendant following the award of the contract for Remedial Action construction. The Performing Settling Defendant shall provide the information required by Paragraph 15 as soon as practicable after the award of the contract and before the Waste Material is actually shipped.

b. Before shipping any hazardous substances, pollutants, or contaminants from the Site to an off-site location, Performing Settling Defendant shall obtain EPA's certification that the proposed receiving facility is operating in compliance with the requirements of CERCLA Section 121(d)(3) and 40 C.F.R. 300.440. Performing Settling Defendant shall only send hazardous substances, pollutants, or contaminants from the Site to an off-site facility that complies with the requirements of the statutory provision and regulations cited in the preceding sentence.

VII. REMEDY REVIEW

16. Periodic Review. Performing Settling Defendant shall conduct any studies and investigations as requested by EPA, in order to permit EPA to conduct reviews of whether the Remedial Action is protective of human health and the environment at least every five years as required by Section 121(c) of CERCLA and any applicable regulations.

17. EPA Selection of Further Response Actions. If EPA determines, at any time, that the Remedial Action is not protective of human health and the environment, EPA may select further response actions for the Site in accordance with the requirements of CERCLA and the NCP.

18. Opportunity To Comment. Settling Defendants and, if required by Sections 113(k)(2) or 117 of CERCLA, the public, will be provided with an opportunity to comment on any further response actions proposed by EPA as a result of the review conducted pursuant to Section 121(c) of CERCLA and to submit written comments for the record during the comment period.

19. Settling Defendants' Obligation To Perform Further Response Actions. If EPA selects further response actions for the Site, the Settling Defendants shall undertake such further response actions to the extent that the reopener conditions in Paragraph 83 or Paragraph 84 (United States' reservations of liability based on unknown conditions or new information) are satisfied. Settling Defendants may invoke the procedures set forth in Section XIX (Dispute Resolution) to dispute (1) EPA's determination that the reopener conditions of Paragraph 83 or Paragraph 84 of Section XXI (Covenants Not To Sue by Plaintiffs) are satisfied, (2) EPA's determination that the Remedial Action is not protective of human health and the environment, or (3) EPA's selection of the further response actions. Disputes pertaining to whether the Remedial Action is protective or to EPA's selection of further response actions shall be resolved pursuant to Paragraph 66 (record review).

20. Submissions of Plans. If Performing Settling Defendant is required to perform the

further response actions pursuant to Paragraph 19, it shall submit a plan for such work to EPA for approval in accordance with the procedures set forth in Section VI (Performance of the Work by Settling Defendants) and shall implement the plan approved by EPA in accordance with the provisions of this Decree.

VIII. QUALITY ASSURANCE, SAMPLING, AND DATA ANALYSIS

21. Performing Settling Defendant shall use quality assurance, quality control, and chain of custody procedures for all treatability, design, compliance and monitoring samples in accordance with "EPA Requirements for Quality Assurance Project Plans (QA/R5)" (EPA/240/B-01/003, March 2001) "Guidance for Quality Assurance Project Plans (QA/G-5)" (EPA/600/R-98/018, February 1998), and subsequent amendments to such guidelines upon notification by EPA to Performing Settling Defendant of such amendment. Amended guidelines shall apply only to procedures conducted after such notification. Prior to the commencement of any monitoring project under this Consent Decree, Performing Settling Defendant shall submit to EPA for approval, after a reasonable opportunity for review and comment by the State, a Quality Assurance Project Plan ("QAPP") that is consistent with the SOW, the NCP and applicable guidance documents. If relevant to the proceeding, the Parties agree that validated sampling data generated in accordance with the QAPP(s) and reviewed and approved by EPA shall be admissible as evidence, without objection, in any proceeding under this Decree. Settling Defendants shall ensure that EPA and State personnel and their authorized representatives are allowed access at reasonable times to all laboratories utilized by Performing Settling Defendant in implementing this Consent Decree. In addition, Performing Settling Defendant shall ensure that such laboratories shall analyze all samples submitted by EPA pursuant to the QAPP for quality assurance monitoring. Performing Settling Defendant shall ensure that the laboratories it utilizes for the analysis of samples taken pursuant to this Decree perform all analyses according to accepted EPA methods. Accepted EPA methods consist of those methods which are documented in the "Contract Lab Program Statement of Work for Inorganic Analysis" and the "Contract Lab Program Statement of Work for Organic Analysis," dated February 1988, and any amendments made thereto during the course of the implementation of this Decree; however, upon approval by EPA, after opportunity for review and comment by the State, the Performing Settling Defendant may use other analytical methods which are as stringent as or more stringent than the CLP- approved methods, including analytical method SW-846. Performing Settling Defendant shall ensure that all laboratories it uses for analysis of samples taken pursuant to this Consent Decree participate in an EPA or EPA-equivalent QA/QC program. Performing Settling Defendant shall only use laboratories that have a documented Quality System which complies with ANSI/ASQC E4-1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs," (American National Standard, January 5, 1995), and "EPA Requirements for Quality Management Plans (QA/R-2)," (EPA/240/B-01/002, March 2001) or equivalent documentation as determined by EPA. EPA may consider laboratories accredited under the National Environmental Laboratory Accreditation Program (NELAP) as meeting the Quality System requirements. Performing Settling Defendant shall ensure that all field methodologies utilized in collecting samples for subsequent analysis pursuant to this Decree will be conducted in accordance with the procedures set forth in the QAPP approved by EPA.

22. Upon request, the Performing Settling Defendant shall allow split or duplicate samples to be taken by EPA and the State or their authorized representatives. Performing

Settling Defendant shall notify EPA and the State not less than 14 days in advance of any sample collection activity unless shorter notice is agreed to by EPA. In addition, EPA and the State shall have the right to take any additional samples that EPA or the State deem necessary. Upon request, EPA and the State shall allow the Settling Defendants to take split or duplicate samples of any samples they take as part of the Plaintiffs' oversight of the Performing Settling Defendant's implementation of the Work.

23. Performing Settling Defendant shall submit to EPA and the State three (3) copies of the results of all sampling and/or tests or other data obtained or generated by or on behalf of Performing Settling Defendant with respect to the Site and/or the implementation of this Consent Decree unless EPA agrees otherwise.

24. Notwithstanding any provision of this Consent Decree, the United States and the State hereby retain all of their information gathering and inspection authorities and rights, including enforcement actions related thereto, under CERCLA, RCRA and any other applicable statutes or regulations.

IX. ACCESS AND INSTITUTIONAL CONTROLS

25. If the Site, or any other property where access and/or land/water use restrictions are needed to implement this Consent Decree, is owned or controlled by any of the Settling Defendants, such Settling Defendants shall:

a. commencing on the date of lodging of this Consent Decree, provide the United States, the State and their representatives, including EPA and their contractors, with access at all reasonable times to the Site, or such other property, for the purpose of conducting any activity related to this Consent Decree including, but not limited to, the following activities:

- (1) Monitoring the Work;
- (2) Verifying any data or information submitted to the United States or the State;
- (3) Conducting investigations relating to contamination at or near the Site;
- (4) Obtaining samples;
- (5) Assessing the need for, planning, or implementing additional response actions at or near the Site;
- (6) Assessing implementation of quality assurance and quality control practices as defined in the approved Quality Assurance Project Plans;
- (7) Implementing the Work pursuant to the conditions set forth in Paragraph 87 of this Consent Decree;
- (8) Inspecting and copying records, operating logs, contracts, or other documents maintained or generated by Settling Defendants or their agents, consistent with Section XXIV (Access to Information);
- (9) Assessing Settling Defendants' compliance with this Consent Decree; and

(10) Determining whether the Site or other property is being used in a manner that is prohibited or restricted, or that may need to be prohibited or restricted, by or pursuant to this Consent Decree;

b. commencing on the date of lodging of this Consent Decree, refrain from using the Site, or such other property, in any manner that would interfere with or adversely affect the implementation, integrity or protectiveness of the remedial measures to be performed pursuant to this Consent Decree. Such restrictions include, but are not limited to, no residential use, no building construction without prior approval of EPA and the State, no use of the groundwater for drinking or domestic purposes, no pumping of groundwater that would cause contaminated groundwater to spread to uncontaminated areas, and no use or disturbance of the contaminated soil under the landfill cap.

c. execute and record in the Town Clerk's Office of the town of Barkhamsted and or the town of New Hartford, State of Connecticut, (1) an easement, running with the land, to (i) the State and its representatives, (ii) the other Settling Defendants and their representatives, and/or (iii) other appropriate grantees that grants a right of access for the purpose of conducting any activity related to this Consent Decree including, but not limited to, those activities listed in Paragraph 25a of this Consent Decree, and (2) an environmental land use restriction to the State, in accordance with Regulation of Connecticut State Agencies ("RCSA") 22a-133-q-1, which grants the right to enforce the land/water use restrictions listed in Paragraph 25b of this Consent Decree, or other restrictions that EPA and the State determine are necessary to implement, ensure non-interference with, or ensure protectiveness of the remedial measures to be performed pursuant to this Consent Decree. The easement and environmental land use restriction shall give the United States the right to enforce as a third party beneficiary. Settling Defendants shall comply with all requirements of RCSA 22a-133-q-1 in the execution and filing of the easement and environmental land use restriction. A draft easement, in substantially the form attached hereto as Appendix F, that is enforceable under the laws of the State of Connecticut.

26. If the Site, or any other property where access and/or land/water use restrictions are needed to implement this Consent Decree, is owned or controlled by persons other than any of the Settling Defendants, Performing Settling Defendant shall use best efforts to secure from such persons:

a. an agreement to provide access thereto for Performing Settling Defendant, as well as for the United States on behalf of EPA, and the State, as well as their representatives (including contractors), for the purpose of conducting any activity related to this Consent Decree including, but not limited to, those activities listed in Paragraph 25.a of this Consent Decree;

b. an agreement, enforceable by the Performing Settling Defendant and the United States, to refrain from using the Site, or such other property, in any manner that would interfere with or adversely affect the implementation, integrity, or protectiveness of the remedial measures to be performed pursuant to this Consent Decree. Such restrictions include, but are not limited to those activities listed in Paragraph 25; and

c. execute and record in the Town Clerk's Office of the town of Barkhamsted and or the town of New Hartford, State of Connecticut, (1) an easement, running with the land, to (i) the State and its representatives, (ii) the other Settling Defendants and their representatives, and/or (iii) other appropriate grantees that grants a right of access for the purpose of conducting any activity related to this Consent Decree including, but not limited to, those activities listed in

Paragraph 25a of this Consent Decree, and (2) an environmental land use restriction to the State, in accordance with Regulation of Connecticut State Agencies ("RCSA") 22a-133-q-1, which grants the right to enforce the land/water use restrictions listed in Paragraph 25b of this Consent Decree, or other restrictions that EPA and the State determine are necessary to implement, ensure non-interference with, or ensure protectiveness of the remedial measures to be performed pursuant to this Consent Decree. The easement and environmental land use restriction shall give the United States the right to enforce as a third party beneficiary. Settling Defendants shall comply with all requirements of RCSA 22a-133-q-1 in the execution and filing of the easement and environmental land use restriction. A draft easement, in substantially the form attached hereto as Appendix F, that is enforceable under the laws of the State of Connecticut.

27. For purposes of Paragraph 25 and 26 of this Consent Decree, "best efforts" includes the payment of reasonable sums of money in consideration of access, access easements, land/water use restrictions, restrictive easements, and/or an agreement to release or subordinate a prior lien or encumbrance. If (a) any access or land/water use restriction agreements required by Paragraphs 26.a or 26.b of this Consent Decree are not obtained within 120 days of the date of entry of this Consent Decree, (b) any access easements or restrictive easements required by Paragraph 26.c of this Consent Decree are not submitted to EPA in draft form within 60 days of the date of entry of this Consent Decree, or (c) Performing Settling Defendant is unable to obtain an agreement pursuant to Paragraph 25.c.(1) or Paragraph 26.c.(1) from the holder of a prior lien or encumbrance to release or subordinate such lien or encumbrance to the easement being created pursuant to this consent decree within 120 days of the date of entry of this consent decree, Performing Settling Defendant shall promptly notify the United States in writing, and shall include in that notification a summary of the steps that Performing Settling Defendant has taken to attempt to comply with Paragraph 25 or 26 of this Consent Decree. The United States may, as it deems appropriate, assist Performing Settling Defendant in obtaining access or land/water use restrictions, either in the form of contractual agreements or in the form of easements running with the land or obtaining the release or subordination of a prior lien or encumbrance. Performing Settling Defendant shall reimburse the United States in accordance with the procedures in Section XVI (Reimbursement of Response Costs), for all costs incurred, direct or indirect, by the United States in obtaining such access, land/water use restrictions, and/or the release/subordination of prior liens or encumbrances including, but not limited to, the cost of attorney time and the amount of monetary consideration paid or just compensation.

28. If EPA determines that land/water use restrictions in the form of state or local laws, regulations, ordinances or other governmental controls are needed to implement the remedy selected in the ROD, ensure the integrity and protectiveness thereof, or ensure non-interference therewith, Performing Settling Defendant shall cooperate with EPA's and the State's efforts to secure such governmental controls.

29. Notwithstanding any provision of this Consent Decree, the United States and the State retain all of its access authorities and rights, as well as all of their rights to require land/water use restrictions, including enforcement authorities related thereto, under CERCLA, RCRA and any other applicable statute or regulations.

X. REPORTING REQUIREMENTS

30. In addition to any other requirement of this Consent Decree, Performing Settling Defendant shall submit to each EPA and the State 2 copies of written progress reports, monthly

or in a frequency otherwise specified by EPA, that: (a) describe the actions which have been taken toward achieving compliance with this Consent Decree during the previous month; (b) include a summary of all results of sampling and tests and all other data received or generated by Performing Settling Defendant or its contractors or agents in the previous month; (c) identify all work plans, plans and other deliverables required by this Consent Decree completed and submitted during the previous month; (d) describe all actions, including, but not limited to, data collection and implementation of work plans, which are scheduled for the next six weeks and provide other information relating to the progress of construction, including, but not limited to, critical path diagrams, Gantt charts and Pert charts; (e) include information regarding percentage of completion, unresolved delays encountered or anticipated that may affect the future schedule for implementation of the Work, and a description of efforts made to mitigate those delays or anticipated delays; (f) include any modifications to the work plans or other schedules that Performing Settling Defendant have proposed to EPA or that have been approved by EPA; and (g) describe all activities undertaken in support of the Community Relations Plan during the previous month and those to be undertaken in the next six weeks. Performing Settling Defendant shall submit these progress reports to EPA and the State by the tenth day of every month following the lodging of this Consent Decree until EPA notifies the Performing Settling Defendant pursuant to Paragraph 50.b of Section XIV (Certification of Completion). If requested by EPA or the State, Performing Settling Defendant shall also provide briefings for EPA and the State to discuss the progress of the Work.

31. The Performing Settling Defendant shall notify EPA of any change in the schedule described in the monthly progress report for the performance of any activity, including, but not limited to, data collection and implementation of work plans, no later than seven days prior to the performance of the activity.

32. Upon the occurrence of any event during performance of the Work that Performing Settling Defendant is required to report pursuant to Section 103 of CERCLA or Section 304 of the Emergency Planning and Community Right-to-Know Act ("EPCRA"), Performing Settling Defendant shall within 24 hours of the onset of such event orally notify the EPA Project Coordinator or the Alternate EPA Project Coordinator (in the event of the unavailability of the EPA Project Coordinator), or, in the event that neither the EPA Project Coordinator or Alternate EPA Project Coordinator is available, the Emergency Response Section, Region 1, United States Environmental Protection Agency. These reporting requirements are in addition to the reporting required by CERCLA Section 103 or EPCRA Section 304.

33. Within 20 days of the onset of such an event, Performing Settling Defendant shall furnish to Plaintiffs a written report, signed by the Performing Settling Defendant's Project Coordinator, setting forth the events which occurred and the measures taken, and to be taken, in response thereto. Within 30 days of the conclusion of such an event, Performing Settling Defendant shall submit a report setting forth all actions taken in response thereto.

34. Performing Settling Defendant shall submit 3 copies (or a number otherwise directed by EPA) of all plans, reports, and data required by the SOW, the Remedial Design Work Plan, the Remedial Action Work Plan, or any other approved plans to EPA in accordance with the schedules set forth in such plans. Performing Settling Defendant shall simultaneously submit 1 copy (or a number otherwise directed by EPA) of all such plans, reports and data to the State. Upon request by EPA Performing Settling Defendant shall submit in electronic form all

portions of any report or other deliverable that Performing Settling Defendant is required to submit pursuant to the provisions of this Consent Decree.

35. All reports and other documents submitted by Performing Settling Defendant to EPA (other than the monthly progress reports referred to above) which purport to document Performing Settling Defendant's compliance with the terms of this Consent Decree shall be signed by an authorized representative of the Performing Settling Defendant.

XI. EPA APPROVAL OF PLANS AND OTHER SUBMISSIONS

36. After review of any plan, report or other item which is required to be submitted for approval pursuant to this Consent Decree, EPA, after reasonable opportunity for review and comment by the State, shall: (a) approve, in whole or in part, the submission; (b) approve the submission upon specified conditions; (c) modify the submission to cure the deficiencies; (d) disapprove, in whole or in part, the submission, directing that the Performing Settling Defendant modify the submission; or (e) any combination of the above. However, EPA shall not modify a submission without first providing Performing Settling Defendant at least one notice of deficiency and an opportunity to cure within 14 days, except where to do so would cause serious disruption to the Work or where previous submission(s) have been disapproved due to material defects and the deficiencies in the submission under consideration indicate a bad faith lack of effort to submit an acceptable deliverable.

37. In the event of approval, approval upon conditions, or modification by EPA, pursuant to Paragraph 36(a), (b), or (c), Performing Settling Defendant shall proceed to take any action required by the plan, report, or other item, as approved or modified by EPA subject only to its right to invoke the Dispute Resolution procedures set forth in Section XIX (Dispute Resolution) with respect to the modifications or conditions made by EPA. In the event that EPA modifies the submission to cure the deficiencies pursuant to Paragraph 36(c) and the submission has a material defect, EPA retains its right to seek stipulated penalties, as provided in Section XX (Stipulated Penalties).

38. Resubmission of Plans.

a. Upon receipt of a notice of disapproval pursuant to Paragraph 36(d), Performing Settling Defendant shall, within 14 days or such longer time as specified by EPA in such notice, correct the deficiencies and resubmit the plan, report, or other item for approval. Any stipulated penalties applicable to the submission, as provided in Section XX, shall accrue during the 14 day period or otherwise specified period but shall not be payable unless the resubmission is disapproved or modified due to a material defect as provided in Paragraphs 39 and 40.

b. Notwithstanding the receipt of a notice of disapproval pursuant to Paragraph 36(d), Performing Settling Defendant shall proceed, at the direction of EPA, to take any action required by any non-deficient portion of the submission. Implementation of any non-deficient portion of a submission shall not relieve Performing Settling Defendant of any liability for stipulated penalties under Section XX (Stipulated Penalties).

39. In the event that a resubmitted plan, report or other item, or portion thereof, is disapproved by EPA, EPA may again require the Performing Settling Defendant to correct the deficiencies, in accordance with the preceding Paragraphs. EPA also retains the right to modify or develop the plan, report or other item. Performing Settling Defendant shall implement any

such plan, report, or item as modified or developed by EPA, subject only to its right to invoke the procedures set forth in Section XIX (Dispute Resolution).

40. If upon resubmission, a plan, report, or item is disapproved or modified by EPA due to a material defect, Performing Settling Defendant shall be deemed to have failed to submit such plan, report, or item timely and adequately unless the Performing Settling Defendant invoke the dispute resolution procedures set forth in Section XIX (Dispute Resolution) and EPA's action is overturned pursuant to that Section. The provisions of Section XIX (Dispute Resolution) and Section XX (Stipulated Penalties) shall govern the implementation of the Work and accrual and payment of any stipulated penalties during Dispute Resolution. If EPA's disapproval or modification is upheld, stipulated penalties shall accrue for such violation from the date on which the initial submission was originally required, as provided in Section XX.

41. All plans, reports, and other items required to be submitted to EPA under this Consent Decree shall, upon approval or modification by EPA, be enforceable under this Consent Decree. In the event EPA approves or modifies a portion of a plan, report, or other item required to be submitted to EPA under this Consent Decree, the approved or modified portion shall be enforceable under this Consent Decree.

XII. PROJECT COORDINATORS

42. Within 20 days of lodging this Consent Decree, Performing Settling Defendant, the State and EPA will notify each other, in writing, of the name, address and telephone number of their respective designated Project Coordinators and Alternate Project Coordinators. If a Project Coordinator or Alternate Project Coordinator initially designated is changed, the identity of the successor will be given to the other Parties at least 5 working days before the changes occur, unless impracticable, but in no event later than the actual day the change is made. The Performing Settling Defendant's Project Coordinator shall be subject to disapproval by EPA and shall have the technical expertise sufficient to adequately oversee all aspects of the Work. The Performing Settling Defendant's Project Coordinator shall not be an attorney for the Performing Settling Defendant or for the Contributing Settling Defendant in this matter. He or she may assign other representatives, including other contractors, to serve as a Site representative for oversight of performance of daily operations during remedial activities.

43. Plaintiffs may designate other representatives, including, but not limited to, EPA and State employees, federal and State contractors and consultants, to observe and monitor the progress of any activity undertaken pursuant to this Consent Decree. EPA's Project Coordinator and Alternate Project Coordinator shall have the authority lawfully vested in a Remedial Project Manager ("RPM") and an On-Scene Coordinator ("OSC") by the National Contingency Plan, 40 C.F.R. Part 300. In addition, EPA's Project Coordinator or Alternate Project Coordinator shall have authority, consistent with the National Contingency Plan, to halt any Work required by this Consent Decree and to take any necessary response action when s/he determines that conditions at the Site constitute an emergency situation or may present an immediate threat to public health or welfare or the environment due to release or threatened release of Waste Material.

44. EPA's Project Coordinator and the Performing Settling Defendant's Project Coordinator will meet in person or by telephone, at a minimum, twice per year or on a mutually agreeable schedule.

XIII. ASSURANCE OF ABILITY TO COMPLETE WORK

45. Within 30 days of entry of this Consent Decree, Performing Settling Defendant shall establish and maintain financial security in the amount of \$1,200,000 in one or more of the following forms:

- a. A surety bond guaranteeing performance of the Work;
- b. One or more irrevocable letters of credit equaling the total estimated cost of the Work;
- c. A trust fund; and
- d. Assurances, in a form reasonably suitable to EPA, establishing the financial ability of one or more Settling Defendants, or by Performing Settling Defendant and/or the Towns of Barkhamsted, New Hartford or Winsted that are served by Performing Settling Defendant and which are providing funding for Performing Settling Defendant, to meet obligations under the Consent Decree; or
- e. A demonstration that the Performing Settling Defendant satisfy the requirements of 40 C.F.R. Part 264.143(f).

46. If the Performing Settling Defendant seeks to demonstrate the ability to complete the Work through a guarantee by a Contributing Settling Defendant pursuant to Paragraph 45.d of this Consent Decree, Settling Defendants shall demonstrate that the guarantor satisfies the requirements of 40 C.F.R. Part 264.143(f). If Performing Settling Defendant seeks to demonstrate the ability to meet obligations under Paragraph 45 through assurances by the Performing Settling Defendant or one or more Towns identified in of this Consent Decree, Performing Settling Defendant shall demonstrate that the Town(s) have taken appropriate formal actions that are reasonably satisfactory to EPA and the State to confirm a legally binding obligation for such commitments by the Town(s). In the event that EPA, after a reasonable opportunity for review and comment by the State, determines at any time that the financial assurances provided pursuant to this Section are inadequate, Performing Settling Defendant shall, within 60 days of receipt of notice of EPA's determination, obtain and present to EPA for approval one of the other forms of financial assurance listed in Paragraph 45 of this Consent Decree. Performing Settling Defendant's inability to demonstrate financial ability to complete the Work shall not excuse performance of any activities required under this Consent Decree.

47. If Performing Settling Defendant can show that the estimated cost to complete the remaining Work has diminished below the amount set forth in Paragraph 45 above after entry of this Consent Decree, Performing Settling Defendant may, on any anniversary date of entry of this Consent Decree, or at any other time agreed to by the Parties, reduce the amount of the financial security provided under this Section to the estimated cost of the remaining work to be performed. Performing Settling Defendant shall submit a proposal for such reduction to EPA, in accordance with the requirements of this Section, and may reduce the amount of the security upon approval by EPA. In the event of a dispute, Performing Settling Defendant may reduce the amount of the security in accordance with the final administrative or judicial decision resolving the dispute.

48. Performing Settling Defendant may change the form of financial assurance provided under this Section at any time, upon notice to and approval by EPA, provided that the new form of assurance meets the requirements of this Section. In the event of a dispute,

Performing Settling Defendant may change the form of the financial assurance only in accordance with the final administrative or judicial decision resolving the dispute.

XIV. CERTIFICATION OF COMPLETION

49. Completion of the Remedial Action.

a. Within 90 days after Performing Settling Defendant concludes that the Remedial Action has been fully performed and the Performance Standards have been attained, Performing Settling Defendant shall schedule and conduct a pre-certification inspection to be attended by Performing Settling Defendant, EPA and the State. If, after the pre-certification inspection, the Performing Settling Defendant still believes that the Remedial Action has been fully performed and the Performance Standards have been attained, it shall submit a written report requesting certification to EPA for approval, with a copy to the State, pursuant to Section XI (EPA Approval of Plans and Other Submissions) within 30 days of the inspection. In the report, a registered professional engineer and the Performing Settling Defendant's Project Coordinator shall state that the Remedial Action has been completed in full satisfaction of the requirements of this Consent Decree. The written report shall include as-built drawings signed and stamped by a professional engineer. The report shall contain the following statement, signed by a responsible management official of the Performing Settling Defendant or the Performing Settling Defendant's Project Coordinator:

To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If, after completion of the pre-certification inspection and receipt and review of the written report, EPA, after reasonable opportunity to review and comment by the State, determines that the Remedial Action or any portion thereof has not been completed in accordance with this Consent Decree or that the Performance Standards have not been achieved, EPA will notify Performing Settling Defendant in writing of the activities that must be undertaken by Performing Settling Defendant pursuant to this Consent Decree to complete the Remedial Action and achieve the Performance Standards. Provided, however, that EPA may only require Performing Settling Defendant to perform such activities pursuant to this Paragraph to the extent that such activities are consistent with the "scope of the remedy selected in the ROD," as that term is defined in Paragraph 13.b. EPA will set forth in the notice a schedule for performance of such activities consistent with the Consent Decree and the SOW or require the Performing Settling Defendant to submit a schedule to EPA for approval pursuant to Section XI (EPA Approval of Plans and Other Submissions). Performing Settling Defendant shall perform all activities described in the notice in accordance with the specifications and schedules established pursuant to this Paragraph, subject to its right to invoke the dispute resolution procedures set forth in Section XIX (Dispute Resolution).

b. If EPA concludes, based on the initial or any subsequent report requesting Certification of Completion and after a reasonable opportunity for review and comment by the State, that the Remedial Action has been performed in accordance with this Consent Decree and that the Performance Standards have been achieved, EPA will so certify in writing to Settling

Defendants. This certification shall constitute the Certification of Completion of the Remedial Action for purposes of this Consent Decree, including, but not limited to, Section XXI (Covenants Not to Sue by Plaintiffs). Certification of Completion of the Remedial Action shall not affect Performing Settling Defendant's obligations under this Consent Decree.

50. Completion of the Work.

a. Within 90 days after Performing Settling Defendant conclude that all phases of the Work (including O & M), have been fully performed, Performing Settling Defendant shall schedule and conduct a pre-certification inspection to be attended by Performing Settling Defendant, EPA and the State. If, after the pre-certification inspection, the Performing Settling Defendant still believes that the Work has been fully performed, Performing Settling Defendant shall submit a written report by a registered professional engineer stating that the Work has been completed in full satisfaction of the requirements of this Consent Decree. The report shall contain the following statement, signed by a responsible management official of Performing Settling Defendant or the Performing Settling Defendant's Project Coordinator:

To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If, after review of the written report, EPA, after reasonable opportunity to review and comment by the State, determines that any portion of the Work has not been completed in accordance with this Consent Decree, EPA will notify Performing Settling Defendant in writing of the activities that must be undertaken by Performing Settling Defendant pursuant to this Consent Decree to complete the Work. Provided, however, that EPA may only require Performing Settling Defendant to perform such activities pursuant to this Paragraph to the extent that such activities are consistent with the "scope of the remedy selected in the ROD," as that term is defined in Paragraph 13.b. EPA will set forth in the notice a schedule for performance of such activities consistent with the Consent Decree and the SOW or require the Performing Settling Defendant to submit a schedule to EPA for approval pursuant to Section XI (EPA Approval of Plans and Other Submissions). Performing Settling Defendant shall perform all activities described in the notice in accordance with the specifications and schedules established therein, subject to its right to invoke the dispute resolution procedures set forth in Section XIX (Dispute Resolution).

b. If EPA concludes, based on the initial or any subsequent request for Certification of Completion by Performing Settling Defendant and after a reasonable opportunity for review and comment by the State, that the Work has been performed in accordance with this Consent Decree, EPA will so notify the Performing Settling Defendant in writing.

XV. EMERGENCY RESPONSE

51. In the event of any action or occurrence during the performance of the Work which causes or threatens a release of Waste Material from the Site that constitutes an emergency situation or may present an immediate threat to public health or welfare or the environment, Performing Settling Defendant shall, subject to Paragraph 52, immediately take all appropriate action to prevent, abate, or minimize such release or threat of release, and shall immediately notify the EPA's Project Coordinator, or, if the Project Coordinator is unavailable,

EPA's Alternate Project Coordinator. If neither of these persons is available, the Performing Settling Defendant shall notify the EPA Emergency Response Unit, Region 1. Performing Settling Defendant shall take such actions in consultation with EPA's Project Coordinator or other available authorized EPA officer and in accordance with all applicable provisions of the Health and Safety Plans, the Contingency Plans, and any other applicable plans or documents developed pursuant to the SOW. In the event that Performing Settling Defendant fails to take appropriate response action as required by this Section, and EPA or, as appropriate, the State takes such action instead, Performing Settling Defendant shall reimburse EPA and the State all costs of the response action not inconsistent with the NCP pursuant to Section XVI (Reimbursement of Response Costs).

52. Nothing in the preceding Paragraph or in this Consent Decree shall be deemed to limit any authority of the United States, or the State, a) to take all appropriate action to protect human health and the environment or to prevent, abate, respond to, or minimize an actual or threatened release of Waste Material on, at, or from the Site, or b) to direct or order such action, or seek an order from the Court, to protect human health and the environment or to prevent, abate, respond to, or minimize an actual or threatened release of Waste Material on, at, or from the Site, subject to Section XXI (Covenants Not to Sue by Plaintiffs).

XVI. PAYMENTS FOR RESPONSE COSTS

53. Payments for Past Response Costs.

a. Within 30 days of the Effective Date, Performing Settling Defendant shall pay to EPA \$483,304.55 in payment for Past Response Costs. Payment shall be made by FedWire Electronic Funds Transfer ("EFT") to the U.S. Department of Justice account in accordance with current EFT procedures, referencing the Barkhamsted-New Hartford Superfund Site, referencing the USAO File Number, EPA Site/Spill ID Number 01B8, and DOJ Case Number 90-11-2-830/1 or by bank cashier's check. Payment shall be made in accordance with instructions provided to the Performing Settling Defendant by the Financial Litigation Unit of the United States Attorney's Office for the District of Connecticut following lodging of the Consent Decree. Any payments received by the Department of Justice after 4:00 p.m. (Eastern Time) will be credited on the next business day.

b. At the time of payment, Performing Settling Defendant shall send notice that payment has been made to the United States, to EPA and to the Regional Financial Management Officer, in accordance with Section XXVI (Notices and Submissions).

c. Of the total amount to be paid by Performing Settling Defendant pursuant to Subparagraph 53.a, \$383,304.55 shall be deposited in the EPA Hazardous Substance Superfund and \$100,000 shall be deposited in the Barkhamsted-New Hartford Landfill Superfund Site Special Account within the EPA Hazardous Substance Superfund to be retained and used to conduct or finance response actions at or in connection with the Site, or to be transferred by EPA to the EPA Hazardous Substance Superfund.

54. Payments for Future Response Costs.

a. Performing Settling Defendant shall pay to EPA all Future Response Costs not inconsistent with the National Contingency Plan. On a periodic basis the United States will send Performing Settling Defendant a bill requiring payment that includes an Itemized Cost Summary prepared by EPA, which includes direct and indirect costs incurred by the United

States and its contractors. The bill shall include a line-item summary of costs in dollars by category of costs (including, but not limited to payroll, travel, indirect costs, and contracts). Performing Settling Defendant shall make all payments within 30 days of Performing Settling Defendant's receipt of each bill requiring payment, except as otherwise provided in Paragraph 54.c. Settling Defendants shall make all payments required by this Paragraph by a certified or cashier's check or checks made payable to "EPA Hazardous Substance Superfund," referencing the name and address of the party making the payment, EPA Site/Spill ID Number 01B8, and DOJ Case Number 90-11-2-830/1. The Performing Settling Defendant shall send the check(s) to: EPA Region 1, Attn: Superfund Accounting, P.O. Box 360197M, Pittsburgh, PA 15251.

b. At the time of payment, Settling Defendants shall send notice that payment has been made to the United States, to EPA and to the Regional Financial Management Officer, in accordance with Section XXVI (Notices and Submissions).

c. Performing Settling Defendant shall reimburse the State for all State Future Response Costs not inconsistent with the National Contingency Plan. The State will send Performing Settling Defendant a bill requiring payment that includes a standard State-prepared cost summary, which includes direct and indirect costs incurred by the State and its contractors on a periodic basis. Performing Settling Defendant shall make all payments within 30 days of Performing Settling Defendant's receipt of each bill requiring payment, except as otherwise provided in Paragraph 54.c. The Performing Settling Defendant shall make all payments to the State required by this Paragraph in the manner described in Paragraph 53.d.

Performing Settling Defendant may contest payment of any Future Response Costs under Paragraph 54 if they determine that the United States or the State has made an accounting error or if it alleges that a cost item that is included represents costs that are inconsistent with the NCP. Such objection shall be made in writing within 30 days of receipt of the bill and must be sent to the United States (if the United States' accounting is being disputed) or the State (if the State's accounting is being disputed) pursuant to Section XXVI (Notices and Submissions). Any such objection shall specifically identify the contested Future Response Costs and the basis for objection. In the event of an objection, the Settling Defendants shall within the 30 day period pay all uncontested Future Response Costs to the United States or the State in the manner described in Paragraph 54. Simultaneously, the Performing Settling Defendant shall establish an interest-bearing escrow account in a federally-insured bank duly chartered in the State of Connecticut and remit to that escrow account funds equivalent to the amount of the contested Future Response Costs. The Performing Settling Defendant shall send to the United States, as provided in Section XXVI (Notices and Submissions), and the State a copy of the transmittal letter and check paying the uncontested Future Response Costs, and a copy of the correspondence that establishes and funds the escrow account, including, but not limited to, information containing the identity of the bank and bank account under which the escrow account is established as well as a bank statement showing the initial balance of the escrow account. Simultaneously with establishment of the escrow account, the Performing Settling Defendant shall initiate the Dispute Resolution procedures in Section XIX (Dispute Resolution). If the United States or the State prevails in the dispute, within 5 days of the resolution of the dispute, the Performing Settling Defendant shall pay the sums due (with accrued interest) to the United States or the State, if State costs are disputed, in the manner described in Paragraph 54. If the Performing Settling Defendant prevail concerning any aspect of the contested costs, the

Performing Settling Defendant shall pay that portion of the costs (plus associated accrued interest) for which they did not prevail to the United States or the State, if State costs are disputed in the manner described in Paragraph 54; Performing Settling Defendant shall be disbursed any balance of the escrow account. The dispute resolution procedures set forth in this Paragraph in conjunction with the procedures set forth in Section XIX (Dispute Resolution) shall be the exclusive mechanisms for resolving disputes regarding the Settling Defendants' obligation to reimburse the United States and the State for their Future Response Costs.

55. In the event that the payments required by Subparagraph 53.a are not made within 30 days of the Effective Date or the payments required by Paragraph 54 are not made within 30 days of the Performing Settling Defendant's receipt of the bill, Performing Settling Defendant shall pay Interest on the unpaid balance. The Interest to be paid on Past Response Costs and State Past Response Costs under this Paragraph shall begin to accrue on the Effective Date. The Interest on Future Response Costs shall begin to accrue on the date of the bill. The Interest shall accrue through the date of the Performing Settling Defendant's payment. Payments of Interest made under this Paragraph shall be in addition to such other remedies or sanctions available to Plaintiffs by virtue of Performing Settling Defendant's failure to make timely payments under this Section including, but not limited to, payment of stipulated penalties pursuant to Paragraph 71. The Performing Settling Defendant shall make all payments required by this Paragraph in the manner described in Paragraph 54.

XVII. INDEMNIFICATION AND INSURANCE

56. Performing Settling Defendant's Indemnification of the United States and the State.

a. The United States and the State do not assume any liability by entering into this agreement or by virtue of any designation of Performing Settling Defendant as EPA's authorized representatives under Section 104(e) of CERCLA. Performing Settling Defendant shall indemnify, save and hold harmless the United States, the State, and their officials, agents, employees, contractors, subcontractors, or representatives for or from any and all claims or causes of action arising from, or on account of, negligent or other wrongful acts or omissions of ~~Performing Settling Defendant, its officers, board members, employees, agents, contractors, subcontractors,~~ and any persons acting on their behalf or under their control, in carrying out activities pursuant to this Consent Decree, including, but not limited to, any claims arising from any designation of Performing Settling Defendant as EPA's authorized representatives under Section 104(e) of CERCLA. Further, the Performing Settling Defendant agrees to pay the United States and the State all costs they incur including, but not limited to, attorneys fees and other expenses of litigation and settlement arising from, or on account of, claims made against the United States or the State based on negligent or other wrongful acts or omissions of Performing Settling Defendant, its officers, board members, employees, agents, contractors, subcontractors, and any persons acting on their behalf or under their control, in carrying out activities pursuant to this Consent Decree. Neither the United States nor the State shall be held out as a party to any contract entered into by or on behalf of Performing Settling Defendant in carrying out activities pursuant to this Consent Decree. Neither the Performing Settling Defendant nor any such contractor shall be considered an agent of the United States or the State.

b. The United States and the State shall give Performing Settling Defendant notice of any claim for which the United States or the State plan to seek indemnification pursuant

to Paragraph 56, and shall consult with Performing Settling Defendant prior to settling such claim.

57. Performing Settling Defendant waives all claims against the United States and the State for damages or reimbursement or for set-off of any payments made or to be made to the United States or the State, arising from or on account of any contract, agreement, or arrangement between any one or more of Performing Settling Defendant and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays. In addition, Performing Settling Defendant shall indemnify and hold harmless the United States and the State with respect to any and all claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between any one or more of Performing Settling Defendant and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays.

58. No later than 15 days before commencing any on-site Work, Performing Settling Defendant shall secure, and shall maintain until the first anniversary of EPA's Certification of Completion of the Remedial Action pursuant to Subparagraph 49.b of Section XIV (Certification of Completion) comprehensive general liability insurance with limits of one (1) million dollars, combined single limit, and automobile liability insurance with limits of one (1) million dollars, combined single limit, naming the United States and the State as additional insureds. In addition, for the duration of this Consent Decree, Performing Settling Defendant shall satisfy, or shall ensure that its contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing the Work on behalf of Performing Settling Defendant in furtherance of this Consent Decree. Prior to commencement of the Work under this Consent Decree, Performing Settling Defendant shall provide to EPA and the State certificates of such insurance and a copy of each insurance policy. Performing Settling Defendant shall resubmit such certificates and copies of policies each year on the anniversary of the Effective Date. If Performing Settling Defendant demonstrates by evidence satisfactory to EPA and the State that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering the same risks but in a lesser amount, then, with respect to that contractor or subcontractor, Performing Settling Defendant need provide only that portion of the insurance described above which is not maintained by the contractor or subcontractor.

XVIII. FORCE MAJEURE

59. "Force majeure," for purposes of this Consent Decree, is defined as any event arising from causes beyond the control of the Performing Settling Defendant, of any entity controlled by Performing Settling Defendant, or of Performing Settling Defendant's contractors, that delays or prevents the performance of any obligation under this Consent Decree despite Performing Settling Defendant's best efforts to fulfill the obligation. The requirement that the Performing Settling Defendant exercise "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential force majeure event and best efforts to address the effects of any potential force majeure event (1) as it is occurring and (2) following the potential force majeure event, such that the delay is minimized to the greatest extent possible. "Force majeure" does not include financial inability to complete the Work or a failure to attain the Performance Standards.

60. If any event occurs or has occurred that may delay the performance of any obligation under this Consent Decree, whether or not caused by a force majeure event, the

Performing Settling Defendant shall notify orally EPA's Project Coordinator or, in his or her absence, EPA's Alternate Project Coordinator or, in the event both of EPA's designated representatives are unavailable, the Director of the Office of Site Remediation and Restoration, EPA Region 1, within two (2) working days of when Performing Settling Defendant first knew that the event might cause a delay. Within seven (7) working days thereafter, Performing Settling Defendant shall provide in writing to EPA and the State an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; the Performing Settling Defendant's rationale for attributing such delay to a force majeure event if it intends to assert such a claim; and a statement as to whether, in the opinion of the Performing Settling Defendant, such event may cause or contribute to an endangerment to public health, welfare or the environment. The Performing Settling Defendant shall include with any notice all available documentation supporting its claim that the delay was attributable to a force majeure. Failure to comply with the above requirements shall preclude Performing Settling Defendant from asserting any claim of force majeure for that event for the period of time of such failure to comply, and for any additional delay caused by such failure. Performing Settling Defendant shall be deemed to know of any circumstance of which Performing Settling Defendant, any entity controlled by Performing Settling Defendant, or Performing Settling Defendant's contractors knew or should have known.

61. If EPA, after a reasonable opportunity for review and comment by the State, agrees that the delay or anticipated delay is attributable to a force majeure event, the time for performance of the obligations under this Consent Decree that are affected by the force majeure event will be extended by EPA, after a reasonable opportunity for review and comment by the State, for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the force majeure event shall not, of itself, extend the time for performance of any other obligation. If EPA, after a reasonable opportunity for review and comment by the State, does not agree that the delay or anticipated delay has been or will be caused by a force majeure event, EPA will notify the Performing Settling Defendant in writing of its decision. If EPA, after a reasonable opportunity for review and comment by the State, agrees that the delay is attributable to a force majeure event, EPA will notify the Performing Settling Defendant in writing of the length of the extension, if any, for performance of the obligations affected by the force majeure event.

62. If the Performing Settling Defendant elect to invoke the dispute resolution procedures set forth in Section XIX (Dispute Resolution), they shall do so no later than 15 days after receipt of EPA's notice. In any such proceeding, Performing Settling Defendant shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a force majeure event, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that Performing Settling Defendant complied with the requirements of Paragraphs 59 and 60, above. If Performing Settling Defendant carries this burden, the delay at issue shall be deemed not to be a violation by Performing Settling Defendant of the affected obligation of this Consent Decree identified to EPA and the Court.

XIX. DISPUTE RESOLUTION

63. Unless otherwise expressly provided for in this Consent Decree, the dispute resolution procedures of this Section shall be the exclusive mechanism to resolve disputes between EPA and Settling Defendants or between the State and Settling Defendants arising under or with respect to this Consent Decree. The procedures for resolution of disputes which involve EPA are governed by Paragraphs 63 to 68. The State may participate in such dispute resolution proceedings to the extent specified in paragraphs 63 to 68. Disputes exclusively between the State and Settling Defendants are governed by Paragraph 69. However, the procedures set forth in this Section shall not apply to actions by the United States to enforce obligations of the Performing Settling Defendant that have not been disputed in accordance with this Section.

64. Any dispute which arises under or with respect to this Consent Decree shall in the first instance be the subject of informal negotiations between the parties to the dispute. The period for informal negotiations shall not exceed 20 days from the time the dispute arises, unless it is modified by written agreement of the parties to the dispute. The dispute shall be considered to have arisen when one party sends the other parties a written Notice of Dispute.

65. Statements of Position.

a. In the event that the parties cannot resolve a dispute by informal negotiations under the preceding Paragraph, then the position advanced by EPA, after reasonable opportunity for review and comment by the State, shall be considered binding unless, within 15 days after the conclusion of the informal negotiation period, Performing Settling Defendant invoke the formal dispute resolution procedures of this Section by serving on the United States and the State a written Statement of Position on the matter in dispute, including, but not limited to, any factual data, analysis or opinion supporting that position and any supporting documentation relied upon by the Performing Settling Defendant. The Statement of Position shall specify the Performing Settling Defendant's position as to whether formal dispute resolution should proceed under Paragraph 66 or Paragraph 67.

b. Within 30 days after receipt of Performing Settling Defendant's Statement of Position, EPA, after reasonable opportunity for review and comment by the State, will serve on Performing Settling Defendant its Statement of Position, including, but not limited to, any factual data, analysis, or opinion supporting that position and all supporting documentation relied upon by EPA. The State, after reasonable opportunity for review and comment by EPA, may also serve a statement of position within the 30 day time limit set forth above in this paragraph. EPA's Statement of Position shall include a statement as to whether formal dispute resolution should proceed under Paragraph 66 or 67. Within 15 days after receipt of EPA's Statement of Position, Performing Settling Defendant may submit a Reply.

c. If there is disagreement between EPA and the Performing Settling Defendant as to whether dispute resolution should proceed under Paragraph 66 or 67, the parties to the dispute shall follow the procedures set forth in the paragraph determined by EPA to be applicable. However, if the Performing Settling Defendant ultimately appeals to the Court to resolve the dispute, the Court shall determine which paragraph is applicable in accordance with the standards of applicability set forth in Paragraphs 66 and 67.

66. Formal dispute resolution for disputes pertaining to the selection or adequacy of

any response action and all other disputes that are accorded review on the administrative record under applicable principles of administrative law shall be conducted pursuant to the procedures set forth in this Paragraph. For purposes of this Paragraph, the adequacy of any response action includes, without limitation: (1) the adequacy or appropriateness of plans, procedures to implement plans, or any other items requiring approval by EPA under this Consent Decree; and (2) the adequacy of the performance of response actions taken pursuant to this Consent Decree. Nothing in this Consent Decree shall be construed to allow any dispute by Performing Settling Defendant regarding the validity of the ROD's provisions.

a. An administrative record of the dispute shall be maintained by EPA and shall contain all statements of position, including supporting documentation, submitted pursuant to this Section. Where appropriate, EPA may allow submission of supplemental statements of position by the Performing Settling Defendant, EPA or the State.

b. The Director of the Office of Site Remediation and Restoration, EPA Region 1, will issue, after reasonable opportunity for review and comment by the State, a final administrative decision resolving the dispute based on the administrative record described in Paragraph 66.a. This decision shall be binding upon the Performing Settling Defendant, subject only to the right to seek judicial review pursuant to Paragraph 66.c and d.

c. Any administrative decision made by EPA pursuant to Paragraph 66.b. shall be reviewable by this Court, provided that a motion for judicial review of the decision is filed by the Performing Settling Defendant with the Court and served on all Parties within 10 days of receipt of EPA's decision. The motion shall include a description of the matter in dispute, the efforts made by the parties to resolve it, the relief requested, and the schedule, if any, within which the dispute must be resolved to ensure orderly implementation of this Consent Decree. The United States may file a response to Performing Settling Defendant's motion.

d. In proceedings on any dispute governed by this Paragraph, Performing Settling Defendant shall have the burden of demonstrating that the decision of the Site Remediation and Restoration Director is arbitrary and capricious or otherwise not in accordance with law. Judicial review of EPA's decision shall be on the administrative record compiled pursuant to Paragraph 66.a.

67. Formal dispute resolution for disputes that neither pertain to the selection or adequacy of any response action nor are otherwise accorded review on the administrative record under applicable principles of administrative law, shall be governed by this Paragraph.

a. Following receipt of Performing Settling Defendant's Statement of Position submitted pursuant to Paragraph 65, the Director of the Office of Site Remediation and Restoration, EPA Region 1, after reasonable opportunity for review and comment by the State, will issue a final decision resolving the dispute. The decision made by the Director of the Office of Site Remediation and Restoration shall be binding on the Performing Settling Defendant unless, within 10 days of receipt of the decision, the Performing Settling Defendant file with the Court and serve on the parties a motion for judicial review of the decision setting forth the matter in dispute, the efforts made by the parties to resolve it, the relief requested, and the schedule, if any, within which the dispute must be resolved to ensure orderly implementation of the Consent Decree. The United States may file a response to Performing Settling Defendant's motion.

b. Notwithstanding Paragraph M of Section I (Background) of this Consent

Decree, judicial review of any dispute governed by this Paragraph shall be governed by applicable principles of law.

68. The invocation of formal dispute resolution procedures under this Section shall not extend, postpone or affect in any way any obligation of the Performing Settling Defendant under this Consent Decree, not directly in dispute, unless EPA after reasonable opportunity for review and comment by the State, or the Court agrees otherwise. Stipulated penalties with respect to the disputed matter shall continue to accrue but payment shall be stayed pending resolution of the dispute as provided in Paragraph 78. Notwithstanding the stay of payment, stipulated penalties shall accrue from the first day of noncompliance with any applicable provision of this Consent Decree. In the event that the Performing Settling Defendant does not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section XX (Stipulated Penalties).

69. Disputes solely between the State and Performing Settling Defendant. Disputes arising under the Consent Decree between the State and the Performing Settling Defendant that relate to Future Response Costs owed to the State, assessment of stipulated penalties by the State, shall be governed in the following manner. The procedures for resolving disputes mentioned in this paragraph shall be the same as provided for in Paragraphs 63 to 68, except that each reference to EPA shall read as a reference to CTDEP, each reference to the OSRR, EPA Region I, shall be read as a reference to Director of Permitting, Enforcement and Remediation Division, and each reference to the United States shall be read as a reference to the State.

XX. STIPULATED PENALTIES

70. Performing Settling Defendant shall be liable for stipulated penalties in the amounts set forth in Paragraphs 71 and 72 to the United States and the State for failure to comply with the requirements of this Consent Decree specified below, unless excused under Section XVIII (Force Majeure). The Settling Defendants shall pay 50% of the stipulated penalties to the United States, and shall pay 50% of the stipulated penalties to the State in accordance with the requirements of Paragraph 77 of this Section. "Compliance" by Performing Settling Defendant shall include completion of the activities under this Consent Decree or any work plan or other plan approved under this Consent Decree ~~identified below in accordance with all applicable~~ requirements of law, this Consent Decree, the SOW, and any plans or other documents approved by EPA pursuant to this Consent Decree and within the specified time schedules established by and approved under this Consent Decree.

71. Stipulated Penalty Amounts - Work.

a. The following stipulated penalties shall accrue per violation per day for any noncompliance except those identified in Paragraph 73 or 74:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$400.00	1st through 14th day
\$500.00	15th through 30th day
\$750.00	31st day and beyond

72. Stipulated Penalty Amounts - Reports.

a. The following stipulated penalties shall accrue per violation per day for

failure to submit timely or adequate reports or other written documents pursuant to Paragraphs 30, 31, 34 and 35:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$100.00	1st through 14th day
\$250.00	15th through 30th day
\$500.00	31st day and beyond

73. In the event that EPA assumes performance of a portion or all of the Work pursuant to Paragraph 89 of Section XXI (Covenants Not to Sue by Plaintiffs), Performing Settling Defendant shall be liable for a stipulated penalty in the amount of \$200,000.

74. All penalties shall begin to accrue on the day after the complete performance is due or the day a violation occurs, and shall continue to accrue through the final day of the correction of the noncompliance or completion of the activity. However, stipulated penalties shall not accrue: (1) with respect to a deficient submission under Section XI (EPA Approval of Plans and Other Submissions), during the period, if any, beginning on the 31st day after EPA's receipt of such submission until the date that EPA notifies Performing Settling Defendant of any deficiency; (2) with respect to a decision by the Director of the Office of Site Remediation and Restoration, EPA Region 1, under Paragraph 66.b or 67.a of Section XIX (Dispute Resolution), during the period, if any, beginning on the 21st day after the date that Performing Settling Defendant's reply to EPA's Statement of Position is received until the date that the Director issues a final decision regarding such dispute; or (3) with respect to judicial review by this Court of any dispute under Section XIX (Dispute Resolution), during the period, if any, beginning on the 31st day after the Court's receipt of the final submission regarding the dispute until the date that the Court issues a final decision regarding such dispute. Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Consent Decree.

75. Following EPA's determination that Performing Settling Defendant has failed to comply with a requirement of this Consent Decree, EPA may give Performing Settling Defendant written notification of the same and describe the noncompliance. EPA and the State may send the Performing Settling Defendant a written demand for the payment of the penalties. However, penalties shall accrue as provided in the preceding Paragraph regardless of whether EPA has sent the Performing Settling Defendant a written demand for the payment of the penalties.

76. All penalties accruing under this Section shall be due and payable to the United States and the State within 30 days of the Performing Settling Defendant's receipt from EPA of a demand for payment of the penalties, unless Performing Settling Defendant invokes the Dispute Resolution procedures under Section XIX (Dispute Resolution). All payments to the United States under this Section shall be paid by certified or cashier's check(s) made payable to "EPA Hazardous Substances Superfund," shall be mailed to Region 1, Attn: Superfund Accounting, P.O. Box 360197M, Pittsburgh, PA 15251, and shall indicate that the payment is for stipulated penalties, and shall reference the EPA Region and Site/Spill ID Number 01B8, the DOJ Case Number 90-11-2-830/1, and the name and address of the party making payment. All payments to the State, under this Section, shall be paid by certified or cashier's check(s) made payable to "State of Connecticut" and shall be mailed to the State in accordance with Section XXVI and shall indicate that the payment is for stipulated penalties. Copies of check(s) paid pursuant to

this Section, and any accompanying transmittal letter(s), shall be sent to the United States and the State as provided in Section XXVI (Notices and Submissions).

77. The payment of penalties shall not alter in any way Performing Settling Defendant's obligation to complete the performance of the Work required under this Consent Decree.

78. Penalties shall continue to accrue as provided in Paragraph 74 during any dispute resolution period, but need not be paid until the following:

a. If the dispute is resolved by agreement or by a decision of EPA that is not appealed to this Court, accrued penalties determined to be owing shall be paid to EPA and the State within 15 days of the agreement or the receipt of EPA's decision or order;

b. If the dispute is appealed to this Court and the United States prevails in whole or in part, Performing Settling Defendant shall pay all accrued penalties determined by the Court to be owed to EPA and the State within 60 days of receipt of the Court's decision or order, except as provided in Subparagraph c below;

c. If the District Court's decision is appealed by any Party, Performing Settling Defendant shall pay all accrued penalties determined by the District Court to be owing to the United States or the State into an interest-bearing escrow account within 60 days of receipt of the Court's decision or order. Penalties shall be paid into this account as they continue to accrue, at least every 60 days. Within 15 days of receipt of the final appellate court decision, the escrow agent shall pay the balance of the account to EPA and the State or to Performing Settling Defendant to the extent that they prevail.

79. If Performing Settling Defendant fails to pay stipulated penalties when due, the United States or the State may institute proceedings to collect the penalties, as well as interest. Performing Settling Defendant shall pay Interest on the unpaid balance, which shall begin to accrue on the date of demand made pursuant to Paragraph 76.

80. Nothing in this Consent Decree shall be construed as prohibiting, altering, or in any way limiting the ability of the United States or the State to seek any other remedies or sanctions available by virtue of Performing Settling Defendant's violation of this Decree or of the statutes and regulations upon which it is based, including, but not limited to, penalties pursuant to Section 122(l) of CERCLA. Provided, however, that the United States shall not seek civil penalties pursuant to Section 122(l) of CERCLA for any violation for which a stipulated penalty is provided herein, except in the case of a willful violation of the Consent Decree.

81. Notwithstanding any other provision of this Section, the United States may, in its unreviewable discretion, waive any portion of stipulated penalties that have accrued pursuant to this Consent Decree.

XXI. COVENANTS NOT TO SUE BY PLAINTIFFS

82. In consideration of the actions that will be performed by the Performing Settling Defendant and the payments that will be made by the Performing Settling Defendant and Contributing Settling Defendants under the terms of the Consent Decree, and except as specifically provided in Paragraphs 83, 84, and 88 of this Section, the United States and the State covenant not to sue or to take administrative action against Settling Defendants pursuant to Sections 106 and 107(a) of CERCLA or any other comparable provisions of State law or

regulations relating to the Site. Except with respect to future liability, these covenants not to sue shall take effect upon the receipt by EPA and the State of the payments required by Paragraph 53.a of Section XVI (Payment For Response Costs). With respect to future liability, these covenants not to sue shall take effect upon Certification of Completion of Remedial Action by EPA pursuant to Paragraph 49.b of Section XIV (Certification of Completion). These covenants not to sue are conditioned upon the satisfactory performance by Performing Settling Defendant of its obligations under this Consent Decree. These covenants not to sue extend only to the Settling Defendant and do not extend to any other person.

83. United States' Pre-Certification Reservations. Notwithstanding any other provision of this Consent Decree, the United States reserves, and this Consent Decree is without prejudice to, the right to institute proceedings in this action or in a new action, or to issue an administrative order seeking to compel Settling Defendants

- a. to perform further response actions relating to the Site or
- b. to reimburse the United States for additional costs of response if, prior to Certification of Completion of the Remedial Action:
 - (1) conditions at the Site, previously unknown to EPA, are discovered,or
 - (2) information, previously unknown to EPA, is received, in whole or in part,

and EPA determines that these previously unknown conditions or information together with any other relevant information indicates that the Remedial Action is not protective of human health or the environment.

84. United States' Post-Certification Reservations. Notwithstanding any other provision of this Consent Decree, the United States reserves, and this Consent Decree is without prejudice to, the right to institute proceedings in this action or in a new action, or to issue an administrative order seeking to compel Settling Defendants

- ~~a. to perform further response actions relating to the Site or~~
- b. to reimburse the United States for additional costs of response if, subsequent to Certification of Completion of the Remedial Action:
 - (1) conditions at the Site, previously unknown to EPA, are discovered,or
 - (2) information, previously unknown to EPA, is received, in whole or in part,

and EPA determines that these previously unknown conditions or this information together with other relevant information indicate that the Remedial Action is not protective of human health or the environment.

85. For purposes of Paragraph 83, the information and the conditions known to EPA shall include only that information and those conditions known to EPA as of the date the ROD was signed and set forth in the Record of Decision for the Site and the administrative record supporting the Record of Decision. For purposes of Paragraph 84, the information and the

conditions known to EPA shall include only that information and those conditions known to EPA as of the date of Certification of Completion of the Remedial Action and set forth in the Record of Decision, the administrative record supporting the Record of Decision, the post-ROD administrative record, or in any information received by EPA pursuant to the requirements of this Consent Decree prior to Certification of Completion of the Remedial Action.

86. States' Pre-Certification Reservations

Notwithstanding any other provisions of this Consent Decree, the State on behalf of CT DEP, reserves, and this Consent Decree is without prejudice to, any right jointly with, or separately from, the United States to institute proceedings in this action under Section 107 of CERCLA, 42 U.S.C. 9607, or under any applicable State law, including but not limited to Conn. Gen. Stat. §§ 22a-133(g), 22a-451 and 22a-432, seeking to compel all or any of the Settling Defendants (1) to perform other response actions at the Site, or (2) to reimburse the State for additional response costs for response actions at the Site, to the extent that EPA has determined that such response actions required under (1) and (2) above in this paragraph will not significantly delay or be inconsistent with the Remedial Action, if prior to Certification of Completion of the Remedial Action:

(i) conditions at, emanating or arising from or related to, the Site, previously unknown to the State, are discovered or become known to the State, or

(ii) information previously unknown to the State is received by the State, in whole or in part, and the State Agency Commissioner, or his or her delegate determines, pursuant to Conn. Gen. Stat. §§ 22a-133(g), 22a-432 and 22a-451 based on these previously unknown conditions or this information together with any other relevant information that the response actions taken are not protective of the public health, safety welfare or the environment. The United States reserves all rights it may have under applicable law, to oppose any determinations made or any actions taken, ordered or proposed by the State pursuant to this Paragraph.

87. States' Post-Certification Reservations

Notwithstanding any other provision of this Consent Decree, the State, on behalf of CT DEP, reserves, and this Consent Decree is without prejudice to, the right jointly with, or separately from, the United States to institute proceedings in this action or in a new action under Section 107 of CERCLA, 42 U.S.C. 9607, or under any applicable State law, including but not limited to Conn. Gen. Stat. §§ 22a-133(g), 22a-432 and 22a-451, seeking to compel all or any of the Settling Defendants (1) to perform other response actions at the Site, or (2) to reimburse the State for additional response costs for response actions at the Site, to the extent that EPA has determined that such response actions required under (1) and (2) above in this Paragraph will not significantly delay or be inconsistent with the Remedial Action, if subsequent to Certification of Completion of Remedial Action:

(i) conditions at, emanating or arising from or related to, the Site, previously unknown to the State, are discovered or become known to the State after Certification of Completion, or

(ii) information previously unknown to the State is received by the State, in whole or in part, after Certification of Completion, and the State Agency Commissioner, or his or her delegate, determines, pursuant to Conn. Gen. Stat. §§ 22a-133(g), 22a-432 and 22a-451, based on these previously unknown conditions or this information together with any other relevant information, that the response actions taken are not protective of public health, safety, welfare

and the environment. The United States reserves all rights it may have under applicable law, to oppose any determinations made or any actions taken, ordered or proposed by the State pursuant to this Paragraph.

88. General reservations of rights. The United States reserves, and this Consent Decree is without prejudice to, all rights against Settling Defendants with respect to all matters not expressly included within Plaintiff's covenant not to sue. Notwithstanding any other provision of this Consent Decree, the United States reserves all rights against Settling Defendants with respect to:

- a. claims based on a failure by Settling Defendants to meet a requirement of this Consent Decree;
- b. liability arising from the past, present, or future disposal, release, or threat of release of Waste Materials outside of the Site;
- c. liability based upon the Settling Defendants' ownership or operation of the Site, or upon the Settling Defendants' transportation, treatment, storage, or disposal, or the arrangement for the transportation, treatment, storage, or disposal of Waste Material at or in connection with the Site, other than as provided in the ROD, the Work, or otherwise ordered by EPA, after signature of this Consent Decree by the Settling Defendants;
- d. liability for damages for injury to, destruction of, or loss of natural resources, and for the costs of any natural resource damage assessments;
- e. criminal liability;
- f. liability for violations of federal or state law which occur during or after implementation of the Remedial Action; and
- g. liability, prior to Certification of Completion of the Remedial Action, for additional response actions that EPA determines are necessary to achieve Performance Standards, but that cannot be required pursuant to Paragraph 13 (Modification of the SOW or Related Work Plans).

89. Work Takeover In the event EPA determines that Performing Settling Defendant has ceased implementation of any portion of the Work, is seriously or repeatedly deficient or late in its performance of the Work, or is implementing the Work in a manner which may cause an endangerment to human health or the environment, EPA may assume the performance of all or any portions of the Work as EPA determines necessary. Performing Settling Defendant may invoke the procedures set forth in Section XIX (Dispute Resolution), Paragraph 66, to dispute EPA's determination that takeover of the Work is warranted under this Paragraph. Costs incurred by the United States in performing the Work pursuant to this Paragraph shall be considered Future Response Costs that Performing Settling Defendant shall pay pursuant to Section XVI (Payment For Response Costs).

90. Notwithstanding any other provision of this Consent Decree, the United States and the State retains all authority and reserves all rights to take any and all response actions authorized by law.

XXII. COVENANTS BY SETTLING DEFENDANTS

91. Covenant Not to Sue. Subject to the reservations in Paragraph 92, Settling Defendants hereby covenant not to sue and agree not to assert any claims or causes of action against the United States or the State with respect to the Site and Past and Future Response Costs as defined herein or this Consent Decree, including, but not limited to:

- a. any direct or indirect claim for reimbursement from the Hazardous Substance Superfund (established pursuant to the Internal Revenue Code, 26 U.S.C. § 9507) through CERCLA Sections 106(b)(2), 107, 111, 112, 113 or any other provision of law;
- b. any claims against the United States, including any department, agency or instrumentality of the United States under CERCLA Sections 107 or 113 related to the Site, or
- c. any claims arising out of response actions at or in connection with the Site, including any claim under the United States Constitution, the Connecticut Constitution, the Tucker Act, 28 U.S.C. § 1491, the Equal Access to Justice Act, 28 U.S.C. § 2412, as amended, or at common law.

92. The Settling Defendants reserve, and this Consent Decree is without prejudice to, claims against the United States, subject to the provisions of Chapter 171 of Title 28 of the United States Code, for money damages for injury or loss of property or personal injury or death caused by the negligent or wrongful act or omission of any employee of the United States while acting within the scope of his office or employment under circumstances where the United States, if a private person, would be liable to the claimant in accordance with the law of the place where the act or omission occurred. However, any such claim shall not include a claim for any damages caused, in whole or in part, by the act or omission of any person, including any contractor, who is not a federal employee as that term is defined in 28 U.S.C. § 2671; nor shall any such claim include a claim based on EPA's selection of response actions, or the oversight or approval of the Performing Settling Defendant's plans or activities. The foregoing applies only to claims which are brought pursuant to any statute other than CERCLA and for which the waiver of sovereign immunity is found in a statute other than CERCLA.

93. ~~Nothing in this Consent Decree shall be deemed to constitute preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).~~

94. Settling Defendants' rights against de micromis potentially responsible parties may be subject to limitations in the Small Business Liability Protection Act signed by President Bush on January 11, 2002.

XXIII. EFFECT OF SETTLEMENT; CONTRIBUTION PROTECTION

95. Nothing in this Consent Decree shall be construed to create any rights in, or grant any cause of action to, any person not a Party to this Consent Decree. The preceding sentence shall not be construed to waive or nullify any rights that any person not a signatory to this decree may have under applicable law. Each of the Parties expressly reserves any and all rights (including, but not limited to, any right to contribution), defenses, claims, demands, and causes of action which each Party may have with respect to any matter, transaction, or occurrence relating in any way to the Site against any person not a Party hereto.

96. The Parties agree, and by entering this Consent Decree this Court finds, that the

Settling Defendants are entitled, as of the Effective Date, to protection from contribution actions or claims as provided by CERCLA Section 113(f)(2), 42 U.S.C. § 9613(f)(2) for matters addressed in this Consent Decree. The matters addressed in this Consent Decree include the United States' and the State's Past Response Costs and Future Response Costs related to the Site, and performance of the Work.

97. The Settling Defendants agree that with respect to any suit or claim for contribution brought by them for matters related to this Consent Decree they will notify the United States and the State in writing no later than 60 days prior to the initiation of such suit or claim.

98. The Settling Defendants also agree that with respect to any suit or claim for contribution brought against them for matters related to this Consent Decree they will notify in writing the United States and the State within 10 days of service of the complaint on them. In addition, Settling Defendants shall notify the United States and the State within 10 days of service or receipt of any Motion for Summary Judgment and within 10 days of receipt of any order from a court setting a case for trial.

99. In any subsequent administrative or judicial proceeding initiated by the United States or the State for injunctive relief, recovery of response costs, or other appropriate relief relating to the Site, Settling Defendants shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim-splitting, or other defenses based upon any contention that the claims raised by the United States or the State in the subsequent proceeding were or should have been brought in the instant case; provided, however, that nothing in this Paragraph affects the enforceability of the covenants not to sue set forth in Section XXI (Covenants Not to Sue by Plaintiffs).

XXIV. ACCESS TO INFORMATION

100. Settling Defendants shall provide to EPA and the State, upon request, copies of all documents and information within their possession or control or that of their contractors or agents relating to activities at the Site or to the implementation of this Consent Decree, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information related to the Work. Settling Defendants shall also make available to EPA and the State, for purposes of investigation, information gathering, or testimony, their employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

101. Business Confidential and Privileged Documents.

a. Settling Defendants may assert business confidentiality claims covering part or all of the documents or information submitted to Plaintiffs under this Consent Decree to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b). Documents or information determined to be confidential by EPA will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality accompanies documents or information when they are submitted to EPA and the State, or if EPA has notified Settling Defendants that the documents or information are not confidential under the standards of Section 104(e)(7) of CERCLA or C.F.R. Part 2, Subpart B, the public may be given access to such documents or information without further notice to Settling Defendants.

b. The Settling Defendants may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If the Settling Defendants assert such a privilege in lieu of providing documents, they shall provide the Plaintiffs with the following: (1) the title of the document, record, or information; (2) the date of the document, record, or information; (3) the name and title of the author of the document, record, or information; (4) the name and title of each addressee and recipient; (5) a description of the contents of the document, record, or information; and (6) the privilege asserted by Settling Defendants. However, no documents, reports or other information created or generated pursuant to the requirements of the Consent Decree shall be withheld on the grounds that they are privileged.

102. No claim of confidentiality shall be made with respect to any data, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, or engineering data, or any other documents or information evidencing conditions at or around the Site.

XXV. RETENTION OF RECORDS

103. Until 6 years after the Settling Defendants' receipt of EPA's notification pursuant to Paragraph 50.b of Section XIV (Certification of Completion of the Work), each Settling Defendant shall preserve and retain all non-identical copies of records and documents (including records or documents in electronic form) now in its possession or control or which come into its possession or control that relate in any manner to their liability under CERCLA with respect to the Site, provided, however, that Settling Defendants who are potentially liable as an owner or operator of the Site must retain, in addition, all documents and records that relate to the liability of any other person under CERCLA with respect to the Site. Each Settling Defendant must also retain, and instruct its contractors and agents to preserve, for the same period of time specified above all non-identical copies of the last draft or final version of any documents or records (including documents or records in electronic form) now in its possession or control or which come into its possession or control that relate in any manner to the performance of the Work, provided, however, that each Settling Defendant (and its contractors and agents) must retain, in addition, copies of all data generated during the performance of the Work and not contained in the aforementioned documents required to be retained. Each of the above record retention requirements shall apply regardless of any corporate retention policy to the contrary.

104. At the conclusion of this document retention period, each Settling Defendant shall notify the United States and the State at least 90 days prior to the destruction of any such records or documents, and, upon request by the United States or the State, Settling Defendants shall deliver any such records or documents to EPA or the State. The Settling Defendants may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If the Settling Defendants assert such a privilege, they shall provide the Plaintiffs with the following: (1) the title of the document, record, or information; (2) the date of the document, record, or information; (3) the name and title of the author of the document, record, or information; (4) the name and title of each addressee and recipient; (5) a description of the subject of the document, record, or information; and (6) the privilege asserted by Settling Defendants. However, no documents, reports or other information created or generated pursuant to the requirements of the Consent Decree shall be withheld on the grounds that they are privileged.

105. Each Settling Defendant hereby certifies individually that, to the best of its knowledge and belief, after thorough inquiry, it has not altered, mutilated, discarded, destroyed or otherwise disposed of any records, documents or other information (other than identical copies) relating to its potential liability regarding the Site since notification of potential liability by the United States or the State or the filing of suit against it regarding the Site and that it has fully complied with any and all EPA requests for information pursuant to Section 104(e) and 122(e) of CERCLA, 42 U.S.C. 9604(e) and 9622(e), and Section 3007 of RCRA, 42 U.S.C. 6927.

XXVI. NOTICES AND SUBMISSIONS

106. Whenever, under the terms of this Consent Decree, written notice is required to be given or a report or other document is required to be sent by one Party to another, it shall be directed to the individuals at the addresses specified below, unless those individuals or their successors give notice of a change to the other Parties in writing. All notices and submissions shall be considered effective upon receipt, unless otherwise provided. Written notice as specified herein shall constitute complete satisfaction of any written notice requirement of the Consent Decree with respect to the United States, EPA, the State and the Settling Defendants, respectively.

As to the United States:

Chief, Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
P.O. Box 7611
Washington, D.C. 20044-7611
Re: DJ # 90-11-2-830/1

and

Director, Site Remediation and Restoration
United States Environmental Protection Agency
Region 1
1 Congress Street, Suite 1100
Boston, MA 02114-2023

As to EPA:

Byron Mah
EPA Project Coordinator
United States Environmental Protection Agency
Region 1
1 Congress Street, Suite 1100
Boston, MA 02114-2023

Michelle Lauterback
Enforcement Counsel
United States Environmental Protection Agency
Region 1
1 Congress Street, Suite 1100
Boston, MA 02114-2023

As to the Regional Financial Management Officer:

Lee Clothier
EPA Financial Management Officer
United States Environmental Protection Agency
Region 1
1 Congress Street, Suite 1100
Boston, MA 02114-2023

As to the State:

Gilbert Richards
State Project Coordinator
Connecticut Department of Environmental
Protection
79 Elm Street
Hartford, CT 06106

John M. Looney
Assistant Attorney General
55 Elm Street
Hartford, CT 06106

As to the Performing Settling Defendant:

James Hart
Administrator
Regional Refuse Disposal District No. 1
P.O. Box 960
New Hartford, CT 06057

and

Mark Zimmerman, Esq.
One State Street
P.O. Box 231277
Hartford, CT 06123-1277

XXVII. EFFECTIVE DATE

107. The effective date of this Consent Decree shall be the date upon which this Consent Decree is entered by the Court, except as otherwise provided herein.

XXVIII. RETENTION OF JURISDICTION

108. This Court retains jurisdiction over both the subject matter of this Consent Decree and the Settling Defendants for the duration of the performance of the terms and provisions of this Consent Decree for the purpose of enabling any of the Parties to apply to the Court at any time for such further order, direction, and relief as may be necessary or appropriate for the construction or modification of this Consent Decree, or to effectuate or enforce compliance with its terms, or to resolve disputes in accordance with Section XIX (Dispute Resolution) hereof.

XXIX. APPENDICES

109. The following appendices are attached to and incorporated into this Consent Decree:

“Appendix A” is the ROD.

“Appendix B” is the SOW.

“Appendix C” is the description and/or map of the Site.

“Appendix D” is the complete list of the Settling Defendants.

“Appendix E” is the NPL listing document.

“Appendix F” is the draft access and institutional controls document.

XXX. COMMUNITY RELATIONS

110. Performing Settling Defendant shall propose to EPA and the State its participation in the community relations plan to be developed by Performing Settling Defendant, with the approval of EPA. EPA will determine the appropriate role for the Performing Settling Defendant under the Plan. Performing Settling Defendant shall also cooperate with EPA and the State in providing information regarding the Work to the public. As requested by EPA or the State, Performing Settling Defendant shall participate in the preparation of such information for

dissemination to the public and in public meetings which may be held or sponsored by EPA or the State Performing to explain activities at or relating to the Site.

XXXI. MODIFICATION

111. Schedules specified in this Consent Decree for completion of the Work may be modified by agreement of EPA and the Performing Settling Defendant. All such modifications shall be made in writing.

112. Except as provided in Paragraph 13 (Modification of the SOW or Related Work Plans), no material modifications shall be made to the SOW without written notification to and written approval of the United States, Performing Settling Defendant, and the Court, if such modifications fundamentally alter the basic features of the selected remedy within the meaning of 40 C.F.R. 300.435(c)(2)(B)(ii). Prior to providing its approval to any modification, the United States will provide the State with a reasonable opportunity to review and comment on the proposed modification. Modifications to the SOW that do not materially alter that document, or material modifications to the SOW that do not fundamentally alter the basic features of the selected remedy within the meaning of 40 C.F.R.300.435(c)(2)(B)(ii), may be made by written agreement between EPA, after providing the State with a reasonable opportunity to review and comment on the proposed modification, and the Performing Settling Defendant.

113. Nothing in this Decree shall be deemed to alter the Court's power to enforce, supervise or approve modifications to this Consent Decree.

114. Material modifications to the SOW may be made only by written notification to and written approval of the United States, Performing Settling Defendant, and the Court. Prior to providing its approval to any modification, the United States will provide the State with a reasonable opportunity to review and comment on the proposed modification.

Modifications to the schedules specified in the Consent Decree for completion of the Work, or modifications to the SOW that do not materially alter that document may be made by written agreement between EPA, after providing the State with a reasonable opportunity to review and comment on the proposed modification, and Performing Settling Defendant. Such non-material modifications will become effective upon agreement of the parties.

Non-material modifications to the Consent Decree other than those addressed above in Paragraph 113 may be made only by written notification to and written approval of the United States, and the State and the Performing Settling Defendant. Such modifications will become effective upon filing with the Court by the United States. Material modifications to the Consent Decree and any modifications to the Performance Standards may be made only by written notification to and written approval of the United States, the State, the Settling Defendants, and the Court.

Nothing in this Decree shall be deemed to alter the Court's power to enforce, supervise or approve modifications to this Consent Decree.

For purposes of this Section, the Consent Decree shall not include the SOW or other attachments to the Consent Decree.

XXXII. LODGING AND OPPORTUNITY FOR PUBLIC COMMENT

115. This Consent Decree shall be lodged with the Court for a period of not less than thirty (30) days for public notice and comment in accordance with Section 122(d)(2) of CERCLA, 42 U.S.C. § 9622(d)(2), and 28 C.F.R. § 50.7. The United States reserves the right to withdraw or withhold its consent if the comments regarding the Consent Decree disclose facts or considerations which indicate that the Consent Decree is inappropriate, improper, or inadequate. The State may withdraw or withhold its consent to the entry of this Consent Decree if comments received disclose facts or considerations which show that the Consent Decree violates state law. The United States reserves the right to challenge in court the State withdrawal from the Decree, including the right to argue that the requirements of state law have been waived, preempted, or otherwise rendered inapplicable by federal law. The State reserves the right to oppose the United States' position taken in opposition to the proposed withdrawal. In addition, in the event of the United States withdrawal from this Consent Decree, the State reserves its rights to withdraw from this Consent Decree. Settling Defendants consent to the entry of this Consent Decree without further notice.

116. If for any reason the Court should decline to approve this Consent Decree in the form presented, this agreement is voidable at the sole discretion of any Party and the terms of the agreement may not be used as evidence in any litigation between the Parties.

XXXIII. SIGNATORIES/SERVICE

117. Each undersigned representative of a Settling Defendant to this Consent Decree and the Assistant Attorney General for the Environment and Natural Resources Division of the Department of Justice certifies that he or she is fully authorized to enter into the terms and conditions of this Consent Decree and to execute and legally bind such Party to this document.

118. Each Settling Defendant hereby agrees not to oppose entry of this Consent Decree by this Court or to challenge any provision of this Consent Decree unless the United States has notified the Settling Defendants in writing that it no longer supports entry of the Consent Decree.

119. Each Settling Defendant shall identify, on the attached signature page, the name, address and telephone number of an agent who is authorized to accept service of process by mail on behalf of that Party with respect to all matters arising under or relating to this Consent Decree. Settling Defendants hereby agree to accept service in that manner and to waive the formal service requirements set forth in Rule 4 of the Federal Rules of Civil Procedure and any applicable local rules of this Court, including, but not limited to, service of a summons.

XXXIV. FINAL JUDGMENT

120. This Consent Decree and its appendices constitute the final, complete, and exclusive agreement and understanding among the parties with respect to the settlement embodied in the Consent Decree. The parties acknowledge that there are no representations, agreements or understandings relating to the settlement other than those expressly contained in this Consent Decree.

121. Upon approval and entry of this Consent Decree by the Court, this Consent Decree shall constitute a final judgment between and among the United States and the Settling Defendants. The Court finds that there is no just reason for delay and therefore enters this judgment as a final judgment under Fed. R. Civ. P. 54 and 58.

SO ORDERED THIS __ DAY OF _____, 20__.

United States District Judge

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of *United States v. Regional Refuse Disposal District No. 1, et al.*, relating to the Barkhamsted-New Hartford Superfund Site.

12/16/02
Date

FOR THE UNITED STATES OF AMERICA



CATHERINE R. McCABE
Deputy Section Chief
Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
P.O. Box 7611
Washington, D.C. 20044-7611

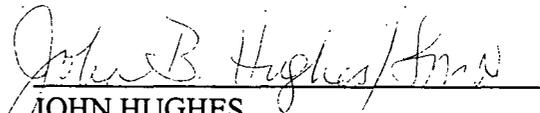
1/7/03
Date



J. TOM BOER, Trial Attorney
Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
P.O. Box 7611
Washington, D.C. 20044-7611

KEVIN J. O'CONNOR
United States Attorney for the
District of Connecticut

1-13-03
Date

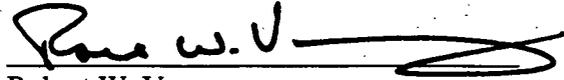


JOHN HUGHES
Assistant United States Attorney
District of Connecticut
U.S. Department of Justice
Connecticut Financial Center
PO Box 1824
New Haven, CT 06508

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Regional Refuse Disposal District No. 1., et. al., relating to the Barkhamsted-New Hartford Superfund Site.

9-28-02

Date



Robert W. Varney
Regional Administrator, Region 1
U.S. Environmental Protection Agency
One Congress Street
Boston, MA 02114

9/26/02

Date



Michelle Lauterback
Enforcement Counsel
U.S. Environmental Protection Agency
Region 1
One Congress Street
Boston, MA 02114

FOR THE STATE OF CONNECTICUT
Department of Environmental Protection
Richard Blumenthal
Attorney General by

10/3/2002

Date



Mark P. Kindall, CT 13797
Assistant Attorney General
55 Elm Street
Hartford, CT 06106

FOR Regional Refuse Disposal District No. 1

11/15/02

Date

Signature: Hans Anderson

Name (print): Hans Anderson

Title: Chairman

Address: P.O. Box 960

New Hartford, CT 06057

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name (print): Mark J. Zimmermann, Esq.

Title: Attorney

Address: Updike, Kelly & Spellacy, P.C.

One State Street, P.O. Box 231277

Hartford, CT 06123-1277

Ph. Number: (860) 548-2624

***/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.**

FOR

Axil Corporation.

November 18, 2002
Date

Signature: 
 Name (print): Richard Dougherty
 Title: Treasurer
 Address: P.O. Box 98
375 Metuchen Road
South Plainfield, NJ 07080

Agent Authorized to Accept Service on Behalf of Above-signed Party:

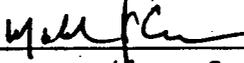
Name (print): Katharine S. Goodbody
 Title: Attorney at Law
 Address: 261 Bradley St.
New Haven, CT 06515
 Ph. Number: 203 773-3637

***/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.**

FOR

Banner Spring Corporation

November 11, 2002
Date

Signature: 
Name (print): MICHAEL COUNIHAN
Title: PRESIDENT
Address: BANNER SPRING CORP.
210 HOLABIRD AVE.
PO BOX 657
WINSTED, CT 06098

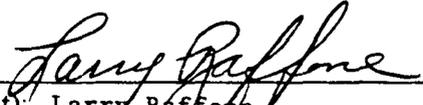
Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name (print): MICHAEL COUNIHAN
Title: PRES
Address: BANNER SPRING CORP
PO BOX 657
WINSTED, CT 06098
Ph. Number: 860-379-3725

***/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.**

FOR The Barden Corporation

September 24, 2002
Date

Signature: 
Name (print): Larry Raffone
Title: Vice President/Finance
Address: 200 Park Avenue
P.O. Box 2449
Danbury, CT 06813-2449

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name (print): Robert M. Carmen
Title: Jenkins & Gilchrist Parker Chapin LLP
Address: Attorneys for the Barden Corporation
405 Lexington Avenue
New York, New York 10174
Ph. Number: (212) 704-6000

***/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.**

FOR BNB MANUFACTURING Co., Inc.

11-7-2002
Date

Signature: Bernardino P. Nanni SR.
Name (print): BERNARDINO P. NANNI SR.
Title: PRESIDENT
Address: C/O BNB MFG. Co., INC.
200 PRICE ROAD
PO BOX 556
WINSTED, CT. 06098

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name (print): BERNARDINO P. NANNI SR.
Title: PRESIDENT
Address: 200 PRICE ROAD
PO BOX 556
WINSTED, CT. 06098
Ph. Number: 860-379-0783

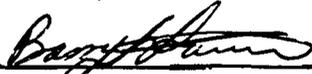
*/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

BNP
11-7-02

FOR BPL, Inc., formerly known as New England Miniature Ball Company

Nov 14. 2002

Date

Signature: 

Name (print): Barry Lawrence

Title: President

Address: BPL, Inc.

18 Hemlock Drive

New Hartford, CT 06057

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name (print): Jane Kimball Warren, Esq.

Title: Member

Address: Cummings & Lockwood, LLC

185 Asylum Street, 36th Flr.

Hartford, CT 06103

Ph. Number: (860) 275-6781

*/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

FOR DEVREX CUTTER GRINDING INC

11/21/2002
Date

Signature: 
Name (print): WADE R. DEVEREUX
Title: PRESIDENT
Address: DEVREX CUTTER GRINDING, INC.
P.O. BOX 430
100 WHITING ST
WINSTED CT 06098

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name (print): WADE R. DEVEREUX
Title: PRESIDENT
Address: 100 WHITING ST
P.O. BOX 430
WINSTED, CT 06098
Ph. Number: 860-379-3495

*! A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

FOR Duralite, Inc.

11/15/2002
Date

Signature: Mark E. Jessen
Name (print): Mark E. Jessen
Title: President
Address: PO Box 188
15 School St.
Riverton, CT 06065

Agent Authorized to Accept Service on Behalf of Above-signed Party:

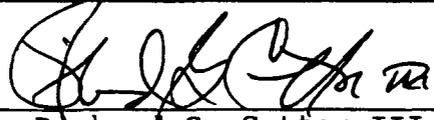
Name (print): Mark Jessen
Title: President
Address: PO Box 188
15 School St.
Riverton, CT 06065
Ph. Number: 860 379 3113

* / A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

FOR Dynamics Corporation of America

September 24, 2002

Date

Signature: 

Name (print): Richard G. Cutter III

Title: Secretary

Address: 905 West Boulevard North
Elkhart, IN 46514

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name (print): Richard G. Cutter III

Title: Secretary

Address: 905 West Boulevard North
Elkhart, IN 46514

Ph. Number: (574) 293-7511

*/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

FOR Fairchild Auto-Mated Parts, Inc.

November 15, 2002
Date

Signature: 
Name (print): NORMAN THOMPSON
Title: PRESIDENT AND TREASURER
Address: 15 White Street
Winsted, CT 06098

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name (print): NORMAN THOMPSON
Title: PRESIDENT AND TREASURER
Address: FAIRCHILD AUTO-MATED PARTS, INC.
15 WHITE STREET
WINSTED, CT 06098
Ph. Number: (860) 379-2725

*/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

FOR

FRED J. POTTER COMPANY

November 13, 2002
Date

Signature: *Klaus A. Liedtke*
Name (print): KLAUS A. LIEDTKE
Title: Partner
Address: 34 Elaine Drive
Simsbury CT 06070

Agent Authorized to Accept Service on Behalf of Above-signed Party:

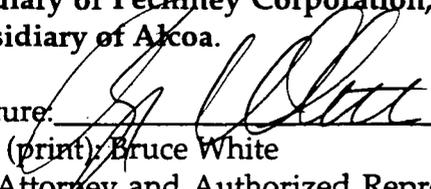
Anne M. Doolittle
Name (print): ANNE M. DOOLITTLE
Title: Partner
Address: 360 E. 72nd St.
#B401
N.Y. N.Y. 10021
Ph. Number: 212 249 3682

B401

*/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

FOR Howmet Corporation, previously a subsidiary of Pechiney Corporation, and now a subsidiary of Alcoa.

Date: September 25, 2002

Signature: 

Name (print): Bruce White

Title: Attorney and Authorized Representative

Address: Karaganis, White & Magel, Ltd.

414 North Orleans

Suite 810

Chicago, IL 60610

312-836-1177 Ext. 150

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name (print): Sanford Harvey

Title: Counsel

Address: Alcoa

Alcoa Corporate Center

201 Isabella Street

at 7th Street bridge

Pittsburgh Pa. 15212-5858

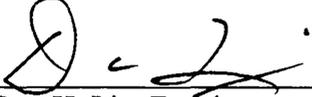
Ph. Number: 412-553 3735

BARKCDSG

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Regional Refuse Disposal District No. 1., et al., relating to the Barkhamsted-New Hartford Superfund Site.

FOR IKON OFFICE SOLUTIONS, INC. *

9/27/02
Date

Signature: 
Name (print): Don H. Liu, Esquire
Title: Senior Vice President, General Counsel and Secretary

Address: IKON Office Solutions, Inc.
70 Valley Stream Parkway
Malvern, PA 19355

Agent Authorized to Accept Service on Behalf of IKON Office Solutions, Inc. *

Name: Michael P. Walsh, Esquire
Title: Vice President, Litigation
Address: IKON Office Solutions, Inc.
70 Valley Stream Parkway
Malvern, PA 19355
Phone Number: (610) 408-7126

* Includes its predecessors in ownership of the former Amseco facility located in New Hartford, CT (The Coca-Cola Company and Eaton Corporation).

Kaman Music Corporation,
FOR Ovation Instruments Division

September 25, 2002

Date

Signature: 
Name (print): Robert M. Garneau
Title: Vice President and Treasurer
Address: 20 Old Windsor Road
P.O. Box 507
Bloomfield, CT 06002

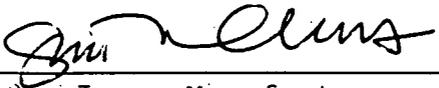
Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name (print): Kaman Corporation
Title: N/A
Address: 1332 Blue Hills Avenue
P. O. Box 1
Bloomfield, CT 06002
Ph. Number: (860) 243-7100

***/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.**

FOR Manafort Brothers, Inc.

November 15, 2002
Date

Signature: 
Name (print): Jason Manafort
Title: Vice President
Address: 414 New Britain Ave.
Plainville, CT 06062

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name (print): Karen A. Mignone
Title: Attorney at Law
Address: 30 Jelliff Lane
Southport, CT 06890

Ph. Number: (203) 319-4040

*/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

FOR MEDPOINTE HEALTHCARE, INC.,
formerly known as CARTER-
WALLACE, INC., on behalf of itself and
the former CARTER-WALLACE, INC.
divisions including the former
LAMBERT KAY DIVISION

9-25-02

Date

Signature: 
Name (print): BETH P. HECHT
Title: SVP, GENERAL COUNSEL - SECY
Address: Medpointe Healthcare, Inc.
265 Davidson Avenue, Suite 300
P.O. Box 6833
Somerset, NJ 08875-6833

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name (print): Richard J. Majos
Title: Compliance & Env. Health
Address: MedPointe
P.O. Box 6833, Davidson Ave
Somerset, N.J. 08875-6833
Ph. Number: 732-564-2414

*/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

FOR

MSI Inc.

November 14, 2002

Date

Signature: Leonard Johnson
Name (print): LEONARD D. JOHNSON
Title: PRESIDENT
Address: 382 Colebrook River Rd.
Riverton CT 06065

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name (print): LEONARD D. JOHNSON
Title: PRESIDENT
Address: MSI INC
382 COLEBROOK RIVER ROAD
RIVERTON, CT 06065
Ph. Number: 860-379-3027

*/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

NewellRubbermaid, Inc. (Crouse-
HINDS Corporation/Cooper Industries, Inc.
The Union Pin Company/Cooper Industries,
Inc.)

FOR _____

SEPTEMBER 06, 2002
Date

Signature: 
Name (print): Peter J. Schultz
Title: Director, Environmental Affairs
Address: _____
6833 Stalter Drive
Rockford, Illinois 61108

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name (print): Peter J. Schultz
Title: Director, Environmental Affairs
Address: NewellRubbermaid, Inc.
6833 Stalter Drive
Rockford, Illinois 61108

Ph. Number: 815-381-8121

*/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

FOR

Northwest Connecticut Manufacturing Company, Inc.

November 5, 2002
Date

Signature: Louis Fasano
Name (print): Louis Fasano
Title: president
Address: PO Box 806
Winsted, CT 06098

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name (print): Louis Fasano
Title: president, NORTHWEST CONNECTICUT MFG. Co., INC
Address: PO Box 806
Winsted, CT 06098

Ph. Number: (860) 379-1553

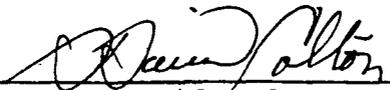
***/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.**

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Regional Refuse Disposal District No. 1., et. al., relating to the Barkhamsted-New Hartford Superfund Site.

FOR ** _____ COMPANY, INC. */

**Phelps Dodge High Performance Conductors of SC & GA, Inc. f/k/a
Hudson Wire Company

10/01/02
Date

Signature: 
Name (print): S. David Colton
Title: Sr. Vice Pres. and General Counsel
Address: One North Central Avenue
Phoenix, Arizona 85004

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name (print): S. David Colton
Title: Sr. Vice Pres. and General Counsel
Address: One North Central Avenue
Phoenix, Arizona 85004

Ph. Number: 602-366-8100

*/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

FOR Pitney Bowes Inc.

9-25-02
Date

Signature: 
Name (print): Arlen F. Henock
Title: Vice President- Finance
Address: One Elmcroft Road
Stamford, CT 06926

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name (print): DAVID R. PATTEE
Title: SENIOR CORPORATE ENVIRONMENTAL ENGINEER
Address: PITNEY BOWES
MSC 40-21
1 ELMCROFT ROAD, STAMFORD, CT 06926
Ph. Number: 203-351-6016

*/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

FOR The Reynolds and Reynolds Company

9/26/02
Date

Signature: [Handwritten Signature]
Name (print): Douglas M. Ventura
Title: VP Bus. Dev. and Gen. Counsel
Address: One Reynolds Way
Kettering, OH 45430

Agent Authorized to Accept Service on Behalf of Above-signed Party:

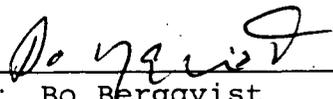
Name (print): Coolidge Wall Womsey + Lombardi
Title: Legal Counsel
Address: 33 W. First Street, Suite 600
Dayton, OH 45402
Ph. Number: 937-223-8177

*/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

FOR SKF USA Inc.

9/25/02

Date

Signature: 

Name (print): Bo Bergqvist

Title: V.P. Finance

Address: 1111 Adams Avenue

Norristown, PA 19403

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name (print): C. William McGlocklin

Title: Director of Environmental Affairs

Address: 1111 Adams Avenue

Norristown, PA 19403

Ph. Number: 610-630-2730

***/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.**

FOR SON-CHIEF ELECTRICS, INC.

10-30-2002
Date

Signature: Donald F. Fitzgerald
Name (print): DONAL F. FITZGERALD
Title: PREC.
Address: 41 MEADOW ST
WINSTED CT. 06098

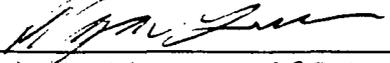
Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name (print): ALEX F. GARMON
Title: MANAGER
Address: SON-CHIEF ELECTRICS, INC.
41 MEADOW STREET
WINSTED, CT 06098
Ph. Number: 860-379-2741

* / A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

FOR Southport Industries, Inc.,

November 8, 2002
Date

Signature: 
Name (print): WAYNE LARSEN
Title: PRESIDENT
Address: 125 PRICE RD
WINSTED CT
06098

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name (print): Paul Jacob, Esq.
Title: Attorney
Address: Jacob & Case, PC
300 Bic Drive
Milford, CT 06460
Ph. Number: 203-874-7110

*/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

FOR

Sterling Engineering Corporation

November 7, 2002
Date

Signature: John M. Lavieri
Name (print): John M. Lavieri
Title: President
Address: P.O. Box 759
Winsted, CT 06098

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name (print): Richard P. Lavieri
Title: ATTORNEY
Address: PO Box 983
Winsted, CT 06098
Ph. Number: (860) 379-4343

* / A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

FOR

Sterling Name Tape COMPANY

November 7, 2002
Date

Signature: 
Name (print): James P. Barrett
Title: President
Address: 9 Willow St.
P.O. Box 939
Winsted, CT 06098

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name (print): James P. Barrett
Title: President
Address: 9 Willow St.
P.O. Box 939
Winsted, CT 06098
Ph. Number: 860-379-5142

*/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

FOR The Capitol Products Company

10-30-02
Date

Signature: *Dominic J. Colavecchio*
Name (print): Dominic J. Colavecchio
Title: President
Address: 35 Willow Street
P.O. Box 710
Winsted, CT. 06098 USA

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name (print): Dominic J. Colavecchio
Title: President
Address: 35 Willow Street
P.O. Box 710
Winsted, CT. 06098 USA
Ph. Number: 1-860-379-3393

*/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

FOR

The Hurley Manufacturing COMPANY

November 14, 2002
Date

Signature: David J. Hurley
Name (print): DAVID J. HURLEY
Title: VICE PRESIDENT
Address: HURLEY MFG CO
37 GREENWOODS ROAD
P.O. BOX 366
NEW HARTFORD, CT 06057

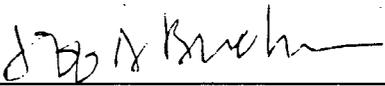
Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name (print): DAVID J. HURLEY
Title: VICE PRESIDENT
Address: HURLEY MFG CO.
37 GREENWOODS Rd, P.O. BOX 366
NEW HARTFORD, CT 06057
Ph. Number: (860) 379-8506

*/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

FOR Three-Five Systems, Inc. on behalf of Refac Electronics, Inc.

November 15, 2002

Signature: 

Name (print): Jeffrey Buchanan

Title: Chief Financial Officer

Address: 1600 N. Desert Drive
Tempe, Arizona 85281-1230

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name (print): Carla A. Consoli, Esq.

Title: Legal Counsel

Address: Bryan Cave LLP
2 North Central, Suite 2200
Phoenix, Arizona 85012

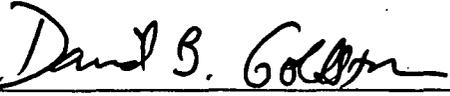
Ph. Number: 602-364-7408

*/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

FOR TRW Inc.

9-27-02

Date

Signature: 

Name (print): David B. Goldston

Title: Assistant Secretary

Address: 1900 Richmond Road

Cleveland, Ohio 44124

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name (print): Scott D. Blackhurst

Title: Senior Counsel, Environment

Address: 1900 Richmond Road

Cleveland, Ohio 44124

Ph. Number: 216.291.7359

*/ A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

FOR

T.S. Skilton and Sons

November 22, 2002
Date

Signature: [Handwritten Signature]
Name (print): TRABEL H. SKILTON
Title: PRESIDENT
Address: BURSON AVE
WINSTED CONN.
06098

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name (print): JAMES TOWNSEND
Title: ATTY
Address: 140 WILLOW ST
WINSTED CT 06098-2092
Ph. Number: (860) 379-7549

* / A separate signature page must be signed by each corporation, individual or other legal entity that is settling with the United States.

APPENDIX A

**Record of Decision
Barkhamsted - New Hartford Landfill
Superfund Site
Barkhamsted, CT**

**Final
September 26, 2001**

**Record of Decision
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Appendix F: Transcript of the Public Hearing on July 18, 2001

DECLARATION FOR THE RECORD OF DECISION

A. SITE NAME AND LOCATION

Barkhamsted-New Hartford Landfill
Barkhamsted, Connecticut
CERCLIS ID # CTD980732333

B. STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the Barkhamsted-New Hartford Landfill, in Barkhamsted, Connecticut, which was chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), 42 USC § 9601 et seq., as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300 et seq., as amended. The Director of the Office of Site Remediation and Restoration (OSRR) has been delegated the authority to approve this Record of Decision.

This decision was based on the Administrative Record, which has been developed in accordance with Section 113 (k) of CERCLA, and which is available for review at the Beardsley & Memorial Library in Winstead, Connecticut and at the United States Environmental Protection Agency (USEPA) Region 1 OSRR Records Center in Boston, Massachusetts. The Administrative Record Index (Appendix A to the ROD) identifies each of the items comprising the Administrative Record upon which the selection of the remedial action is based.

The State of Connecticut concurs with the Selected Remedy.

C. ASSESSMENT OF THE SITE

The response action selected in this ROD is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

D. DESCRIPTION OF THE SELECTED REMEDY

This ROD sets forth the selected remedy for the Barkhamsted-New Hartford Landfill Site, which involves the restoration of contaminated groundwater by monitored natural attenuation (MNA). Institutional controls will be used to restrict the future use of the Site and prevent ingestion and dermal contact with groundwater. Groundwater contamination at the Site, which includes volatile and semi-volatile organic compounds, and low concentrations of metals, constitutes a low-level threat. As a result of previous actions at the Site, groundwater is the only medium requiring remedial action. All source materials and principal threats have been addressed under the previous action.

The selected remedy is a comprehensive approach for this operable unit that addresses all current and potential future risks caused by groundwater contamination. Specifically, this

Record of Decision
Part 1: The Declaration

remedial action includes the plume of contaminated groundwater beneath and downgradient of the Barkhamsted-New Hartford landfill. The remedial measures will allow for restoration of the Site groundwater to cleanup levels. Remediation of the contaminant source was addressed in a previous action.

Previous actions at the Site, conducted as a Non-time Critical Removal Action (NTCRA) lead by the Connecticut Department of Environmental Protection (CTDEP) addressed source materials and principal threat wastes. The selected response action addresses the remaining low-level threat wastes at the Site by treating the wastes via naturally occurring, in-situ processes (natural attenuation) to achieve the cleanup levels.

The major components of this remedy are:

1. Remediation of groundwater to cleanup levels by natural attenuation involving naturally occurring in-situ processes; natural attenuation is expected to last approximately 16 years before groundwater will meet applicable standards;
2. Installation of groundwater monitoring wells in the down-gradient part of the plume;
3. Institutional Controls to protect the integrity of the landfill cap and to prevent ingestion and contact with contaminated groundwater. Institutional controls for this Site include environmental land use restrictions on present and future uses, and groundwater use restrictions;
4. A public education program involving informational meetings and/or mailings to discuss potential Site hazards;
5. Long Term Monitoring of groundwater, surface water, and sediment to evaluate changes over time and to evaluate the success of the remedial action; and
6. Five-year Review.

E. STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate to the remedial action (unless justified by a waiver), is cost-effective, and utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable.

Upon completion of this remedy, hazardous substances will remain on-Site under the landfill cap and will limit use of the property. For all other areas of the Site, upon completion of this remedy to clean up groundwater, no hazardous substances will remain on-Site above levels that prevent unlimited use or unrestricted exposure. However, prior to reaching clean up goals, groundwater and / or land use restrictions are necessary. This remedy to clean up groundwater will require greater than five years to achieve these clean up goals; therefore, pursuant to CERCLA section 121(c) and as provided in the current guidance on Five Year Reviews

Record of Decision
Part 2: The Decision Summary

(OSWER Directive 9355.7-03B-P, Comprehensive Five-Year Review Guidance, June 2001), EPA must conduct a policy five-year review. Therefore, the five-year review will be completed prior to five years from the date of the Preliminary Close Out Report (PCOR). This is the final remedy for the Barkhamsted New-Hartford Landfill.

F. ROD DATA CERTIFICATION CHECKLIST

The following information is included in the Decision Summary section of this Record of Decision. Additional information can be found in the Administrative Record file for this Site.

1.	Chemicals of concern (COCs) and their respective concentrations	page. no. xx
2.	Baseline risk represented by the COCs	page. no. xx
3.	Cleanup levels established for COCs and the basis for the levels	page. no. xx
4.	Current and future land and ground-water use assumptions used in the baseline risk assessment and ROD	page. no. xx
5.	Land and groundwater use that will be available at the Site as a result of the selected remedy	page. no. xx
6.	Estimated capital, operation and maintenance (O&M), and total present worth costs; discount rate; and the number of years over which the remedy cost estimates are projected	page. no. xx
7.	Decisive factor(s) that led to selecting the remedy	page. no. xx

G. AUTHORIZING SIGNATURES

This ROD documents the selected remedy for groundwater at the Barkhamsted-New Hartford Landfill. This remedy was selected by USEPA with concurrence of the Connecticut Department of Environmental Protection.

U.S. Environmental Protection Agency

By: _____ Date: _____
Patricia L. Meaney
Director
Office of Site Remediation and Restoration, Region 1

A. SITE, LOCATION AND BRIEF DESCRIPTION

The Barkhamsted-New Hartford Landfill, CERCLIS ID # CTD980732333, is located adjacent to and southwest of Route 44 within the Towns of Barkhamsted and New Hartford,

Record of Decision
Part 2: The Decision Summary

Connecticut. The Potentially Responsible Parties group has been the lead entity for Site activities.

The Site is on a 97.8 acre parcel of land on the northern slope of a hill within the Farmington River Valley in the north central portion of Connecticut, approximately 20 miles northwest of Hartford. The Site is bordered on the northeast by the Barkhamsted Town Garage facility. The remainder of the parcel is bounded by a combination of developed and undeveloped private property. Residences with private drinking wells border the Site. A portion of the Site was used as a landfill, owned and operated by the Regional Refuse Disposal District #1 (RRDD#1). The Site previously operated as a landfill, and in 1998 a landfill cap and leachate collection system, surrounded by a fence, were constructed as a Non-Time Critical Removal Action (NTCRA) under CERCLA (see Action Memorandum dated January 19, 1996).

A more complete description of the Site can be found in Section 2 of the Remedial Investigation Report (O'Brien & Gere, 1996).

B. SITE HISTORY AND ENFORCEMENT ACTIVITIES

1. History of Site Activities

The Barkhamsted Site was utilized for the disposal of solid waste between April 1974 and August 1988. After August 1988, the landfill was utilized only for the disposal of bulky and non-processible waste with the exception of a period during November and December 1988 when the Connecticut Resources Recovery Authority (CRRA) Mid-Connecticut Waste to Energy Plant was inoperable. Recycling activities were conducted at the Site since it was opened. The following table provides a chronology of events at the Site since the formation of RRDD#1:

<u>Date</u>	<u>Activity at the Site</u>
September 1970	RRDD#1 was formed.
September 1972	RRDD#1 received CTDEP solid waste permit #005-2L.
September 1972	RRDD#1 purchased the Barkhamsted property from the Town of Barkhamsted.
January 1974	Modification to the RRDD#1 solid waste permit was issued.
April 1974	The landfill became operational.
1974 - 1979	Problems were reported regarding a lack of daily cover material.

Record of Decision
Part 2: The Decision Summary

<u>Date</u>	<u>Activity at the Site</u>
1970s	Operation of chemical pit which received oily sludge with metal grindings and degreasers.
April 1974 - August 1988	Barkhamsted Site was utilized for the disposal of solid waste.
1980	CTDEP inspection of the Site.
1981	USEPA conducted a preliminary assessment for the Site.
March 1981	RRDD#1 was requested by the CTDEP to eliminate hazardous waste from the facility.
July 1981	CTDEP formally approved metal grinding waste for disposal at RRDD#1.
1983	Two complaints were received concerning the presence of a large number of drums at the landfill.
April 1983	CTDEP requested that 25 drums be relocated from the vicinity of the oak tree northwest of the landfill building to a paved area on-Site.
November 1983	30 drums were found near the scrap metal area north of the toe of the landfill and northwest of the landfill garage.
December 1983	A modification to the landfill operating permit was issued.
1984	Requirement for a new metal grindings cell. Metal grindings were stored on Site in 55-gallon drums.
September 1986	CTDEP acknowledged the handling of both waste oil and batteries for recycling.
1987	USEPA conducted a Site inspection.
November - December 1988	Disposal of solid waste at the Site because CRRA mid-Connecticut Waste to Energy Plant was inoperable.
August 1988 - October 1993	Disposal of bulky and non-processible waste only.
1988	CTDEP document states that one half of the barrels received at the Site contained unspecified amounts of chlorinated hydrocarbons or methyl-ethyl-ketone.

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<u>Date</u>	<u>Activity at the Site</u>
October 1989	Barkhamsted Site listed on NPL
February 1990	A minor amendment was granted to the RRDD#1 solid waste permit allowing the landfill to accept dewatered sludge from the Winstead Publicly Owned Treatment Works (POTW).
November 1992	RRDD#1 implements landfill closure. CTDEP Minor Amendment (to Permit # SW-0005-2L) revises water quality monitoring plan.
October 1993	RRDD#1 stops accepting waste for on-Site disposal.
January 1995	CTDEP approves landfill closure.
1998	NTCRA is completed.

On February 27, 1990, a minor amendment was granted to the RRDD#1 solid waste permit allowing the landfill to accept dewatered sludge from the Winstead Publicly Owned Treatment Works (POTW). The sewage sludge was brought to the Site and incorporated into the landfill cover material.

Industrial wastes, including metal grinding waste, oily sludge with metal grindings and degreasers, barrels containing unspecified amounts of chlorinated hydrocarbons and methyl-ethyl-ketone, and keratin (a food processing waste) were accepted at the Site. Dry metal grinding waste was reportedly utilized on Site roads and incorporated into the landfill daily cover. CTDEP records state that an industrial waste pit was operated at the Site during the first year of landfill operation (Fuss & O'Neill, 1991b).

Landfill closure was implemented in November 1992 in accordance with the Landfill Closure Plan (Fuss & O'Neill 1992). In addition, water quality monitoring was revised in accordance with a minor amendment to Permit No. SW-0005-2L. RRDD#1 ceased accepting wastes for on-Site disposal in October 1993. Final landfill closure was approved by CTDEP in January 1995.

A more detailed description of the Site history can be found in Section 1.2 of the Remedial Investigation Report.

2. History of Federal and State Investigations and Removal and Remedial Actions

In 1981, the USEPA conducted a preliminary assessment for the Site Study Area based on a 1980 CTDEP inspection, and recommended that an inspection take place. USEPA's

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inspection reported that a groundwater sample collected and analyzed prior to the inspection contained total xylene (92 ppb), toluene (870 ppb), 1,1-dichloroethane (86 ppb), 4-methyl-2-pentanone (1700 ppb), and vinyl chloride (170 ppb). In addition, the inspection reported that industrial oily metal grinding sludges disposed of at the Site contained cadmium, chromium, copper, lead, manganese, nickel and zinc. Leachate from the landfill was observed discharging into the Unnamed Brook during this inspection.

Pursuant to Section 105(8)(b) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), the Barkhamsted Site was proposed for inclusion on the National Priorities List (NPL) on June 21, 1988 (53 FR 23988). The Barkhamsted Site was listed on the NPL on October 5, 1989 (NPL final rule update #6, 54 FR 41015).

In 1990, a state Administrative Order No. 666 was issued by CTDEP. This Administrative Order required RRDD#1 to: 1) investigate the waste materials and disposal activities on Site; 2) determine the potential impact of such activities or such waste on human health both on Site and off Site; 3) determine the existing and potential extent and degree of soil, groundwater, and surface water pollution; and 4) identify potential impacts of polluted groundwater and surface water on public and private drinking water supplies. A Scope of Study was prepared and implemented on behalf of RRDD#1 to satisfy the requirements of the CTDEP Order. The results of the investigation were presented in the RRDD#1 Landfill Site Investigation Report by Fuss & O'Neill, December 1991 (Fuss & O'Neill, 1991b).

A CERCLA Administrative Order on Consent to conduct a Remedial Investigation/Feasibility Study (RI/FS) at the Site Study Area to the Barkhamsted Site Potentially Responsible Party (PRP) Group, by the USEPA, with the concurrence of the State of Connecticut, became effective on October 4, 1991 (Docket No. I-91-1128, October 4, 1991). During December 1991 and January 1992, the PRPs performed a Limited Field Investigation (LFI) at the Site Study Area pursuant to an LFI Work Plan approved by USEPA in December 1991. The purpose of the LFI was to produce a focused Work Plan for the RI. The results of the LFI are presented in the RI Work Plan, which received conditional approval from the USEPA effective October 1, 1992.

The field work conducted pursuant to the approved RI Work Plan was performed between October 1992 and October 1993. The results of the investigation are presented in the RI Report (O'Brien & Gere Engineers, Inc., February 1996) approved by USEPA on March 7, 1996.

In April 1994, the PRPs prepared and submitted an Engineering Evaluation/Cost Analysis (EE/CA) for removal actions to be implemented as a NTCRA. As part of the NTCRA the USEPA presumptive remedy for CERCLA municipal landfill sites, including a cap, would be implemented. The final EE/CA Report (O'Brien & Gere 1994) was submitted to the USEPA on September 22, 1994 and approved by the Agency on September 26, 1994. Based on the report, the USEPA prepared an Action Memorandum dated January 19, 1996 to document approval of the NTCRA (Appendix 1-1). USEPA and CTDEP executed an enforcement agreement, dated

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August 22, 1996, so that CTDEP could oversee the NTCRA with the legislature providing funding to the CTDEP to implement the action. CTDEP and RRDD#1 subsequently entered into Consent Order #SRD-072 requiring RRDD#1 to design and implement the NTCRA approved by the Action Memorandum.

In September 1996, a draft *Conceptual Design Report* (O'Brien & Gere 1996b) was submitted to the CTDEP. Comments on the draft *Conceptual Design Report* were received from the CTDEP by copy of a letter dated October 31, 1996. Responses to the CTDEP comments were provided by the PRPs in a letter dated November 22, 1996.

In accordance with Section B.1.e of the Consent Order (#SRD-072), RRDD#1 prepared the Remedial Action Plan (O'Brien & Gere Engineers, Inc., April 1997) for the NTCRA to be completed at the Barkhamsted Site. The Remedial Action Plan, Technical Specifications, Contract Drawings, and the Subsurface Investigations document represent the Final Remedial Design for the Site.

The NTCRA included the following major components:

- Relocation of contaminated soil, sediment, and refuse to within the limits of the area to be capped
- Installation of a leachate collection system
- Installation of a 15,000-gallon double-walled underground leachate storage tank and associated appurtenances
- Capping of the landfill with a low-permeability capping system
- Relocation of an existing stream
- Vertical extension of active groundwater monitoring wells located within the limits of the capped area, and abandonment of monitoring wells no longer being used
- Site restoration
- Installation of perimeter security fencing

3. History of CERCLA Enforcement Activities

On May 21, 1991, EPA (Byron, sometimes you have EPA, and sometimes you have USEPA pick one and make it consistent) notified approximately 39 parties of their potential liability because they either owned or operated the facility, generated hazardous wastes that were shipped to the facility, arranged for the disposal of hazardous wastes at the facility, or transported

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hazardous wastes to the facility. Negotiations commenced with these potentially responsible parties (PRPs) within 60 days regarding the settlement of the PRPs' liability at the Site.

The PRPs formed a steering committee and substantial negotiations have taken place. On October 4, 1991, an Administrative Order on Consent was signed. Under this agreement, 23 members of the PRP group agreed to develop the RI/FS. The FS was submitted for public comment in June of 2001 and will be considered final upon the execution of this Record of Decision.

The PRPs have been active in the remedy selection process for this Site. The PRP group has publicly endorsed EPA's proposed plan for remedial action.

C. COMMUNITY PARTICIPATION

Throughout the Site's history, community concern and involvement has varied. Since completion of the landfill cap under the interim cleanup action, community interest has been at a low level. The EPA and CTDEP have kept the community and other interested parties apprised of Site activities through informational meetings, fact sheets, press releases and public meetings. Below is a brief chronology of public outreach efforts.

- In June 1991, the EPA published a fact sheet to describe the PRP search process and to provide basic information about the Superfund program and the history of the Barkhamsted - New Hartford Landfill Site.
- In October 1991, EPA awarded a Technical Assistance Grant to an existing local community group, Barkhamsted Residents Acting to Conserve the Environment (BRACE).
- In December 1991, EPA conducted community interviews in preparation for a Community Relations Plan.
- In April 1992, EPA released a Community Relations Plan that outlined a program to address community concerns and keep citizens informed about and involved in remedial activities.
- In September 1992, EPA published a fact sheet to describe plans for the Remedial Investigation and Feasibility Study and to also provide an update on the enforcement process.
- In 1994, EPA made the administrative record available for public review at EPA's offices in Boston and at the Beardsley & Memorial Library, 690 Main Street,

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Winstead, Connecticut. This is the primary information repository for local residents and will be kept up to date by EPA.

- In December 1994, EPA published a fact sheet to describe the proposed action and technical alternatives evaluated in the Engineering Evaluation / Cost Analysis, and to announce a public meeting.
- On December 14, 1994, EPA held an informational meeting at the Barkhamsted Elementary School to describe the proposed action and technical alternatives evaluated in the Environmental Engineering / Cost Analysis.
- On January 11, 1995, EPA held a formal public hearing to solicit public input on the proposed landfill capping interim action. The public comment period was extended by 15 days and resulted in a 45 day comment period, December 15, 1994 through January 30, 1995.
- In July 1997, the Connecticut Department of Public Health published a fact sheet to summarize the findings of the Public Health Assessment completed in March, 1997.
- In March 1998, EPA published a fact sheet and held a public information meeting to describe upcoming construction activity and schedules for the NTCRA landfill work.
- In March 1999, EPA published a fact sheet to provide an update of Site construction activity completed to date, and the schedule for activity during 1999.
- In March 2000, EPA published a fact sheet to describe the alternatives being evaluated in the Feasibility Study and to describe the nine CERCLA criteria and the public participation process to follow the Feasibility Study.
- During the week of June 21, 2001 EPA published a notice and brief analysis of the Proposed Plan in The Register Citizen and made the plan available to the public at the Beardsley & Memorial Library.
- EPA community involvement staff canvassed the local residents, going door to door during March 1998 prior to the public meeting and again in June 2001 prior to the Proposed Plan public comment period to solicit any new community concerns or questions about the Site.
- From June 21, 2001 to July 20, 2001, the Agency held a 30 day public comment period to accept public comment on the alternatives presented in the Feasibility Study-I would use FS here since it has already been spelled out and the Proposed Plan and on any other documents previously released to the public.

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- On June 20, 2001, EPA held an informational meeting to discuss the results of the Remedial Investigation and the cleanup alternatives presented in the Feasibility Study and to present the Agency's Proposed Plan to a broader community audience than those that had already been involved at the Site. At this meeting, representatives from EPA and CTDEP answered questions from the public.
- On July 18, 2001, the Agency held a public hearing to discuss the Proposed Plan and to accept any oral comments. A transcript of this meeting and the comments and the Agency's response to comments are included in the Responsiveness Summary which is part of this Record of Decision I would use ROD here since it has already been spelled out.

D. SCOPE AND ROLE OF RESPONSE ACTION

The response action contained in this ROD is the final Site remedy and is intended to address fully the threats to human health and the environment posed by the conditions at this Site. This is the first and only operable unit for the Barkhamsted-New Hartford Landfill Site. The selected remedy, selected after evaluating four management migration alternatives, combines management of migration with source control (NTCRA) to obtain a comprehensive approach for Site remediation. In summary, the remedy provides for the restoration of the contaminated groundwater beneath and downgradient of the landfill by natural attenuation to cleanup levels after approximately 16 years. Institutional controls will be implemented to control Site use, and environmental monitoring will be implemented to evaluate the success of the cleanup and provide information for the 5 year reviews. A public education program, involving informational meetings and/or mailings, will be implemented to discuss potential Site hazards.

The NTCRA previously addressed Site source materials. The NTCRA, which involved the relocation of contaminated soil and refuse to within the limits of the area to be capped, installation of a leachate collection system, capping of the landfill with a low-permeability capping system, and relocation of an existing stream, was completed in 1998. The source materials addressed by the NTCRA constituted the principal threat contaminants at the Site.

The principal and low-level threats that this ROD addresses are summarized in the following tables:

Principal Threats	Medium	Contaminant(s)	Action To Be Taken
None	None		

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Low-Level Threats	Medium	Contaminant(s)	Action To Be Taken
Groundwater	Groundwater	VOCs SVOCs inorganics	Natural attenuation

In summary, the response action contained in this ROD addresses the remaining threats to human health and the environment posed by the Site. This remedy represents the final remedy anticipated for the Site.

E. SITE CHARACTERISTICS

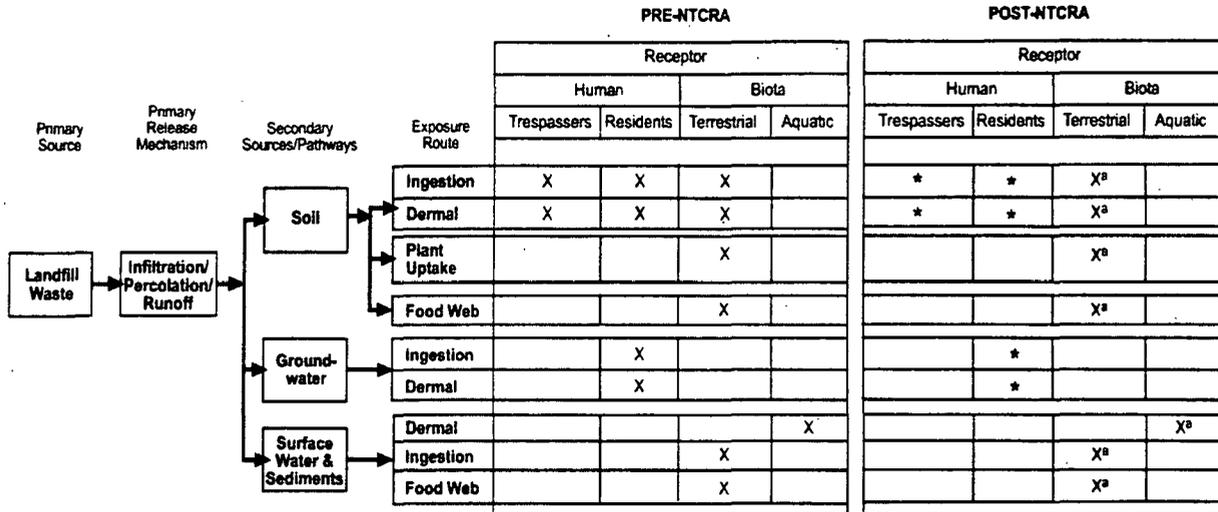
This section summarizes information obtained as part of the RI/FS activities at the Site. A Conceptual Site Model (CSM) is first presented. The CSM is a three-dimensional "picture" of Site conditions that illustrates contaminant sources, release mechanisms, exposure pathways, migration routes, and potential human and ecological receptors. It documents current and potential future Site conditions and shows what is known about human and environmental exposure through contaminant release and migration to potential receptors.

Following the CSM, descriptions of the investigative and analytical strategies that were employed during the RI/FS process are presented, along with a synopsis of the results of those investigations. The nature and extent of contamination are summarized for all affected media at the Site, although this remedy applies only to Site groundwater.

Conceptual Site Model - (See Figure 1 above)

The landfilled wastes are the source of contamination at the Site. During its period of operation, wastes deposited in the landfill reportedly included metal grinding waste and oily sludge and degreasers.

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* Exposure prevented by capping or institutional controls
X^a Exposure only to media outside of cap

FIGURE BARKHAMSTED LANDFILL CONCEPTUAL SITE MODEL

A drum crushing operation also operated at the landfill, and barrels of chlorinated hydrocarbons and methyl ethyl ketone were reportedly accepted. The means by which contaminants were released to the soil are not known, but possibilities include direct disposal of liquids; leakage of liquids from containers; and disposal of wastes containing liquid or solid contaminants in direct contact with the soil. Some of the contaminants became dissolved in infiltrating precipitation and were transported down into the overburden and bedrock aquifers. A portion of the infiltrating precipitation did not percolate to the water table but instead flowed laterally on poorly permeable layers until it emerged as seeps on the sides of the landfill. Contaminated water from the seeps, as well as contaminated runoff from the landfill surface, either infiltrated the ground or flowed off into surface waters. Due either to contaminated surface water or to contaminated groundwater discharging to the surface water, some sediments in the surface water bodies also became contaminated.

The risk assessment and response action for the groundwater are based on this CSM. The risk assessment was prepared prior to implementation of the NTCRA in 1995. Subsequent to implementation of the NTCRA, the USEPA conducted a risk screening in order to update Site risks. Figure 1, the CSM, details Site risks both before and subsequent to the implementation of

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the NTCRA. The response actions detailed in this ROD are based on post-NTCRA risks.

General Site Characteristics

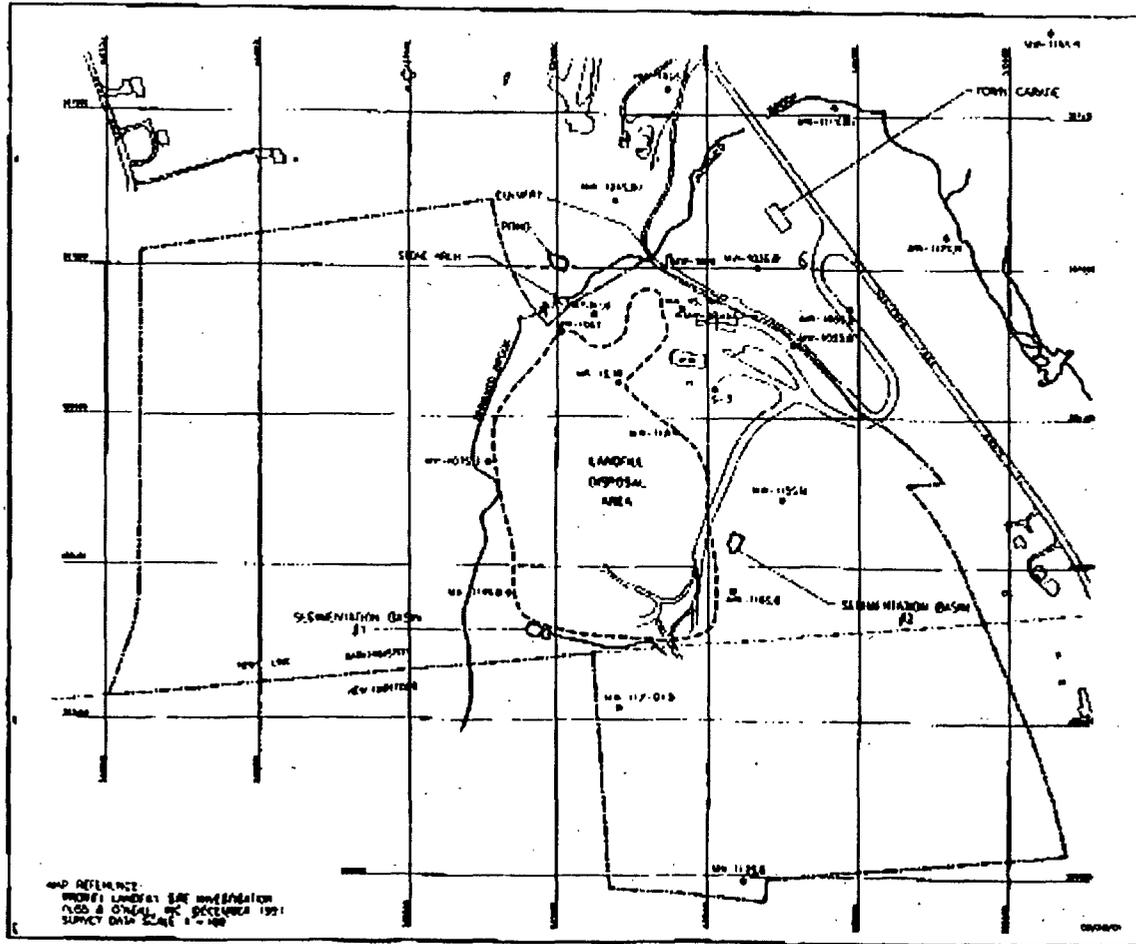
The Site is on a 97.8-acre parcel of land (Figure 2) on the northern slope of a hill within the Farmington River Valley, in the north central portion of Connecticut. It is surrounded primarily by mixed hardwood and conifer forests. There is one surface water body, the Unnamed Brook, which originates south of the Site and flows north along the west side of the landfill area. Once beyond the landfill, the brook curves to the northeast and flows under Route 44, where it enters the Farmington River floodplain and a series of small beaver ponds. It eventually flows into the Farmington River, 0.25 miles southeast of the Site.

The Site is bordered on the northeast by the Barkhamsted Town Garage facility. The remainder of the parcel is bounded by a combination of developed and undeveloped private property. Residences with private drinking wells border the Site. There are no known areas of archaeological or historical importance. A portion of the Site was used as a landfill. Other areas of the property contain a transfer station, a recycling area, a maintenance and office building, and dense woods. Activities conducted at the landfill included disposal of non-processible and bulky waste, community-type recycling, and composting of yard waste. A Site plan (prior to construction of the landfill cap as a NTCRA) is shown on Figure 3.

Under an Administrative Order, the PRPs performed an RI to develop an understanding of the nature and extent of contamination at the Site. The objectives were to define the source(s), BYRON—you are missing text

Figure 2

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LEGEND

- - - - - PROPERTY LINE
- BOUNDARY LINE
- MONITORING WELL LOCATION
- - - - - LIMITS OF REPLY

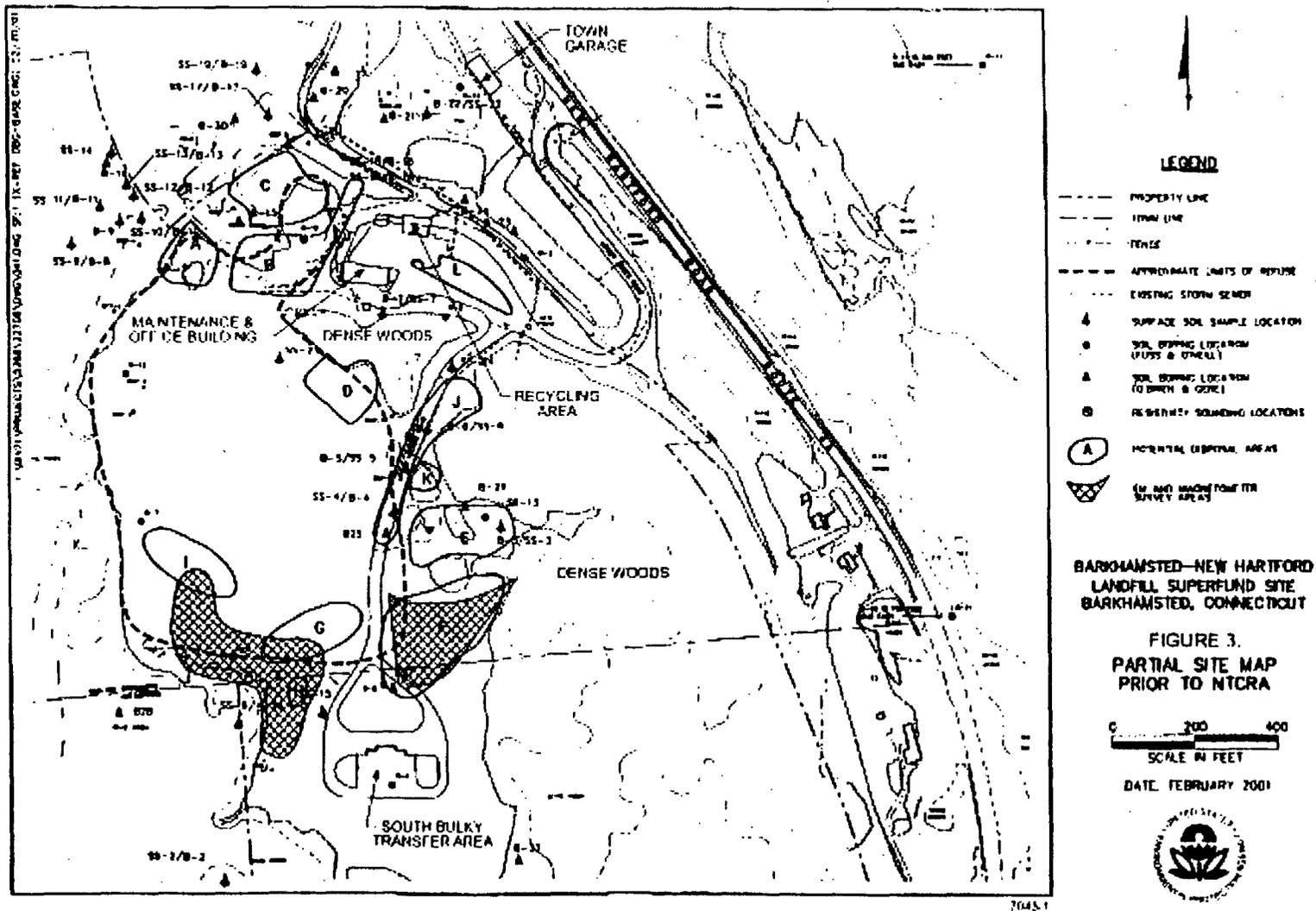
**BARKHAMSTED-NEW HARTFORD
LANDFILL SUPERFUND SITE
BARKHAMSTED, CONNECTICUT**

SITE MAP

APPROX. SCALE IN FEET

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Figure 3



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nature, and extent of contamination; to identify and evaluate potential exposure pathways; to provide sufficient information to assess the risks to human health and the environment; and to develop sufficient information to support the evaluation of remedial alternatives, the selection of a remedy, and the preparation of a Record of Decision (I would use ROD here since it has already been spelled out). To achieve these objectives, the RI included the collection and analysis of samples of soil, groundwater, surface water, sediment, and air at and around the Site. Each medium that was investigated during the RI is discussed separately below.

Soil

During the RI, soil samples were collected both to determine the nature and extent of contamination and to conduct a risk assessment. The strategy for these investigations was to first identify, both within and beyond the limits of the contiguous landfill, potential source areas and areas for further investigation. Geophysical surveys and a soil gas sampling program were then performed within the selected areas to identify specific locations of potential contamination.

Following the preliminary investigations in the subareas of the Site, 24 surface soil samples were collected to support the risk assessment. Soil samples were collected within the limits of refuse, around the perimeter of the landfill, at upgradient (background) locations, and in a residential area along US Route 44. These samples were collected from a depth of 0 to 1 foot and were analyzed for Target Compound List/Target Analyte List (TCL/TAL) volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), PCBs/pesticides, and inorganics. Grain-size analyses were also conducted on the samples. Laboratory analytical results are presented in the RI Report (O'Brien & Gere, 1996). Generally, VOCs and PCBs/pesticides were found at trace levels or not detected in the surface soil samples. SVOCs were detected, but at concentrations below the standards of the Connecticut Remediation Regulations. Inorganics, or metals, were detected at concentrations up to two to three times greater than background in several areas. In one area where metal grindings were handled, the metals concentrations were up to two orders of magnitude higher than background.

Soil borings were drilled at 32 locations to define the nature and extent of soil contamination. The borings were located within the limits of refuse, around the perimeter of the landfill, and at upgradient (background) locations. The locations of the borings, like those of the surface soil samples, were based on the results of the geophysical surveys and the soil gas sampling program. Soil samples were collected continuously to the water table, to naturally-occurring soil, or to a depth of 10 feet in most cases. The soil samples were screened in the field, and at least one sample per boring was analyzed for TCL/TAL VOCs, SVOCs, PCBs/pesticides,

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and inorganics. The occurrence of VOCs, SVOCs, and inorganics were found to be highly correlated with the presence of waste. The occurrence of PCBs/pesticides was very limited. Based on the results of the soil boring program, the boundary denoting the limits of refuse was adjusted in some places.

The final investigation related to delineation of the sources of contamination was the excavation of 29 test pits to define the limits of refuse around the landfill periphery. The limits of refuse, based on visual observation of subsurface materials, were staked at each test pit and subsequently surveyed. The limits defined by the test pits correlated well with the information developed during the other investigative activities.

Contaminants of concern (COCs) were selected from the constituents detected in the soil based upon the unacceptable risk posed by the contaminant. The COCs identified in soil included VOCs, SVOCs, and inorganics. BYRON—why is the text above in red?

Groundwater

Prior to the RI, 31 monitoring wells had been installed at the Site to sample groundwater and monitor water levels. An additional 22 monitoring wells were installed during the RI. In order to characterize the vertical extent of contamination, wells were installed in the overburden and at three depths in the bedrock: shallow, intermediate, and deep. In most cases, the wells were installed as multi-depth clusters and were located upgradient, cross-gradient, and downgradient of the landfill.

Hydraulic conductivity testing of the overburden and bedrock aquifers was conducted during and after the installation of the new wells. The test results for the overburden indicated hydraulic conductivities ranging from 0.1 to 7.5 ft/day. The ranges of values for the shallow and intermediate bedrock were similar, ranging from 0.001 to 43 ft/day. One test in the deep bedrock yielded a value of 0.002 ft/day.

Two rounds of samples were collected from the monitoring wells during the RI. All of the wells were sampled in the first round, and all but three clusters were sampled in the second round. Samples were analyzed for TCL/TAL VOCs, SVOCs, PCBs/pesticides, and inorganics. The groundwater was found to contain numerous contaminants including acetone, 2-butanone, toluene, trichloroethene, 4-methylphenol, 2,4-dimethylphenol, 2-methylphenol, phenol, and a number of metals.

Since the completion of the RI, four additional rounds of groundwater sampling have been conducted. Not all of the original RI wells have been sampled in the subsequent rounds, since some wells were abandoned during the NTCRA. Most recently, samples were collected in December 1999 and February 2000 to update the risk assessment, to confirm the extent of the plume, and to estimate the extent to which natural attenuation is occurring. This more recent sampling has shown that the concentrations of most contaminants in the groundwater have declined since the RI. A notable exception is toluene, the concentration of which rose

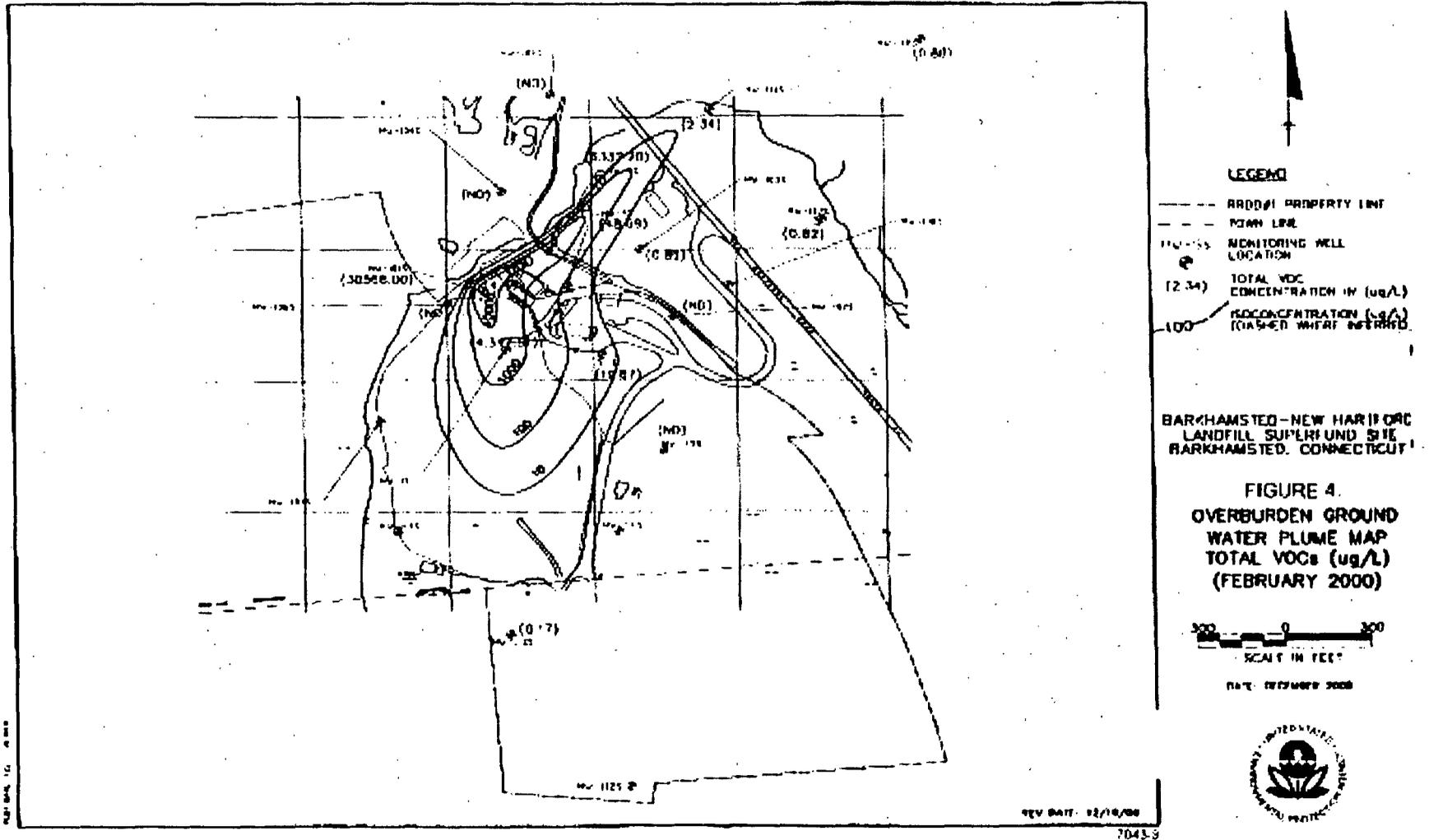
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significantly in two overburden monitoring wells close to the landfill. During the RI, the plume of contaminated groundwater was found to migrate predominantly in the overburden and the shallow bedrock aquifers to the north and northeast of the landfill. Although monitoring wells in the intermediate and deep bedrock also contained contaminants at the time of the RI, the levels of contamination have been substantially lower in more recent sampling rounds. There are no NAPLs (non-aqueous phase liquids) known to be present at the Site.

The plume of contaminated groundwater flows out from beneath the northeastern side of the landfill. Some of the plume discharges to the Unnamed Brook, while the remainder migrates in a northeasterly direction (subparallel to the brook) beyond Route 44 and into the floodplain of the Farmington River. The plume is generally about 300 feet wide in the overburden (Figure 4) downgradient of the landfill and somewhat wider in the shallow bedrock (Figure 5). Since the bulk of the plume migrates within the overburden and the shallow bedrock aquifers, the vertical extent of the plume is generally between 10 and 50 feet below the ground surface. Lesser concentrations of contaminants occur in wells in the deep bedrock aquifer, at depths of about 200 feet. (Byron: there is a textual page spacing issue here)

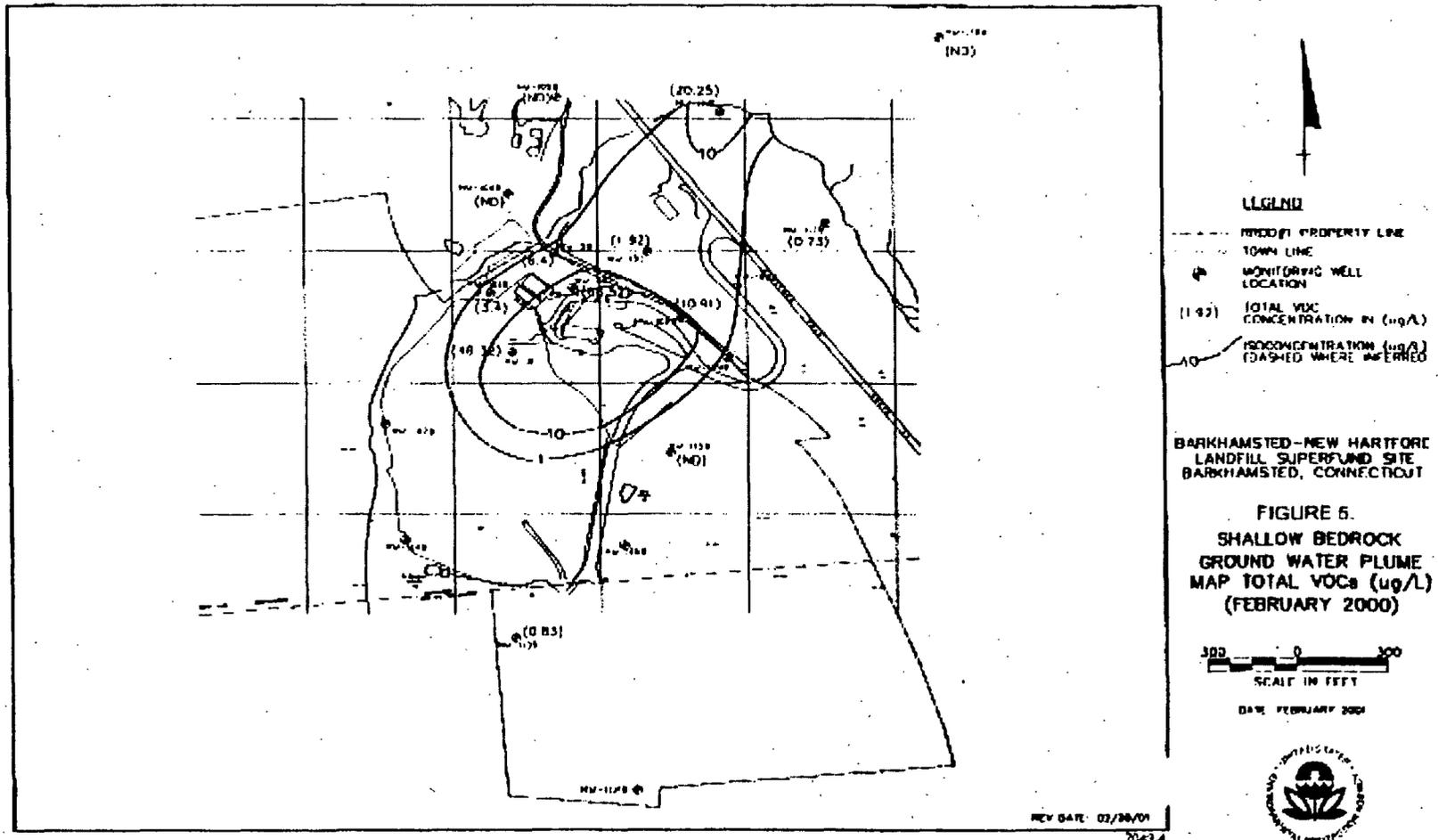
Figure 4

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Figure 5



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g the path of the plume, the overburden aquifer is generally 10 to 20 feet thick and consists of glacial till and the overlying ice-contact deposits. The overburden aquifer is unconfined. At its most downgradient extent, the plume migrates into glacial outwash deposits that underlie the Farmington River valley. The outwash deposits are about 40 to 50 feet thick in the vicinity of the plume.

The bedrock at the Site is predominantly micaceous schist with thin beds of amphibolite and pegmatite intrusions. The designation "shallow" bedrock generally refers to the upper 10 to 20 feet.

In the vicinity of the landfill, vertical gradients at multi-well clusters indicate the potential for downward flow of groundwater. Conversely, along the Unnamed Brook north of the landfill and in the Farmington River valley, vertical gradients are upward.

Prior to the implementation of the NTCRA, the origin of the groundwater contamination at the Site was precipitation that infiltrated through the landfill cover and dissolved contaminants as it percolated downward through the waste. The RI also indicates that, due to groundwater mounding within the landfill, some of the contamination originated from waste that lay within a zone of saturation. Since the capping of the landfill, infiltration of precipitation has been largely eliminated along with that source of groundwater contamination.

In addition to the monitoring wells, ten domestic water supply wells to the north and east of the Site were sampled one time during the RI. The samples from these wells were analyzed for the same parameters as the monitoring wells. These 10 wells were a subset of a large number of water supply wells that were identified during a groundwater users survey that extended one mile from the Site. The wells were selected from the larger group based on their position relative to the landfill and the direction of groundwater movement in the bedrock aquifer. No contaminants related to the Site were detected at concentrations above the applicable standards in the domestic supply wells.

COCs for groundwater include 14 VOCs, four SVOCs, and four inorganics. The COCs were selected from the constituents detected in groundwater based on the unacceptable risks that those contaminants present.

COCs have migrated off-Site in the groundwater system within both the overburden and the bedrock aquifers, so ingestion of water from wells that intercept the plume is a potential subsurface route of human exposure. Residential and institutional properties that surround the Site obtain their water from individual supply wells. No currently active drinking water wells are known to be affected by contaminants from the Site. However, if public or private water supply wells were installed within or near the plume in the future, contaminants from the Site could affect them.

WINTRAN, an analytical two-dimensional groundwater flow and transport model, was used during the Feasibility Study to simulate the fate and transport of COCs at the Site. Separate

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models were used for the overburden and bedrock aquifers. In both models, the groundwater flow portion of the WINTRAN model was used to simulate steady-state flow between a constant head source and sink. The Unnamed Brook could not be included because the model could not be calibrated with that feature in the simulations; therefore, it was assumed that no groundwater discharges to surface water.

The transport portion of the model incorporated the effects of advection, dispersion, retardation, and contaminant degradation. Two COCs for the groundwater, 4-methylphenol and 2-butanone, were simulated. Since these compounds are present in high concentrations in the plume and are fairly soluble in water, the cleanup times for these compounds represent conservative estimates of the time for remediation of all groundwater COCs. The source of these contaminants was simulated with low-rate injection wells in the landfill area. The assumption was made that, when the landfill was capped, the source of contaminants was eliminated. Based on trends in the groundwater monitoring data through the RI/FS period, fairly high rates of contaminant degradation were projected by the model calibration. However, due to the uncertainties that are associated with contaminant transport modeling, the predicted cleanup times must be considered estimates. The uncertainties in the model predictions arise from the inability to simulate the complex physical and chemical heterogeneities of the aquifer/plume system and the limited water quality data for calibration.

Leachate Seeps

A number of leachate seeps had been located at the Site during pre-RI investigations. During the RI, a survey of the Site was conducted to identify all potential seeps. Twelve seeps were found, most of which had an ultimate discharge point of the Unnamed Brook.

Samples of the discharge from the seeps were collected on two occasions during the RI. All 12 seeps were sampled in the first round, but only nine were sampled in the second. The samples were analyzed for TCL/TAL VOCs, SVOCs, PCBs/pesticides, and inorganics in most cases. The contaminants detected at the highest concentrations include acetone, 2-butanone, toluene, 4-methyl-2-pentanone, phenol, 4-methylphenol, and a number of metals including iron, aluminum, and manganese. The leachate seeps were determined to be directly affecting water quality in the Unnamed Brook.

Since the capping of the landfill, infiltration of precipitation has been largely eliminated. It is expected that the seeps will eventually dry up and cease to be a source of surface water contamination because infiltrating precipitation would have been the source of water for any perched zones of saturation within the landfill.

Surface Water

Surface water samples were collected twice during the RI. Sixteen locations for samples were designated, upstream, downstream, and proximal to the landfill; however, in each sampling round, one sample was omitted. Most of the locations sampled were in the Unnamed Brook,

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except two that were in the sedimentation basins for the landfill. Samples were analyzed for TCL/TAL VOCs, SVOCs, PCBs/pesticides, and inorganics in most cases. Downstream surface water samples contained generally low concentrations of Site-related VOCs and SVOCs; however, metals were found to represent the most significant impact of the landfill on surface water.

Recent sampling (December 1999, February 2000), conducted since the implementation of the NTCRA, demonstrates that no constituents exceed the surface water criteria identified in the ecological risk assessment.

Sediment

Sediment samples were collected at locations where surface water samples and leachate seep samples were collected. The sediment samples at the surface water sample locations were collected twice during the RI, at all 16 locations in the first round and at 14 locations in the second round. Samples were analyzed for TCL/TAL VOCs, SVOCs, PCBs/pesticides, and inorganics in most cases. The sediment samples were also analyzed for grain-size distribution. Downstream sediment samples contained generally few VOCs, numerous SVOCs, low concentrations of several pesticides, and metals at concentrations that were up to an order of magnitude above background results.

Sediment samples were also collected at locations where leachate seep samples were collected. The sediment samples at the leachate seep sample locations were collected on two occasions during the RI, at three locations in the first round and at three different locations in the second round. Samples were analyzed for TCL/TAL VOCs, SVOCs, PCBs/pesticides, and inorganics in most cases. The sediment samples were also analyzed for grain-size distribution. Numerous VOCs, SVOCs, pesticides, and metals were detected in the leachate seep sediment samples.

During the performance of the NTCRA, an approximate 340-ft reach of the Unnamed Brook on the west side of the landfill was relocated, with the former section of the brook being filled and covered with soil. Additionally, sediments were excavated from an approximate 70-ft reach of the brook near the northwest corner of the landfill, and placed beneath the cap during the NTCRA construction.

Air

During the RI, air samples were collected to evaluate whether Site-related residues were being transported from the Site in the air. Seven air sampling stations were established, including locations within the limits of refuse, around the perimeter of the landfill, and at two residential properties adjacent to the Site. The strategy for these investigations was to collect samples prior to and during the conduct of invasive Site investigation activities. Samples were collected continuously over a period of about 8 hours on four dates, two prior to and two during episodes of monitoring well drilling. Wind speed and direction, temperature, and atmospheric

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pressure data were also collected.

The samples were analyzed for TCL/TAL VOCs, SVOCs, and, at one of the seven stations, for respirable particulates. The results were compared to Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PELs) and American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs). Since these standards are developed for repeated exposures in industrial settings, they were considered conservative for evaluating community health issues at the Site.

For all sampling events, the detected VOCs and SVOCs were present at concentrations at least 100 times less than the PELs and TLVs. The average particulate concentrations were also below the standards.

Principal Threats

Principal threat wastes are those source materials considered to be highly toxic or highly mobile which generally cannot be contained in a reliable manner or would present a significant risk to human health or the environment should exposure occur. The manner in which principal threats are addressed generally will determine whether the statutory preference for treatment as a principal element is satisfied. Wastes generally considered to be principal threats are liquid, mobile and/or highly-toxic source material. All principal threats have been addressed by the NTCRA and, therefore, are not discussed further.

Low-Level Threats

Low-level threat wastes are those source materials that generally can be reliably contained and that would present only a low risk in the event of exposure. Wastes that are generally considered to be low-level threat wastes include non-mobile contaminated source material of low to moderate toxicity, surface soil containing chemicals of concern that are relatively immobile in air or groundwater, low leachability contaminants or low toxicity source material. The low-level threats remaining on-Site include the contaminants remaining in Site groundwater, including VOCs, SVOCs, and metals. A low level threat to invertebrates in the Unnamed Brook may also remain due to barium and manganese in the sediments.

F. CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES

The current land uses at the Site include the closed landfill, a transfer station, a recycling area, a maintenance and office building, and dense woods. Land use in areas adjacent to and surrounding the Site currently include the Barkhamsted Town Garage facility to the northeast; a Connecticut Department of Transportation facility to the north; residential properties to the northwest; residential and commercial properties farther to the north and directly east along Route 44; and primarily undeveloped wooded land to the west and south. Reasonably anticipated future uses of the Site, the adjacent land, and the surrounding areas are the same as

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the current uses.

Groundwater is the sole water supply for homes and businesses in the vicinity of the Site and would need to be used by any future development in the area. These homes and businesses extract groundwater from private individual wells since no public water system exists in the immediate vicinity of the Site.

Groundwater beneath the landfill and in the surrounding area is classified as GA. The GA classification signifies that the groundwater is presumed to be of natural quality and suitable for drinking without treatment. The State's policy for GA groundwater is to maintain or restore all groundwater in such areas to its natural quality. Connecticut's Water Quality Standards are an important element of Connecticut's USEPA-endorsed Core Comprehensive State Groundwater Protection Program. The groundwater classifications assigned under these standards have been derived through careful consideration of many of the same factors addressed in USEPA's *Groundwater Use and Value Determination Guidance*. A hierarchy of designated uses is included for each groundwater classification.

In addition to the assigned groundwater classification, a Ground Water Use and Value Determination for the Barkhamsted-New Hartford Landfill was prepared by the Bureau of Water Management of the Permitting, Enforcement & Remediation Division, Federal Remediation Program, CTDEP. The evaluation resulted in the assignment of an overall Use and Value of Medium to the groundwater in the review area surrounding the Site.

A highly productive stratified drift aquifer is located in the valley of the Farmington River West Branch, just east of the Site. To the southeast of the Site, this aquifer supplies water to two wells of the New Hartford Water Company. Contaminated groundwater from the Site reaches this aquifer, although there is no evidence that any public or private water supply wells have been affected except those at the landfill itself and the nearby Barkhamsted Highway Department garage. The well at the landfill was completed in bedrock and extended to a depth of 160 feet below grade. No records were available regarding the highway department well.

Any future public water supplies developed in this area would most likely rely on the stratified drift aquifer. However, the plume does not represent a significant threat to such potential wells. This conclusion is based on two factors. First, the plume reaches the stratified drift aquifer, but is not significantly impacting the aquifer. The plume undergoes some attenuation before entering the stratified drift aquifer. Secondly, the area of the plume comprises a small fraction of the total recharge area of the stratified drift aquifer, so the plume is significantly diluted once it enters the stratified drift.

Groundwater from the Site provides significant base flow to the Unnamed brook and is a minor component of the hydrologic budget of the West Branch Farmington River and associated wetlands. Significant wetlands are not associated with the Unnamed brook, and it does not provide significant wildlife habitat. In contrast, the Farmington River is a valuable ecological resource. It has also been designated by the U.S. Department of the Interior as a Wild and Scenic

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River. Since groundwater from the Site provides only a small component of the flow in the Farmington River, the contamination is not expected to impact the ecological functions and values of the river. No watersheds for public surface water supplies are affected by the Site.

G. SUMMARY OF SITE RISKS

A baseline risk assessment was performed to estimate the probability and magnitude of potential adverse human health and environmental effects from exposure to contaminants associated with the Site assuming no remedial action was taken. It provides the basis for taking action and identifies the contaminants and exposure pathways that need to be addressed by the remedial action. The public health risk assessment followed a four step process: 1) hazard identification, which identified those hazardous substances which, given the specifics of the Site were of significant concern; 2) exposure assessment, which identified actual or potential exposure pathways, characterized the potentially exposed populations, and determined the extent of possible exposure; 3) toxicity assessment, which considered the types and magnitude of adverse health effects associated with exposure to hazardous substances, and 4) risk characterization and uncertainty analysis, which integrated the three earlier steps to summarize the potential and actual risks posed by hazardous substances at the Site, including carcinogenic and non-carcinogenic risks and a discussion of the uncertainty in the risk estimates. A summary of those aspects of the human health risk assessment which support the need for remedial action is discussed below followed by a summary of the environmental risk assessment.

1. Human Health Risk Assessment

Of the media evaluated in the human health risk assessment (peripheral soil, groundwater, seep water and brook surface water/sediment), only future groundwater exposure posed an unacceptable risk. Of the 56 chemicals detected in the groundwater plume at the Site during the December 1999 and February 2000 sampling rounds, 22 were selected for evaluation in the human health risk assessment as chemicals of concern (COCs). The COCs were selected to represent potential Site related hazards based on toxicity, concentration, frequency of detection, and mobility and persistence in the environment and can be found in Table 1-3 of the FS. These chemicals were identified in the Feasibility Study (I would use FS here since it has already been spelled out) as presenting a significant current or future risk and are referred to as the COCs in this ROD and summarized in Table 1. This Table contains the exposure point concentrations used to evaluate the reasonable maximum exposure scenario (RME) in the baseline risk assessment for the COCs. Estimates of average or central tendency exposure concentrations for the chemicals of concern and all chemicals of potential concern can be found Appendix 1-4 of the FS and in Risk Screening for Groundwater, Surface Water and Seeps at the Barkhamsted-New Hartford Landfill Superfund Site, USEPA April 2000 (USEPA, 2000).

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**Table 1
Summary of Chemicals of Concern and
Medium-Specific Exposure Point Concentrations**

Scenario Timeframe: Future								
Medium: Groundwater								
Exposure Medium: Groundwater								
Exposure Point	Chemical of Concern	Concentration Detected		Units	Frequency of Detection	Exposure Point Concentration (Maximum Concentration)	Exposure Point Concentration Units	Statistical Measure
		Min	Max					
Ingestion of and dermal contact with ground-water	arsenic	5	22	ug/l	18	0.022	mg/l	Max
	chromium (total)	10	222	ug/l	17	0.22	mg/l	Max
	lead	3	42	ug/l	19	0.042	mg/l	Max
	manganese	60	8,100	ug/l	56	8.1	mg/l	Max
	acetone	1.4	18,000	ug/l	17	18	mg/l	Max
	benzene	0.15	17	ug/l	38	0.017	mg/l	Max
	2-butanone	4.7	37,000	ug/l	4	37	mg/l	Max
	1,2-dichloroethane	0.15	4.4	ug/l	28	0.004	mg/l	Max
	1,2-dichloropropane	0.13	2.2	ug/l	21	0.002	mg/l	Max
	chloroethane	0.24	18	ug/l	30	0.016	mg/l	Max
	chloroform	0.11	0.43	ug/l	3	0.0004	mg/l	Max
	chloromethane	0.21	2.3	ug/l	8	0.002	mg/l	Max
	dibromochloro-methane	0.78	0.78	ug/l	1	0.00078	mg/l	Max
	4-methyl-2-pentanone	0.4	2,200	ug/l	9	2.2	mg/l	Max
	methylene chloride	0.29	110	ug/l	18	0.11	mg/l	Max
	toluene	0.1	23,000	ug/l	35	23	mg/l	Max
	trichloroethene	0.12	43	ug/l	23	0.004	mg/l	Max
	vinyl chloride	0.17	19	ug/l	7	0.0019	mg/l	Max
	bis(2ethyl hexyl) phthalate	2.3	65	ug/l	14	0.065	mg/l	Max
	1,4-dichlorobenzene	2.8	4.3	ug/l	2	0.004	mg/l	Max
2,4-dimethylphenol	6.4	2,200	ug/l	25	2.2	mg/l	Max	

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	4-Methylphenol	2.3	51,000	ug/l	10	51	mg/l	Max
Key								
ug/l: micrograms per liter or parts per billion 95% UCL: 95% Upper Confidence Limit MAX: Maximum Average Concentration								
The table presents the chemicals of concern (COCs) and exposure point concentration for each of the COCs detected in groundwater (i.e., the concentration that will be used to estimate the exposure and risk from each COC in the groundwater). The table includes the range of concentrations detected for each COC, as well as the frequency of detection (i.e., the number of times the chemical was detected in the samples collected at the Site), the exposure point concentration (EPC), and how the EPC was derived.								

Potential human health effects associated with exposure to the COCs were estimated quantitatively or qualitatively through the development of several hypothetical exposure pathways. These pathways were developed to reflect the potential for exposure to hazardous substances based on the present uses, potential future uses, and location of the Site. The following is a brief summary of just the exposure pathways that were found to present a significant risk. All other risks have been addressed by the NTCRA. A more thorough description of all exposure pathways evaluated in the risk assessment including estimates for an average exposure scenario, can be found in Section 2.1 of the Human Health Risk Assessment (HHRA) and on page 3 of the USEPA Risk Screening for Groundwater, Surface Water and Seeps (April 18, 2000).

Exposure Assessment

For contaminated groundwater, it was assumed that a resident would ingest 2 liters of water per day for 350days/yr for 30 years. For the Reasonable Maximum Exposure Scenario (RME), concentrations of each contaminant in each well are averaged over the two sampling rounds and the maximum average of all wells for a particular chemical was included as the exposure point concentration in the risk screen. Oral and dermal exposures were assessed.

Risk Characterization

Excess lifetime cancer risks were determined for each exposure pathway by multiplying a daily intake level with the chemical specific cancer potency factor. Cancer potency factors have been developed by USEPA from epidemiological or animal studies to reflect a conservative "upper bound" of the risk posed by potentially carcinogenic compounds. That is, the true risk is unlikely to be greater than the risk predicted. The resulting risk estimates are expressed in scientific notation as a probability (e.g. 1×10^{-6} for 1/1,000,000) and indicate (using this example), that an average individual is not likely to have greater than a one in a million chance of developing cancer over 70 years as a result of Site-related exposure (as defined) to the compound at the stated concentration. All risks estimated represent an "excess lifetime cancer risk" - or the additional cancer risk on top of that which we all face from other causes such as cigarette smoke or exposure to ultraviolet radiation from the sun. The chance of an individual developing cancer from all other (non-Site related) causes has been estimated to be as high as one in three. USEPA's generally acceptable risk range for Site related exposure is 10^{-4} to 10^{-6} .

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Current USEPA practice considers carcinogenic risks to be additive when assessing exposure to a mixture of hazardous substances. A summary of the cancer toxicity data relevant to the chemicals of concern is presented in Table 2.

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**Table 2
Cancer Toxicity Data Summary**

Pathway: Ingestion, Dermal						
Chemical of Concern	Oral Cancer Slope Factor	Dermal Cancer Slope Factor	Slope Factor Units	Weight of Evidence/Cancer Guideline Description	Source	Date (MM/DD/YYYY)
arsenic	1.5	1.5	[(mg/kg)/day] ⁻¹	A	IRIS	4/01/01
1,4-dichlorobenzene	.024	.024	[(mg/kg)/day] ⁻¹	C	HEAST	FY '97
benzene	.029	.029	[(mg/kg)/day] ⁻¹	A	IRIS	4/01/01
1,2-dichloroethane	.091	.091	[(mg/kg)/day] ⁻¹	B2	IRIS	4/01/01
1,2-dichloropropane	.068	.068	[(mg/kg)/day] ⁻¹	B2	HEAST	FY '97
chloroethane	.0029	.0029	[(mg/kg)/day] ⁻¹	B2	NCEA	4/01/01
chloroform	.0061	.0061	[(mg/kg)/day] ⁻¹	B2	IRIS	4/01/01
chloromethane	.013	.013	[(mg/kg)/day] ⁻¹	C	HEAST	FY '97
dibromochloromethane	.084	.084	[(mg/kg)/day] ⁻¹	C	IRIS	4/01/01
methylene chloride	.0075	.0075	[(mg/kg)/day] ⁻¹	B2	IRIS	4/01/01
trichloroethene	.011	.011	[(mg/kg)/day] ⁻¹	B2	NCEA	4/01/01
vinyl chloride	1.9	1.9	[(mg/kg)/day] ⁻¹	A	IRIS	4/01/01
bis(2-ethyl hexyl) phthalate	.014	.014	[(mg/kg)/day] ⁻¹	B2	IRIS	4/01/01

Key
 -: No information available
 IRIS: Integrated Risk Information System, U.S. EPA
 HEAST: Health Effects Assessment Summary Tables
 NCEA: National Center for Environmental Assessment

EPA GROUP:
 A - Human Carcinogen
 B2 - Probable human carcinogen - Indicates sufficient evidence in animals and inadequate or no evidence in humans
 C - Possible human carcinogen

Summary of Toxicity Assessment

This table provides carcinogenic risk information which is relevant to the contaminants of concern in groundwater. At this time, slope factors are not available for the dermal route of exposure. Thus, the dermal slope factors used in the assessment have been extrapolated from oral values. An adjustment factor is sometimes applied, and is dependent upon how well the chemical is absorbed via the oral route. Adjustments are particularly important for chemicals with less than 50% absorption via the ingestion route. However, adjustment is not necessary for the chemicals evaluated at this Site. Therefore, the same values presented above were used as the dermal carcinogenic slope factors for these contaminants.

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In assessing the potential for adverse effects other than cancer, a hazard quotient (HQ) is calculated by dividing the daily intake level by the reference dose (RfD) or other suitable benchmark. Reference doses have been developed by USEPA and they represent a level to which an individual may be exposed that is not expected to result in any deleterious effect. RfDs are derived from epidemiological or animal studies and incorporate uncertainty factors to help ensure that adverse health effects will not occur. A $HQ \leq 1$ indicates that a receptor's dose of a single contaminant is less than the RfD, and that toxic noncarcinogenic effects from that chemical are unlikely. The Hazard Index (HI) is generated by adding the HQs for all chemical(s) of concern that affect the same target organ (e.g. liver) within or across those media to which the same individual may reasonably be exposed. A $HI \leq 1$ indicates that toxic noncarcinogenic effects are unlikely. A summary of the noncarcinogenic toxicity data relevant to the chemicals of concern is presented in Table 3.

Table 3 Non-Cancer Toxicity Data Summary									
Pathway: Ingestion, Dermal									
Chemical of Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Dermal RfD	Dermal RfD Units	Primary Target Organ	Combined Uncertainty/ Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (MM/DD/ YY)
arsenic	Chronic	0.0003	mg/kg-day	0.0003	mg/kg-day	Skin	3	IRIS	4/01/01
chromium	Chronic	0.003 (Cr VI)	mg/kg-day	0.003 (Cr VI)	mg/kg-day	---	900	IRIS	4/01/01
manganese	Chronic	0.024	mg/kg-day	0.024	mg/kg-day	CNS	1	IRIS	4/01/01
acetone	Chronic	0.1	mg/kg-day	0.1	mg/kg-day	Liver/ Kidney	1000	IRIS	4/01/01
benzene	Chronic	0.003	mg/kg-day	0.003	mg/kg-day	---	3000	NCEA	3/94
2-butanone	Chronic	0.6	mg/kg-day	0.6	mg/kg-day	Develop- mental	3000	IRIS	4/01/01
1,2-dichloro- ethane	Chronic	0.03	mg/kg-day	0.03	mg/kg-day	---	1000	NCEA	6/97
1,2-dichloro- propane	Chronic	0.0011	mg/kg-day	0.0011	mg/kg-day	Respirato- ry	300	IRIS	4/01/01
chloroethane	Chronic	0.4	mg/kg-day	0.4	mg/kg-day	---	1000	NCEA	7/96
chloroform	Chronic	0.01	mg/kg-day	0.01	mg/kg-day	Liver	1000	IRIS	4/01/01

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dibromochloromethane	Chronic	0.02	mg/kg-day	0.02	mg/kg-day	Kidney	1000	IRIS	4/01/01
4-methyl-2-pentanone	Chronic	0.08	mg/kg-day	0.08	mg/kg-day	Liver/ Kidney	3000	HEAST	FY '97
methylene chloride	Chronic	0.06	Mg/kg-day	0.06	mg/kg-day	Liver	100	IRIS	4/01/01
toluene	Chronic	0.2	mg/kg-day	0.2	mg/kg-day	Liver/ Kidney	1000	IRIS	4/01/01
trichloroethylene	Chronic	0.006	mg/kg-day	0.006	mg/kg-day	Liver/ Kidney	3000	NCEA	2/95
bis(2-ethylhexyl)-phthalate	Chronic	0.02	mg/kg-day	0.02	mg/kg-day	Liver	1000	IRIS	4/01/01
1,4-dichlorobenzene	Chronic	0.03	mg/kg-day	0.03	mg/kg-day	—	300	NCEA	5/94
2,4-dimethylphenol	Chronic	0.02	mg/kg-day	0.02	mg/kg-day	Blood	3000	IRIS	4/01/01
4-methylphenol	Chronic	0.005	mg/kg-day	0.005	mg/kg-day	CNS	1000	HEAST	FY '97

Summary of Toxicity Assessment

This table provides non-carcinogenic risk information which is relevant to the contaminants of concern in groundwater. All of the COCs have toxicity data indicating their potential for adverse non-carcinogenic health effects in humans.

Tables 4 and 5 depict the carcinogenic and non-carcinogenic risk summary for the chemicals of concern in groundwater evaluated to reflect present and potential future ingestion and dermal contact with groundwater by area residents corresponding to the reasonable maximum exposure (RME) scenario. Only those exposure pathways deemed relevant to the remedy being proposed are presented in this ROD. Readers are referred to USEPA's Risk Screening for Groundwater, Surface Water and Seeps for the Barkhamsted-New Hartford Landfill Superfund Site (April, 2000) for a more comprehensive risk summary of all exposure pathways evaluated for all chemicals of potential concern and for estimates of the central tendency risk.

Table 4 Characterization Summary - Carcinogens						
Scenario Timeframe:		Future Resident				
Receptor Population:		Resident				
Receptor Age:		Child				
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk		
				Ingestion	Dermal	Exposure Routes Total
Ground-water	Ground-water	Aquifer - Tap Water	arsenic	4.0x10 ⁻⁴	2.0x10 ⁻⁶	4.0x10 ⁻⁴
		Aquifer - Tap Water	1,4-dichlorobenzene	1.2x10 ⁻⁶	8.0x10 ⁻⁷	2.0x10 ⁻⁶

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Aquifer - Tap Water	benzene	5.9x10 ⁻⁶	9.1x10 ⁻⁷	6.8x10 ⁻⁶
Aquifer - Tap Water	1,2-dichloroethane	4.4x10 ⁻⁶	2.2x10 ⁻⁷	4.6x10 ⁻⁶
Aquifer - Tap Water	1,2-dichloropropane	1.6x10 ⁻⁶	1.6x10 ⁻⁷	1.8x10 ⁻⁶
Aquifer - Tap Water	chloroethane	5.6x10 ⁻⁷	3.3x10 ⁻⁸	5.9x10 ⁻⁷
Aquifer - Tap Water	chloroform	2.9x10 ⁻⁸	2.9x10 ⁻⁹	3.2x10 ⁻⁸
Aquifer - Tap Water	chloromethane	3.1x10 ⁻⁷	9.1x10 ⁻⁹	3.2x10 ⁻⁷
Aquifer - Tap Water	dibromochloromethane	7.9x10 ⁻⁷	6.1x10 ⁻⁸	8.5x10 ⁻⁷
Aquifer - Tap Water	methylene chloride	9.9x10 ⁻⁶	3.8x10 ⁻⁷	1.0x10 ⁻⁵
Aquifer - Tap Water	trichloroethene	5.3x10 ⁻⁷	9.0x10 ⁻⁸	6.2x10 ⁻⁷
Aquifer - Tap Water	vinyl chloride	4.3x10 ⁻⁵	2.3x10 ⁻⁶	4.5x10 ⁻⁵
Aquifer - Tap Water	bis(2ethyl hexyl) phthalate	1.1x10 ⁻⁵	1.8x10 ⁻⁵	2.9x10 ⁻⁵
groundwater risk total=				5.0x10 ⁻⁴
Total Risk =				5.0x10 ⁻⁴
Key — : Toxicity criteria are not available to quantitatively address this route of exposure.				

Risk Characterization

This table provides risk estimates for the significant routes of exposure. These risk estimates are based on a reasonable maximum exposure and were developed by taking into account various conservative assumptions about the frequency and duration of a child's exposure to groundwater, as well as the toxicity of the COCs (arsenic, 1,4-dichlorobenzene, benzene, 1,2-Dichloroethane, 1,2-dichloropropane, Chloroethane, chloroform, chloromethane, dibromochloromethane, methylene chloride, trichloroethene, vinyl chloride, bis(2ethyl hexyl) phthalate). The total risk from direct exposure to contaminated groundwater at this Site to a current child resident is estimated to be 5.04 x 10⁻⁴. The COC contributing most to this risk level is arsenic.

Table 5

Risk Characterization Summary - Non-Carcinogens

Scenario Timeframe: Current
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient		
					Ingestion	Dermal	Exposure Routes Total

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Ground-water	Ground-water	Aquifer - Tap water	arsenic	Skin	2.0	1.1×10^{-2}	2.0
Ground-water	Ground-water	Aquifer - Tap water	chromium	—	2.0	2.1×10^{-3}	2.0
Ground-water	Ground-water	Aquifer - Tap water	manganese	CNS	9.1	1.3×10^{-3}	9.1
Ground-water	Ground-water	Aquifer - Tap water	acetone	Liver/Kidney	4.9	2.4×10^{-2}	4.9
Ground-water	Ground-water	Aquifer - Tap water	benzene	—	1.5×10^{-1}	2.4×10^{-2}	1.8×10^{-1}
Ground-water	Ground-water	Aquifer - Tap water	2-butanone	Developmental	1.7	1.6×10^{-2}	1.7
Ground-water	Ground-water	Aquifer - Tap water	1,2-dichloroethane	---	3.6×10^{-3}	1.8×10^{-4}	3.8×10^{-3}
Ground-water	Ground-water	Aquifer - Tap water	1,2-dichloropropane	Respiratory	4.9×10^{-2}	5.1×10^{-3}	5.4×10^{-2}
Ground-water	Ground-water	Aquifer - Tap water	chloroethane	—	1.1×10^{-3}	6.6×10^{-5}	1.2×10^{-3}
Ground-water	Ground-water	Aquifer - Tap water	chloroform	Liver	1.1×10^{-3}	1.1×10^{-4}	1.2×10^{-3}
Ground-water	Ground-water	Aquifer - Tap water	dibromochloromethane	Kidney	1.1×10^{-3}	8.5×10^{-5}	1.1×10^{-3}
Ground-water	Ground-water	Aquifer - Tap water	4-methyl-2-pentanone	Liver/Kidney	7.4×10^{-1}	2.2×10^{-2}	7.7×10^{-1}
Ground-water	Ground-water	Aquifer - Tap water	methylene chloride	Liver	5.0×10^{-2}	2.0×10^{-3}	5.2×10^{-2}
Ground-water	Ground-water	Aquifer - Tap water	toluene	Liver/Kidney	3.1	1.1	4.2
Ground-water	Ground-water	Aquifer - Tap water	trichloroethene	Liver/Kidney	1.8×10^{-2}	3.2×10^{-3}	2.1×10^{-2}
Ground-water	Ground-water	Aquifer - Tap water	bis(2-ethylhexyl) phthalate	Liver	8.8×10^{-2}	1.5×10^{-1}	2.4×10^{-1}
Ground-water	Ground-water	Aquifer - Tap water	1,4-dichlorobenzene	---	3.6×10^{-3}	2.6×10^{-3}	6.2×10^{-3}
Ground-water	Ground-water	Aquifer - Tap water	2,4-dimethylphenol	Blood	3.0	4.2×10^{-1}	3.4
Ground-water	Ground-water	Aquifer - Tap water	4-methylphenol	CNS	275	27	302
GW Hazard Index Total =							331
Hazard Index Total =							331
Skin Hazard Index =							2.0

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	Blood Hazard Index =	3.4
	Respiratory Hazard Index =	0.054
	Developmental Hazard Index =	1.7
	CNS Hazard Index =	311
	Liver/Kidney Hazard Index =	9.9
Key		
— : Toxicity criteria are not available to quantitatively address this route of exposure.		
N/A: Route of exposure is not applicable to this medium.		
Risk Characterization		
This table provides hazard quotients (HQs) for each route of exposure and the hazard index (sum of hazard quotients) for all routes of exposure. The Risk Assessment Guidance (RAGS) for Superfund states that, generally, a hazard index (HI) greater than 1 indicates the potential for adverse noncancer effects. The estimated HI of 327 indicates that the potential for adverse noncancer effects could occur from exposure to contaminated groundwater containing chromium, manganese, acetone, 2-butanone, toluene, 2,4-dimethylphenol, and 4-methylphenol.		

The only medium which poses an unacceptable risk is groundwater. The total cancer risk from dermal and oral exposures via a drinking water scenario is 5×10^{-4} . Eighty percent of the cancer risk is due to arsenic, which at the maximum concentration of 22 $\mu\text{g/L}$, is below its current MCL of 50 $\mu\text{g/L}$. This cancer risk estimate is conservative because it assumes that groundwater containing the maximum concentration is actually consumed. If groundwater were to be used, it is much more likely that the concentration would be closer to the average concentration. Groundwater in the area is not consumed presently because municipal drinking water is provided. In addition, institutional controls will be instituted to prevent installation of drinking water wells in the future.

According to Review Comments on the "Geochemical Modeling for Assessing Natural Attenuation of Arsenic at the Barkhamstead New Hartford Landfill" Superfund Site, Barkhamstead, CT by Ann Keeley, Ph.D. on March 22, 2001, concentrations of arsenic will decrease over time to 5 $\mu\text{g/L}$. The cancer risk associated with 22 $\mu\text{g/L}$ arsenic is 4×10^{-4} . The cancer risk associated with the other carcinogenic chemicals is 1×10^{-4} . Since the modeled future arsenic concentration (5 $\mu\text{g/L}$) is 4.4 times lower, the future cancer risk of arsenic would be 9.1×10^{-5} . If the concentrations of the other carcinogenic chemicals remain the same (which is unlikely), the total future cancer risk would be 1.93×10^{-4} . The RI/FS found that the concentrations of these chemicals should reach background levels in about 15 years. Since it is likely that the concentrations of the other carcinogenic chemicals will decrease due to natural attenuation, it is probable that the future cancer risk would be below 1×10^{-4} , within EPA's acceptable risk range of 1×10^{-4} to 1×10^{-6} . As a result, it is concluded that the future cancer risk will be acceptable even if groundwater was used for drinking water.

The current risks of non-carcinogenic chemicals exceed EPA's hazard quotients of concern. The total cancer risk from dermal and oral exposures via a drinking water scenario is 5×10^{-4} . Eighty percent of the cancer risk is due to arsenic, which at the maximum concentration of 22 $\mu\text{g/L}$, is below the current MCL of 50 $\mu\text{g/L}$. The hazard indices (HI) which may exceed

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USEPA's hazard quotient of concern occur for the target endpoints of skin (HI=2.0), blood (HI=3.4), developmental effects (HI=1.7), liver/kidney effects (HI=9.1) and CNS (HI=311). The greatest contributor by far to noncancer risk is 4-methylphenol which is responsible for a HQ of 302 for central nervous system (CNS) effects (Table 5).

Lead in groundwater also exceeds its action level and would exceed USEPA's goal for lead in children's blood. The USEPA's Integrated Exposure and Uptake Biokinetic model was used to evaluate the hazard potential posed by exposure of young children less than 7 years of age as the most sensitive receptor group. This model evaluates exposures to lead from multiple media (i.e. soil/dust, drinking water, diet and air). Model defaults for media concentrations were assumed for all media except for drinking water. The model defaults are based on national background levels of lead in diet, air, dust and soil. The outcome of the model revealed that at the maximum average concentration of lead in any well (42 ug/l), 15.5% of children in the population would have blood lead levels that exceed 10 ug/dL. It is USEPA policy to protect 95% of the sensitive population against blood lead levels in excess of 10 ug/dl blood.

Uncertainty

There is always some imprecision, inaccuracy, and unrepresentativeness in the environmental data used to characterize site risks. The extent to which the data are incomplete is usually quantifiable, but precision, accuracy, and representativeness can only be estimated or described qualitatively. Below is a brief discussion of the major uncertainties associated with the risk assessment for the Site. A more complete discussion can be found in Section 5 of the Baseline Human Health Risk Assessment.

- The data include many measurements flagged with a "J", indicating that the measurement is approximate, or with a "UJ", indicating that the detection limit is approximate. These measurements contribute to the overall uncertainty in the estimate of risks.
- Many contaminants were measured near their detection limits, where the measurement precision is low. Also, with the typical incidence of low-level laboratory contaminants, measured concentrations of many samples were flagged "J" (estimated" wherever observed concentrations were less than the detection limits).
- Some of the low measurements of acetone and 2-butanone may have been either laboratory or sampling contaminants and/or Site contaminants. Due to the presence of related compounds at the Site, this assessment conservatively assumes that detected quantities represent actual Site contamination, not laboratory or sampling artifacts.
- Nitrate, a common landfill contaminant, was not analyzed for in the RI. It is associated with sewage, fertilizer, and general household waste, not specifically with hazardous waste. Non-Contract Laboratory Program (CLP) analyses indicated that nitrates were present above levels of potential health concern, but the quantitative risk assessment did not address risks from nitrate. Therefore, risks may be underestimated for consumption of

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groundwater directly downgradient of the landfill.

- Use of unfiltered groundwater samples for chemical analysis during the RI may overstate exposures that would actually occur in the event that groundwater directly downgradient of the landfill were to be used as drinking water. Actual water supplies from groundwater are typically less turbid than samples from monitoring wells and would probably have lower concentrations of most metals.
- An important assumption in this assessment is that environmental concentrations of chemicals will remain constant for the foreseeable future. This assumption is made when estimated exposure rates are extended a number of years. A more detailed model might predict the dispersion of contamination and degradation of organic compounds expected to occur with natural attenuation. Unfortunately, this kind of modeling is not very reliable. Uncertainty about the extent of contamination and movement of contaminants toward the nearby residences means that risks to neighborhood residents could be underestimated or overestimated by this assessment.
- Use of maximum values for an upper estimate of exposure is conservative, and may result in overestimation of the risk for the maximally exposed individual. On the other hand, average concentrations are also subject to statistical uncertainty, and may overestimate or underestimate realistic or exposure point concentrations.

Human Health Risk Summary

All human health risks other than those associated with groundwater were addressed as a result of the NTCRA because all exposure pathways except groundwater ingestion were either eliminated or ameliorated to acceptable risk levels by the NTCRA. The only medium that poses an unacceptable human health risk is exposure to groundwater. The total elevated cancer risk from dermal and oral exposures via a drinking water scenario is 5×10^{-4} (e.g. 5 in 10,000 chance of cancer above the normal lifetime chance of cancer of 1 in 3 or 4). Most (80%) of this elevated risk is due to arsenic, which at a maximum concentration of 22 $\mu\text{g/l}$, is below the current MCL of 50 $\mu\text{g/l}$. The hazard indices (HI) of contaminants in groundwater which may exceed the hazard quotient of concern (HI=1) occur for non-carcinogenic effects to skin, blood, kidney, fetal development, and the central nervous system. The greatest contributor by far to non-cancer risk is 4-methylphenol which is responsible for a hazard quotient (HQ) of 302 for central nervous system effects. Lead in groundwater also exceeds its action level and would exceed the EPA's health goal for lead in children's blood under the conservative assumption that children would ingest lead at the maximum average concentration of lead in any well (42 $\mu\text{g/l}$).

2. Ecological Risk Assessment

RI Baseline Ecological Risk Assessment

The baseline ecological risk assessment in the RI (Metcalf & Eddy, 1996) evaluated

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ecological risk of chemicals of potential concern (COPCs) in sediment and surface water of the Unnamed Brook and Unnamed Pond, as well as soil in seeps. The ecological risk assessment was limited to locations outside the projected landfill cap using the assumption that seeps would dry out and become soil areas. COPCs are chemicals that have been detected at least once during chemical analysis of samples from a site. There were 59 COPCs in sediment, 32 COPCs in surface water, and 60 COPCs in seep soil, many of which were common to all three media. The maximum concentration of each COPC in each medium was screened against conservative ecological risk-based screening levels for the same medium (surface water, sediment and soil), and those COPCs that exceeded screening levels were selected as Chemicals of Concern (COCs) for further ecological risk assessment. The COCs selected for each medium were presented in Table 3-5 of the baseline ecological risk assessment (Metcalf & Eddy, 1996). The COCs included inorganics, pesticides and PAHs.

The risks of the COCs were evaluated by calculating average and maximum hazard quotients (HQ) for each receptor. The HQ is calculated by dividing the COC concentration or dose at the site by the no-effect or low-effect concentration or dose derived from the scientific literature. The representative receptors included fish, benthic invertebrates, amphibians, mammals (beaver, muskrat, mink, woodchuck, rodents), birds (robin), and soil invertebrates (earthworms). The average and maximum HQs for fish were calculated by dividing the average and maximum COC concentrations in surface water by the USEPA Ambient Water Quality Criteria. The HQ values for benthic invertebrates were calculated by dividing average and maximum COC concentrations in sediment by Lowest Effect Levels (LELs) from the Ontario Ministry of Energy and Environment or other conservative benchmarks. HQ values for mammals and birds were calculated by dividing the estimated dose due to ingestion of soil, sediment or tissue by no-effect or low-effect benchmark doses from the scientific literature.

The baseline ecological risk assessment concluded that: 1) aquatic invertebrate communities in the unnamed brook were at risk from metals, specifically aluminum, manganese, and iron; 2) mink and other semi-aquatic animals were at risk from pesticides in sediment (primarily DDT); and 3) small terrestrial mammals that consume animal tissue (e.g. earthworms) are at risk from the ingestion of chromium in seep soil.

Post-NTCRA Ecological Risk Assessment

Since the completion of the RI and the Baseline Ecological Risk Assessment, RRDD#1 has completed landfill closure under the NTCRA, which included capping of the landfill and installation of a leachate collection system, completed in 1998. During the performance of the NTCRA, an approximate 340-ft reach of the Unnamed Brook on the west side of the landfill (in the vicinity of Leachate Seeps 8 and 13) was relocated, with the former section of the brook being filled and covered with soil. Moreover, sediments were excavated from an approximate 70-ft reach of the brook near the northwest corner of the landfill (roughly between Leachate Seeps 5 and 6), and placed beneath the cap during the NTCRA construction. That excavation was conducted after coordinating with CTDEP to remove the most visually contaminated (iron stained) sediment from the brook.

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Monitoring of water in the seeps and surface water of the Unnamed Brook was conducted in November/December, 2000 and February, 2000. In April, 2000 USEPA updated the ecological risk assessment with data from 1999/2000 by estimating risks associated with surface water and seeps. The surface water and seep water data are presented in Tables 6 and 7, respectively.

Post-NTCRA Surface Water

The more recent surface water monitoring data (Table 6) indicates that none of the inorganics that had driven the risk to aquatic organisms prior to the NTCRA exceeded surface water benchmarks after the NTCRA. However, bis(2-ethylhexyl) phthalate and carbon disulfide were detected in surface waters in December, 1999 at concentrations exceeding surface water quality benchmarks, but these were not detected in February, 2000. The concentrations of contaminants detected in surface water in December, 1999 and February, 2000 are compared with benchmark concentrations for aquatic organisms in Table 6. The results show that carbon disulfide and bis(2-ethylhexyl) phthalate exceeded their benchmarks in December, 1999 but not in February, 2000. These results indicate that at the last sampling period in February, 2000 there were no exceedances of surface water benchmarks in the Unnamed Brook, indicating that there is no significant risk of COCs in surface water to aquatic organisms.

Table 6 Chemical Concentrations in Surface Water of Unnamed Brook Before and After NTCRA-Barkhamsted Landfill						
Chemical of Concern of Concern	Benchmark (ug/l)	Benchmark Source	Maximum Concentration (ug/l)			
			Pre-NTCRA		Post-NTCRA	
			August, 1995	April, 1997	December, 1999	February , 2000
Acetone	1500	(2)	10J	NA	ND	ND
Carbon disulfide	0.92	(2)	NA	NA	13	ND
Methylene chloride	2200	(2)	2J	NA	0.67J	ND
2,4-Dimethylphenol	2.4	(5)	8	NA	ND	ND
4-Methylphenol	--	--	16	NA	ND	ND
Bis(2-ethylhexyl) phthalate	3	(2)	ND	NA	3.9J	ND
Aluminum	87	(3)	700	500	ND	ND
Barium	3.9	(1)	ND	ND	ND	ND
Copper	2.7	(4)	ND	ND	ND	ND
Iron	1000	(3)	8800	2100	1.2	1.9
Lead	0.4	(4)	3	ND	ND	ND
Manganese	120	(2)	250	230	0.25	0.29
Zinc	36.5	(4)	ND	10	ND	ND
Data from Table 3 (EPA, 2000)						
(1) EPA, 1996						
(2) Suter and Tsao, 1996						
(3) National Recommended Ambient Water Quality Criteria (EPA, 1999)						
(4) National Recommended Ambient Water Quality Criteria-adjusted to 25 mg/l hardness (EPA, 1999)						
(5) Rhode Island Ambient Water Quality Criteria (as used in the baseline risk assessment)						
NA = Not Analyzed						

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ND = Not Detected						
J = Estimated concentration						
-- = Not Available						
Values in bold exceed benchmark						

Data from Table 3 (EPA, 2000)

Post-NTCRA Seep Water

Seeps are expected to gradually diminish with the implementation of the NTCRA, until all seeps have been eliminated. As shown in Table 7, chemical concentrations in seep water have decreased since the NTCRA and do not exceed surface water benchmarks in the latest sampling round (February, 2000), except possibly for 2,4-dimethylphenol which had an estimated concentration greater than the benchmark. Nevertheless, 2,4-dimethylphenol was not detectable in surface water of the Unnamed Brook (see Table 6), indicating that seep water is not causing exceedances of aquatic benchmarks in the Unnamed Brook itself where aquatic organisms occur. Aquatic organisms do not occur in the seeps themselves. These trends are expected to continue over time due to the landfill cap and continuing leachate collection. The seeps are expected to become drier as less precipitation infiltrates into the landfill. The ecological risks of seep soil to terrestrial mammals were minimal prior to the NTCRA and will decrease as vegetation becomes established in the seep areas. The results of these analyses will be used to assess the ecological risk over time and determine the need for any future remedial action. In particular, the monitoring data will be addressed as part of the 5-year review for the site.

Chemical of Concern	Benchmark (ug/l)	Benchmark Source	Maximum Concentration (ug/l)			
			Pre-NTCRA		Post-NTCRA	
			August, 1995	August, 1998	December, 1999	February, 2000
Acetone	1500	(2)	26	NA	1.2J	ND
1,1-Dichloroethane	47	(2)	ND	NA	0.47J	0.64
1,2-Dichloroethane	910	(2)	ND	NA	0.26J	ND
1,2-Dichloropropane	--	--	ND	NA	0.29J	ND
4-Methyl-2-pentanone (MIBK)	170	(2)	ND	NA	0.62J	ND
Benzene	130	(2)	2.1	NA	1.9	1.8
Bromodichloromethane	--	--	ND	NA	0.28J	ND
Carbon disulfide	0.92	(2)	ND	NA	54J	ND
Chlorobenzene	54	(2)	2.8	NA	1.3	0.96
Chloroethane	--	--	4.7	NA	1.5J	1.3
Chloroform	28	(2)	ND	NA	1	ND
Chloromethane	--	--	ND	NA	ND	0.43J
Dibromochloromethane	--	--	ND	NA	0.15J	ND
Ethylbenzene	7.3	(2)	0.58	NA	ND	ND
Methylene chloride	2200	(2)	ND	NA	0.36J	ND

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	Benchmark	Benchmark	Maximum Concentration (ug/l)			
			Pre-NTCRA		Post-NTCRA	
Toluene	9.8	(2)	ND	NA	0.21J	0.16J
Xylenes	13	(2)	3.4	NA	2.2	0.79
cis-1,2-Dichloroethene	590	(6)	ND	NA	0.12J	ND
Diethyl phthalate	210	(2)	7.1J	NA	2.6J	ND
2,4-Dimethylphenol	2.4	(5)	21	NA	24	5.4J
Phenol	110	(7)	ND	NA	ND	13
Aluminum	87	(3)	900	ND	3.6J	52
Arsenic	150	(3)	5	ND	0.005	0.007
Barium	3.9	(1)	500	300	0.4	0.4
Cadmium	0.8	(4)	ND	ND	ND	0.001
Chromium	23.8	(3)	20	10	0.01	0.05
Copper	29	(4)	10	ND	ND	0.09
Iron	1000	(3)	80000	42000J	76	150
Lead	14.7	(4)	ND	ND	ND	0.058
Manganese	120	(2)	4800	5600	0.25	0.29
Zinc	382	(4)	ND	ND	0.02	0.17
Data from Table 4 (EPA, 2000)						
(1) EPA, 1996						
(2) Suter and Tsao, 1996 (Tier II chronic values)						
(3) National Recommended Ambient Water Quality Criteria (EPA, 1999)						
(4) National Recommended Ambient Water Quality Criteria-adjusted to 25 mg/l hardness (EPA, 1999)						
(5) Rhode Island Ambient Water Quality Criteria (as used in the baseline risk assessment)						
(6) Tier II value for 1,3-Dichloropropane used based on structural similarity						
(7) AWQC chronic value calculated by the Great Lakes Water Quality Initiative as cited in Suter and Tsao, 1996						
NA = Not Analyzed						
ND = Not Detected						
J = Estimated concentration						
-- = Not Available						
Values in bold exceed benchmark						

Post-NTCRA Sediment

Sediments have not been analyzed in the Unnamed Brook after the completion of the NTCRA. Estimated post-NTCRA average and maximum COC concentrations were calculated by removing the RI data for the samples from areas of the Unnamed Brook that were relocated (SED-5) or excavated (SED-15), followed by re-calculation of the maximum and average concentrations. These re-calculated average and maximum concentrations were compared with updated sediment benchmarks for benthic invertebrates. The results of this comparison are presented in Table 8.

Chemical	Sediment Concentration (ug/kg)	Sediment Benchmark Concentration (ug/kg)

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	Pre-NTCRA (1)		Post-NTCRA (2)		TEC	PEC
	Maximum	Average	Maximum	Average	(ug/kg)	(ug/kg)
Benzo(a)pyrene	850	268	850	251	150	1,450
Phenanthrene	730	243	730	255	204	1,170
Pyrene	2,300	402	2,300	436	195	1,520
4,4'-DDE	9.6	3.3	9.6	3.4	3.16	31.3
4,4'-DDT	11	3.4	11	3.3	4.16	62.9
Endosulfan	8.9	3.2	8.9	3.2	5.4(3)	5.4(3)
Endrin	3.8	2.9	3.8	2.8	20 (3)	20(3)
Chlordane	11	2.2	11	2.3	3.24	17.6
Barium	204,000	80,642	204,000	73,190	40,000(4)	40,000(4)
Chromium	66,900	23,952	55,700	22,093	43,400	111,000
Copper	47,900	16,252	47,900	15,988	31,600	149,000
Iron	79,400,000	21,608,750	79,400,000	20,320,500	20,000,000(5)	40,000,000 (6)
Lead	73,700	21,394	73,700	21,838	35,800	128,000
Manganese	9,450,000	1,221,279	9,450,000	1,105,035	460,000 (5)	1,100,000 (6)
Nickel	35,500	12,208	35,500	11,780	22,800	48,600
Zinc	183,000	48,170	183,000	47,414	121,000	459,000

NA = Not Available

TEC = Threshold Effects Concentration from MacDonald et al (2000)

PEC = Probable Effects Concentration from MacDonald et al (2000)

(1) Data from RI Report (Metcalf & Eddy, 1996)

(2) Concentrations estimated by recalculation after removal of SED-5 and SED-15 from RI database

(3) Sediment Quality Benchmark from EPA (1996) Ecotox Thresholds. ECO Update. EPA 540/F-95/038

(4) Benchmark from Table 5-1 in RI Report (Metcalf & Eddy, 1996)

(5) Lowest Effect Level from Ontario Ministry of the Environment

(6) Severe Effect Level from Ontario Ministry of the Environment

Updated sediment benchmarks for aquatic organisms were taken from more recent studies (MacDonald et al 2000; EPA, 1996). The original RI benchmarks (Table 5-1 of Metcalf & Eddy, 1996) were used if updated benchmarks were unavailable. Two types of benchmarks are represented; no-effect concentrations and probable effect concentrations. No-effect benchmarks include the Threshold Effect Concentration (TEC) from MacDonald et al (2000), the Lowest Effect Level (LEL) from the Ontario Ministry of Environment and Energy (OMEE), and the Sediment Quality Benchmark (SQB) from EPA (1996). These benchmarks represent concentrations below which adverse effects are unlikely. These benchmarks are compared with maximum contaminant concentrations in screening level ecological risk assessments to screen out chemicals from further concern. It can be concluded that a chemical will not have adverse effects if it does not exceed these type of benchmarks.

The probable effect benchmarks include Probable Effect Concentrations (PEC) from MacDonald et al (2000) and Severe Effect Levels (SELs) from OMEE. These benchmarks

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represent concentrations above which adverse effects are likely. These benchmarks can be used in a baseline ecological risk assessment to conclude that effects are likely, unless rebutted by more site-specific data such as toxicity tests or benthic population surveys. Generally, the baseline ecological risk assessment concludes that adverse effects are likely only if the average concentration exceeds this type of benchmark.

The results of this analysis (Table 8) indicate that the estimated maximum post-NTCRA sediment concentration of many of the COCs exceeds the no-effect benchmarks, but the average concentrations of only two COCs (barium and manganese) exceed the probable effect benchmarks. As a result, it is concluded that some level of risk might still exist for benthic invertebrates in the Unnamed Brook.

It is likely that the contaminant concentrations in the biotic zone of the Unnamed Brook will decrease in the future due to biodegradation of some of the organic COCs, decreased inputs due to the NTCRA, and covering of stream sediment by natural sedimentation. Over time, these processes should ameliorate the possible risks to benthic invertebrates. As part of the NTCRA consent order between Connecticut and the PRP group, the seeps and sediment will be monitored in the future. The results of these analyses can be used to assess the ecological risk during the monitoring period and at the 5-year review period.

Post-NTCRA Seep Soils

The primary risk of contaminants in seep soil was associated with ingestion by deer mice of chromium in prey tissue. This risk was calculated based on a food web model that conservatively assumed that the deer mouse diet is 50% animal tissue, that the chromium concentration in tissue was equal to that in soil, that 100% of the diet was obtained from seep areas, and that the reference dose was 2.5 mg/kg/day. Hazard Quotients for the average and maximum exposure cases were 44 and 1128, respectively, for the consumption of chromium in animal tissue. The average exposure case is likely more reflective of actual exposure than the maximum exposure case, and this risk is likely overestimated by one or more orders of magnitude because of the conservative exposure assumptions used in the food web model. In addition, the reference dose used in the model was highly conservative because it assumed that all of the chromium in seep soil was in the more toxic hexavalent form. Since it is likely that most of the chromium in seep soils would be in the less toxic trivalent form, a more appropriate reference dose would be 5466 mg/kg/day, which is the estimated reference dose for white footed mice (Sample et al, 1996) for trivalent chromium. This reference dose is about 2000 times higher so it is probable that the hazard quotient is overestimated by at least 3 orders of magnitude due to this factor alone. Combined with the probability that the mice would probably forage beyond the seep areas for much more of their diet than assumed, it is concluded that the actual risk of seep soil to mice is negligible.

Uncertainty

As discussed previously with human health risk assessment there is always some

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imprecision, inaccuracy, and unrepresentativeness in the environmental data used to characterize site risks. Many of the human health risk uncertainties described previously apply to ecological risk assessment as well. Conservative assumptions with high levels of uncertainty include the use of estimated data (J values) in the calculation of average concentrations, the assumption that environmental concentrations will remain the same over time, and the use of maximum concentrations as an upper estimate of exposure. In addition, there is great uncertainty concerning the toxicity factors used to estimate risks to the representative receptor organisms. The toxic effects of COCs have not been tested in laboratory studies with the selected receptors, rather, the no-effect doses have been estimated based on laboratory studies with other laboratory species. Additional uncertainty factors associated with ecological risk assessment include uncertainty concerning the assumptions made in food web modeling, including soil-to-prey bioaccumulation factors, foraging areas relative to site exposure areas, proportion of time spent by a receptor species at the site, body weights, ingestion rates, and diet composition.

Ecological Risk Summary

The baseline ecological risk assessment in the RI concluded that: 1) aquatic invertebrate communities in the Unnamed Brook were at risk from metals, specifically aluminum, manganese and iron; 2) mink and other semi-aquatic animals were at risk from pesticides in sediment (primarily DDT); and 3) small mammals that consume animal tissue (e.g. earthworms) are at risk from the ingestion of chromium from organisms that grow in seep soil.

Evaluation of the available post-NTCRA chemical data indicate that the concentrations have decreased significantly in surface water of the Unnamed Brook and in seep water. Risks of chemicals in surface water to aquatic organisms are now acceptable as shown by the absence of benchmark exceedances during the latest monitoring round in February, 2000. Chemical concentrations in seep water have decreased, and are not causing exceedances of aquatic benchmarks in the Unnamed Brook. These trends are expected to continue over time due to the landfill cap and continuing leachate collection. The seeps are expected to become drier as less precipitation infiltrates into the landfill.

Most of the ecological risk of seep soil to terrestrial mammals was associated with chromium in the food web of mice that might eat earthworms in seep soils. Due to the use of highly conservative food web assumptions and toxicity factors, it is probable that the actual risk in seep soils is negligible. The RI ecological risk assessment assumed that all of the chromium was in the more toxic hexavalent form and that the mice would feed only in the seep soil areas. Use of more realistic exposure and toxicity assumptions would result in calculated risks at least three orders of magnitude lower than those estimated in the RI. Any other potential risks of seep soil will decrease as the seeps dry out and vegetation becomes established in the seep areas.

Although sediment in the Unnamed Brook has not been sampled since the NTCRA, it is probable that risks to benthic organisms have decreased due to NTCRA activities (stream relocation and selected excavation, capping and leachate collection), as well as natural sedimentation and attenuation of organic COCs. A comparison of sediment COC concentrations

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measured prior to the NTCRA with updated sediment benchmarks indicates that there may be limited risk to benthic organisms due to barium and manganese in sediment.

With the completion of the NTCRA cap and leachate collection system, it is anticipated that the sources of contaminants to the Unnamed Brook-leachate seeps and landfill runoff have been or will be mitigated. Results of sampling conducted in November/December 1999 and February 2000 showed that none of the previously detected COCs (pesticides, metals, SVOCs) were detected. Monitoring of seeps and sediment will be conducted as part of the NTCRA consent order between Connecticut and the PRP group. These data can be used to confirm that ecological risks are continuing to decrease.

Table 9. Comparison of Detected Chemicals in Surface Water with Ecological Benchmarks for Unnamed Brook-Barkhamsted Landfill Superfund Site (December, 1999 & February, 2000)

Chemical	Benchmark (ug/l)	Maximum Concentration (ug/l)	
		December, 1999	February, 2000
Carbon disulfide	0.92 (1)	13	ND
Methylene chloride	2200 (1)	0.67J	ND
bis(2-ethylhexyl) phthalate	3 (2)	3.9J	ND
Iron	1000(1)	1.2	1.9
Manganese	120 (2)	0.25	0.29

J= Estimated Concentration

ND = Not Detected

Data from Table 3, USEPA (2000)

(1) from Suter and Tsao, 1996 (Tier II chronic value)

(2) from National Recommended Ambient Water Quality Criteria (USEPA, 1999)

References

USEPA. 1999. National Recommended Ambient Water Quality Criteria-Correction. USEPA 822-Z-99-001.

Suter II, G. W. and C. L. Tsao. 1996. Toxicological Benchmarks for Screening Potential

Contaminants of Concern for Effects on Aquatic Biota: 1996 Revision. ES/ER/TM-96/R2. Oak

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With the completion of the NTCRA cap and leachate collection system, it is anticipated that the sources of contaminants to the Unnamed Brook – leachate seeps and landfill runoff – have been or will be mitigated. Results of sampling conducted in November/December 1999 and February 2000 showed that neither of the pesticide contaminants of potential concern (DDE or DDT) were detected in any of the surface water or leachate seep samples collected.

3. Basis for Response Action

In summary, the only media which poses an unacceptable risk to human health is groundwater. It has been determined that ecological risks have been addressed by the NTCRA.

The baseline human health revealed that residents potentially exposed to compounds of concern in groundwater via ingestion and dermal exposure may present an unacceptable human health risk. The total cancer risk from dermal and oral exposures via a drinking water scenario is 5×10^{-04} . Eighty percent of the cancer risk is due to arsenic, which at the maximum concentration of 22ug/L, is below the current MCL of 50ug/L. The hazard indices (HI) which may exceed USEPA's hazard quotient of concern occur for the target endpoints of skin (HI=2.0), blood (HI=3.4), developmental effects (HI=1.7), liver/kidney effects (HI=9.1) and CNS (HI=311). The greatest contributor by far to noncancer risk is 4-methylphenol which is responsible for a HQ of 302 for central nervous system (CNS) effects. Lead in groundwater also exceeds its action level and would exceed USEPA's goal for lead in children's blood.

Based on the findings of the baseline human health and ecological risk assessments and post-NTCRA risk assessment screenings, only groundwater was found to pose a future Site risk and, therefore, is the only focus of this remedial action.

H. REMEDIATION OBJECTIVES

Based on preliminary information relating to types of contaminants, environmental media of concern, and potential exposure pathways, response action objectives (RAOs) were developed to aid in the development and screening of alternatives. These RAOs were developed to mitigate prevent existing and future potential threats to human health and the environment. The RAOs for the selected remedy for Barkhamsted New-Hartford Superfund Site are: (BYRON: the Groundwater section that follows the Sediment Section is indented more—please line up the spacing)

Sediment

The RAOs for sediment for environmental protection are as follows:

- Protect benthic invertebrates and mammals ingesting contaminated prey from direct contact with, or ingestion of, sediment having constituent concentrations exceeding a hazard index of 1.

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- Prevent releases of constituents from sediments that would result in surface water levels exceeding federal Ambient Water Quality Criteria, CT Water Quality Standards, or in their absence, a hazard index of 1.

Groundwater

Human Health

The RAOs for groundwater identified by USEPA for human health are as follows:

- Prevent the ingestion or dermal contact with groundwater having constituent concentrations exceeding USEPA Safe Drinking Water Act Maximum Contaminant Levels (MCLs), or in their absence, the more stringent of an excess cancer risk of 1×10^{-6} for each substance or a hazard quotient of 1 for each noncarcinogenic substance.
- Restore groundwater beyond the compliance boundary (limits of the landfill) to MCLs or any more stringent CT Remediation Standards (background concentrations), or in their absence, the more stringent of an excess cancer risk of 1×10^{-6} for each substance or a hazard quotient of 1 for each noncarcinogenic substance.

I. DEVELOPMENT AND SCREENING OF ALTERNATIVES

1. Statutory Requirements/Response Objectives

Under its legal authorities, USEPA's primary responsibility at Superfund sites is to undertake remedial actions that are protective of human health and the environment. In addition, Section 121 of CERCLA establishes several other statutory requirements and preferences, including: a requirement that USEPA's remedial action, when complete, must comply with all federal and more stringent state environmental and facility siting standards, requirements, criteria or limitations, unless a waiver is invoked; a requirement that USEPA select a remedial action that is cost-effective and that utilizes permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and a preference for remedies in which treatment which permanently and significantly reduces the volume, toxicity or mobility of the hazardous substances is a principal element over remedies not involving such treatment. Response alternatives were developed to be consistent with these Congressional mandates.

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2. Technology and Alternative Development and Screening

CERCLA and the National Contingency Plan (NCP) set forth the process by which remedial actions are evaluated and selected. In accordance with these requirements, a range of alternatives were developed for the Site.

The RI/FS developed a limited number of remedial alternatives that attain Site specific remediation levels for Site groundwater within different time frames using different technologies; and a no action alternative.

As discussed in Section 2.4 of the FS, groundwater treatment technology options were identified, assessed and screened based on implementability, effectiveness, and cost. These technologies were combined into management of migration (MM) alternatives. Section 3 of the FS presented the remedial alternatives developed by combining the technologies identified in the previous screening process in the categories identified in Section 300.430(e)(3) of the NCP. The purpose of the initial screening was to narrow the number of potential remedial actions for further detailed analysis while preserving a range of options. Each alternative was then evaluated in detail in Sections 4 and 5 of the FS. Four management of migration alternatives were selected for detailed analysis.

J. DESCRIPTION OF ALTERNATIVES

This Section provides a narrative summary of each management of migration alternative evaluated.

Management of migration (MM) alternatives address contaminants that have migrated into and with the groundwater from the original source of contamination. At the Site, contaminants have migrated from landfill wastes and contaminated soils into groundwater prior to implementation of the NTCRA. The MM alternatives analyzed for the Site include:

- MM-1 No Action
- MM-2 Management/Natural Attenuation
- MM-3A Collection, Treatment, and Discharge of Groundwater
- MM-3B Collection, Treatment, and Discharge of Groundwater

Each of the four MM alternatives is summarized below. A more complete, detailed presentation of each alternative is found in Section 3 of the FS.

MM-1: No Action

The key component of MM-1: No Action is monitoring of groundwater, surface water (including seeps), and sediment for 5-year reviews.

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A No-Action alternative is included in the MM alternatives as required by the NCP (40 C.F.R. § 300.430(e)(6)). The No-Action alternative would include an environmental monitoring program for groundwater, surface water and sediment, to be performed for at least 30 years. Monitoring is part of the No Action alternative as it is necessary to perform the 5-year reviews as required by the NCP (40 C.F.R. § 300.430(f)(ii)). The No Action alternative would not, in and of itself, treat, remove, or actively reduce the potential exposure risk to contaminated groundwater, soil, and/or sediments on-Site. This alternative would not include environmental land use restrictions or public education.

Estimated annual O&M cost (monitoring): \$16,900

Estimated Present Worth: \$242,080 (assuming 30 years at 7% discount rate)

MM-2: Management/Natural Attenuation

The key components of MM-2: Management/Natural Attenuation include:

- Long-term monitoring of groundwater, surface water (including seeps), and sediment
- Restoration of contaminated groundwater via natural attenuation.
- Environmental land use restrictions
- Public education program

Long-term monitoring would include the installation of additional monitoring wells and periodic sampling and analysis of the groundwater, surface water, seeps, and sediment to evaluate changes over time. Groundwater sampling would be conducted quarterly, although certain wells would be sampled only semiannually or annually. The samples would be analyzed for TCL VOCs and SVOCs and TAL metals. Surface water samples would also be collected quarterly and analyzed for the same parameters as the groundwater plus pesticides. Seeps would be sampled quarterly for the first year and analyzed for the same parameters as the surface water samples. The seep sampling program would then be reviewed and adjusted, if necessary, based on the results from the first year. Air sampling would be conducted during the first sampling round. Air samples would be taken from the landfill vents and from four stations, including one at a downwind residence and two at the recycling/maintenance facility work area. The air samples would be analyzed for VOCs and compared to applicable Federal and state standards. Based on the results of this single air sampling event, recommendations for additional sampling or actions, if necessary, would be made.

Environmental land use restrictions involve placing legal restrictions on present and future uses. Land use restrictions would include prohibition of residential use of the Site, use of groundwater for drinking or any other purpose, disturbances of soil on the Site, and construction of buildings on the Site. In general, these land use restrictions would prevent residential use of the Site, prevent contaminated groundwater from being extracted for use, and avoid disturbance of the landfill cap installed under the NTCRA. Additional environmental land use restrictions of down-gradient properties would prohibit the installation of any wells and the use of groundwater

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for any purpose. Any owner of property interests on the Site shall be required to create binding land use restrictions on their property needed to implement the remedy under applicable federal, state and local standards. On any property outside of the Site where the remedy calls for institutional controls to be implemented, any and all property rights needed to implement legally binding, land use restrictions for the remedy shall be acquired under applicable federal, state, and local standards.

A public education program would be implemented. Informational meetings would be held to inform the community of imminent or completed remedial activities. Mailings would also be used to provide updates on the progress of the cleanup or, if necessary, to discuss potential Site hazards.

The groundwater cleanup levels would be achieved via natural attenuation under this alternative. Natural attenuation processes include advection, dispersion, sorption, dilution, volatilization, geochemical precipitation, bio-degradation, radioactive decay, and chemical or biological stabilization, transformation, or destruction. Groundwater modeling conducted during the FS showed that natural attenuation will achieve the groundwater cleanup levels, in the overburden in approximately 15.6 years and in the bedrock aquifer in approximately 6 years.

An evaluation of natural attenuation was conducted in accordance with USEPA protocols (Wiedemeier, et. al. 1998). Lines of evidence indicate that the organic contaminant plumes in the overburden and shallow bedrock are attenuating naturally. The first line of evidence was applied through evaluation of the historic groundwater analytical data that established decreasing trends in COCs and documented plume stability. The second line of evidence was documented through the collection and analysis of geochemical parameters during the December 1998, November/December 1999, and February 2000 sampling events, and examining those data trends and relationships between the supplies of electron donors and electron acceptors, and the presence of metabolic by-products.

A review of historical groundwater quality data indicates that the concentrations of Site-related constituents are either remaining stable or decreasing over time. Elimination of the source of groundwater contaminants by completion of the NTCRA in November 1998 shows further decreases in contaminant concentrations. Evidence of microbial mediated degradation is supported by the presence of daughter products. Geochemical evidence that indicates subsurface conditions amenable for microbially mediated degradation include the following:

- an abundance of dissolved organic carbon that can be utilized as a carbon source (electron donor) by microbes;
- anaerobic conditions that sustain reductive dechlorination;
- presence of organic compounds that can undergo fermentation reactions (BTEX, ketones) that produce hydrogen, which can be utilized by microbes during reductive dechlorination;
- low concentrations of nitrate that will not suppress the reductive dechlorination pathway;
- low sulfate concentrations within the plume as compared to background suggesting utilization as an electron acceptor;

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-
- some degree of increased chloride concentration in the plume compared to background suggesting dechlorination is occurring;
 - some degree of increased alkalinity in the plume compared to background suggesting that the plume is biologically active;
 - decreases in oxidation-reduction potential in the plume as compared to background suggesting the plume is biologically active;
 - the presence of methane that suggests highly reducing conditions and microbial degradation; and
 - groundwater pH ranges that are suitable for microbial populations.

In addition to the lines of evidence, completion of the bioattenuation screening process provides further evidence supporting natural attenuation. The screening process completed for the December 1998, November/December 1999, and February 2000 data consistently indicates that there is adequate to strong evidence that geochemical conditions are amenable to natural attenuation. Natural attenuation is discussed in detail in Section 4.2.2.2. of the FS.

Site conditions with implementation of MM-2 would eventually be consistent with applicable federal and state chemical-specific ARARs once natural attenuation of the ground water in the overburden is achieved in approximately 15.6 years and in the bedrock aquifer in approximately 6 years. The remedy is also consistent with all identified action-specific ARARs listed in Table 4-3B. No location-specific ARARs were identified.

Estimated Capital Cost: \$147,000

Estimated Annual O&M Costs: \$82,000

Estimated Present Worth: \$945,392 to \$1,196,909 (assuming a range of 16 to 30 years at a discount rate of 7%)

Estimated Time to Reach Remediation Goals: 15.6 years

MM-3A: Collection, Treatment (including air stripping and carbon adsorption) and Discharge of Groundwater

The key components of MM-3A: Collection, Treatment (including air stripping and carbon adsorption) and Discharge of Groundwater include:

- Long-term monitoring of groundwater, surface water (including seeps), and sediment
- Environmental land use restrictions
- Public education program
- Groundwater extraction
- Filtration
- Chemical precipitation
- Neutralization
- Air stripping
- Carbon adsorption
- Discharge of treated groundwater to the Unnamed Brook

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The treatment technologies are described in detail in Section 2.4.1. of the FS and are summarized below.

Alternative MM-3A builds upon MM-1 and MM-2 (as it includes the same monitoring, environmental land use restrictions, and public education elements) and also consists of installation of extraction wells; on-Site treatment of groundwater collected in the wells via filtration, chemical precipitation, neutralization, air stripping, and carbon adsorption; and discharge of treated groundwater to the Unnamed Brook.

As summarized in Section E of this ROD, Site Characteristics, the nature and extent of contamination in groundwater suggests that VOCs, SVOCs, and metals are the primary COCs. The distribution of impact appears to be primarily in the overburden and shallow bedrock aquifers. However, groundwater in various depths of the overburden and bedrock aquifers has been impacted. Extraction wells (recovery wells) are suitable for extraction of groundwater from shallow and deep overburden or bedrock aquifers. Groundwater modeling (presented in Section 1.2.4 of the FS) was used to evaluate the number, location, and pumping rate of the extraction wells necessary to prevent further migration of the groundwater plume. The modeling showed that installation of 7 wells in the overburden zone and 7 wells in the shallow bedrock zone will effectively capture the plume. A combined pumping rate of 15.4 gpm would create a sufficient capture zone to intercept the contaminants. Aquifer performance testing would be required to evaluate the actual placement and flow rate of the recovery wells.

The treatment technologies would address the COCs. Filtration would remove precipitated metals and suspended solids. Chemical precipitation involves oxidation and reduction reactions to change the chemical form of a hazardous material to render it less toxic or to change its solubility, stability, or separability, or otherwise change it for handling or disposal purposes. Neutralization is used to eliminate or reduce the reactivity and corrosiveness of contaminated water and/or treated water. The process of pH adjustment is a partial neutralization process which makes the waste stream either more acidic or more alkaline to enhance chemical, biochemical reactions and precipitation. Air stripping is a mass transfer process in which volatile organic contaminants in groundwater are transferred to the gaseous (vapor) phase. Carbon adsorption is a physical treatment process involving adsorption of chemical contaminants onto activated carbon. It involves contacting a liquid or vapor waste stream with the carbon, usually by flow, through a series of packed-bed reactors. The treated water would be discharged to the Unnamed Brook in accordance with the criteria established by state and federal regulations.

This alternative would eventually be consistent with Federal and State Chemical-specific ARARs. For MM-3A, groundwater will achieve the cleanup levels in the overburden in approximately 13.2 years and in the bedrock in approximately 4.9 years.

Estimated Capital Cost: \$1,514,080

Estimated Annual O&M Costs: \$244,800

Estimated Present Worth: \$3,673,291 - \$4,584,181 (assuming a range of 14 to 30 years at a

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discount rate of 7%)

Estimated Implementation Time Frame: one year

Estimated Time to Reach Remediation Goals: 14.2 years

MM-3B: Collection, Treatment (including UV oxidation) and Discharge of Groundwater

The key components of MM-3B: Collection, Treatment (including UV oxidation) and Discharge of Groundwater include:

- Long-term monitoring of groundwater, surface water (including seeps), and sediment
- Environmental land use restrictions
- Public education program
- Groundwater extraction
- Filtration
- Chemical precipitation
- Neutralization
- UV oxidation
- Discharge of treated groundwater to the Unnamed Brook

The treatment technologies are described in detail in Section 2.4.1 of the FS and are summarized below.

Alternative MM-3B builds upon MM-1 and MM-2 (as it includes the same monitoring, environmental land use restrictions, and public education elements) and is very similar to MM-3A, with the exception of the use of UV oxidation in lieu of air stripping and carbon adsorption. Ultraviolet (UV) oxidation is a process which utilizes UV radiation in combination with an oxidizer such as hydrogen peroxide or ozone to destroy hazardous chemicals in aqueous solution. The combination of the UV radiation and oxidizer produces a synergistic effect and acts to promote the oxidation of many contaminants into nontoxic forms. This treatment process is most amenable to dissolved organic compounds including halogenated organic and aromatic compounds and has been successful in treating many of the COCs associated with this Site. The treated water would be discharged to the Unnamed Brook in accordance with the criteria established by state and federal regulations.

This alternative would eventually be consistent with Federal and State Chemical-specific ARARs. For MM-3B, groundwater will achieve the cleanup levels in the overburden in approximately 13.2 years and in the bedrock in approximately 4.9 years.

Estimated Capital Cost: \$1,572,880

Estimated Annual O&M Costs: \$245,800

Estimated Present Worth: \$3,819,545 - \$4,767,071 (assuming a range of 14 to 30 years at a discount rate of 7%)

Estimated Implementation Time Frame: one year

Estimated Time to Reach Remediation Goals: 14.2 years

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K. SUMMARY OF THE COMPARATIVE ANALYSIS OF ALTERNATIVES

Section 121(b)(1) of CERCLA presents several factors that at a minimum USEPA is required to consider in its assessment of alternatives. Building upon these specific statutory mandates, the NCP articulates nine evaluation criteria to be used in assessing the individual remedial alternatives.

A detailed analysis was performed on the alternatives using the nine evaluation criteria in order to select a Site remedy. The following is a summary of the comparison of each alternative's strength and weakness with respect to the nine evaluation criteria. These criteria are summarized as follows:

Threshold Criteria

The two threshold criteria described below must be met in order for the alternatives to be eligible for selection in accordance with the NCP:

1. **Overall protection of human health and the environment** addresses whether or not a remedy provides adequate protection and describes how risks posed through each pathway are eliminated, reduced or controlled through treatment, engineering controls, or institutional controls.
2. **Compliance with applicable or relevant and appropriate requirements (ARARs)** addresses whether or not a remedy will meet all Federal environmental and more stringent State environmental and facility siting standards, requirements, criteria or limitations, unless a waiver is invoked.

Primary Balancing Criteria

The following five criteria are utilized to compare and evaluate the elements of one alternative to another that meet the threshold criteria:

3. **Long-term effectiveness and permanence** addresses the criteria that are utilized to assess alternatives for the long-term effectiveness and permanence they afford, along with the degree of certainty that they will prove successful.
4. **Reduction of toxicity, mobility, or volume through treatment** addresses the degree to which alternatives employ recycling or treatment that reduces toxicity, mobility, or volume, including how treatment is used to address the principal threats posed by the Site.
5. **Short term effectiveness** addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that

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may be posed during the construction and implementation period, until cleanup goals are achieved.

6. **Implementability** addresses the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.
7. **Cost** includes estimated capital and Operation Maintenance (O&M) costs, as well as present-worth costs.

Modifying Criteria

The modifying criteria are used as the final evaluation of remedial alternatives, generally after USEPA has received public comment on the RI/FS and Proposed Plan:

8. **State acceptance** addresses the State's position and key concerns related to the preferred alternative and other alternatives, and the State's comments on ARARs or the proposed use of waivers.
9. **Community acceptance** addresses the public's general response to the alternatives described in the Proposed Plan and RI/FS report.

Following the detailed analysis of each individual alternative, a comparative analysis, focusing on the relative performance of each alternative against the nine criteria, was conducted. This comparative analysis can be found in Tables 4-4a through 4-4g of the FS.

A summary of the comparative analysis is presented below in Table 10. This table presents the nine criteria and a brief narrative summary of the alternatives and the strengths and weaknesses according to the detailed and comparative analysis. Only those alternatives which satisfied the first two threshold criteria were balanced and modified using the remaining seven criteria.

Table 10: Summary for the Comparative Analysis of Alternatives

Overall Protection of Human Health and the Environment

Overall protection of human health and the environment addresses whether each alternative provides adequate protection of human health and the environment and describes how risks posed through each exposure pathway are eliminated, reduced, or controlled, through treatment, engineering controls, and/or institutional controls.

All of the alternatives, except the no-action alternative (MM-1), are protective of human health and the environment by eliminating, reducing, or controlling risks posed by the Site through treatment of contaminants, engineering controls, and/or institutional controls. For MM-2, the two-dimensional groundwater model shows that natural attenuation will achieve the cleanup levels in the overburden in approximately 15.6 years and in the bedrock aquifer in approximately 6 years. For MM-3A and MM-3B, groundwater will achieve the cleanup levels in the overburden in approximately 13.2 years and in the bedrock in approximately 4.9 years. Alternatives MM-3A and MM-3B provide only a slight advantage over MM-2 in terms of the time to achieve groundwater criteria. There is no difference in the

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cleanup time frames between MM-3A and MM-3B.

MM-2, MM-3A, and MM-3B provide better protection than MM-1 since they include environmental land use restrictions and public education that would prevent contact with, and ingestion of, groundwater. MM-2, MM-3A, and MM-3B are considered to be equally protective of human health and the environment because cleanup goals will be met.

Compliance with Applicable or Relevant and Appropriate Requirements

Section 121(d) of CERCLA requires that remedial actions at CERCLA sites at least attain legally applicable or relevant and appropriate Federal and State requirements, standards, criteria, and limitations which are collectively referred to as "ARARs," unless such ARARs are waived under CERCLA section 121(d)(4).

Applicable requirements are those substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law that specifically address hazardous substances, the remedial action to be implemented at the Site, the location of the Site, or other circumstances present at the Site. Relevant and appropriate requirements are those substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law which, while not applicable to the hazardous materials found at the Site, the remedial action itself, the Site location or other circumstances at the Site, nevertheless address problems or situations sufficiently similar to those encountered at the Site that their use is well-suited to the Site.

Compliance with ARARs addresses whether a remedy will meet all of the applicable or relevant and appropriate requirements of other Federal and State environmental statutes or provides a basis for invoking a waiver.

All alternatives had in common the federal and state chemical-specific ARARs. Maximum contaminant levels (MCLs) for several Site contaminants are exceeded in the plume that flows northeast from beneath the landfill in the groundwater system. MM 1 does not meet chemical-specific ARARs because it does not adequately address exceedances of MCLs. Location- and Location specific ARARs associated with construction and potential regulatory issues associated with wastewater discharge requirements, air emissions, and waste generation, storage and disposal applied to alternatives MM-3A and MM-3B only.

Alternatives MM-3A and MM-3B provide only a slight advantage over MM-2 in terms of the time to achieve the groundwater cleanup levels. There is no difference in the cleanup time frames between MM-3A and MM-3B. Alternatives MM-2, MM-3A, MM-3B would eventually be compliant with the chemical-specific ARARs.

The activities associated with implementation of MM-2, MM-3A, and MM-3B would be performed in a manner compliant with the action-specific ARARs. Alternative MM-3A and MM-3B will meet all applicable federal and state location-specific ARARs for building discharge pipes and discharging water into wetlands and watercourses. Based on the above, only alternatives MM-2, MM-3A, and MM-3B would be compliant with the applicable ARARs or critical To Be Considered Materials (TBCs) for the Site. TBCs are non-promulgated advisories or guidance issued by the federal or state government that are not legally binding and do not have the status of ARARs.

Long-Term Effectiveness and Permanence

Long-term effectiveness and permanence refers to expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time, once clean-up levels have been met. This criterion includes the consideration of residual risk and the adequacy and reliability of controls.

Each alternative, except the No Action alternative, provides some degree of long-term protectiveness through environmental land use restrictions and public education. Alternatives MM-3A and MM-3B may provide an additional degree of protection through groundwater extraction and treatment.

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There are no controls under MM-1 to manage untreated groundwater. Environmental land use restrictions and public education are adequate and reliable in restricting activities resulting in potential ingestion of, or contact with, groundwater for MM-2, MM-3A, and MM-3B. Monitoring activities associated with all four alternatives are adequate and reliable in terms of evaluating changes in the extent and concentrations of the contaminants. The extraction and treatment technologies associated with both MM-3A and MM-3B have been used extensively and have been proven to provide long-term reliability.

The adequacy and suitability of controls for MM-3A, MM-3B, and MM-2 are better than MM-1, since they include use of environmental land use restrictions and public education. MM-2, MM-3A, and MM-3B are equal with respect to the reliability of the management controls.

Five year reviews would be necessary to evaluate the effectiveness of any of these alternatives because hazardous substances would remain on-Site in concentrations above health-based levels.

Reduction of Toxicity, Mobility, or Volume Through Treatment

Reduction of toxicity, mobility, or volume through treatment refers to the anticipated performance of the treatment technologies that may be included as part of a remedy.

Alternatives MM-1 and MM-2 do not include treatment as a component of the remedy. Therefore, these alternatives would not actively reduce the toxicity or volume of contamination at the Site. Over time, however, contaminant levels in the existing areas of contamination are expected to decrease through natural attenuation.

The treatment processes associated with MM-3A and MM-3B would generate treatment residuals.

Short-Term Effectiveness

Short-term effectiveness addresses the period of time needed to implement the remedy and any adverse impacts that may be posed to workers and the community during construction and operation of the remedy until cleanup goals are achieved.

For all four alternatives, the community is restricted from access to the Site via the existing fencing although there would be no maintenance of the existing fence under the No-action alternative (MM-1). Under alternative MM-2, MM-3A, and MM-3B environmental land use restrictions will prohibit disturbance of the landfill cap. Groundwater, surface water and sediment monitoring will not affect the community.

For MM-2, MM-3A, and MM-3B, additional environmental land use restrictions will prohibit installation of wells and use of groundwater. Alternatives MM-3A and MM-3B would pose a minimal increase in potential risk to the community if implemented compared to MM-1 and MM-2. This is due to potential exposure to contaminated fugitive dust and vapors during construction. Risks to samplers of exposure to contaminated groundwater, surface water, and sediment would be associated with the monitoring program for MM-1, MM-2, MM-3A, and MM-3B. Appropriate personal protective equipment would be used during the monitoring activities.

Since alternatives MM-3A and MM-3B involve construction activities, inhalation of dust and vapors, and direct contact with groundwater could cause significantly more risk to workers if MM-3A and MM-3B were implemented than if MM-1 and MM-2 were implemented.

No environmental impacts are identified for implementation of MM-1 and MM-2. Alternatives MM-3A and MM-3B could pose an impact to the environment by contaminant transport during construction. Impacts may be caused by improper off-Site drainage control and dust control measures. There is no expected environmental impact during operation and maintenance of MM-3A and MM-3B.

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Implementability

Implementability addresses the technical and administrative feasibility of a remedy from design through construction and operation. Factors such as availability of services and materials, administrative feasibility, and coordination with other governmental entities are also considered.

Groundwater, surface water, and sediment monitoring associated with MM-1, MM-2, MM-3A, and MM-3B is readily implemented and is reliable to evaluate the Site conditions. For all four alternatives, additional remedial actions (if required) would be easily implemented.

For MM-2, MM-3A, and MM-3B, legal coordination with property owners and town officials would be required to implement the environmental land use restrictions and public education program. On any property outside of the Site where the remedy calls for institutional controls to be implemented, property rights needed to implement legally binding, land use restrictions for the remedy need to be acquired under applicable federal, state, and local standards. Environmental land use restrictions, public education, and groundwater, surface water and sediment monitoring are readily implemented and are reliable.

Installation of recovery wells and construction and operation of the treatment technologies associated with MM-3A and MM-3B are readily implemented and reliable. The effectiveness of MM-3A and MM-3B would be easily monitored as part of the groundwater, surface water, and sediment monitoring program.

Although all of the alternatives presented are feasible, there is significant difference in the implementability of MM-1 and MM-2 versus MM-3A and MM-3B, as the latter two require the installation, operation, and maintenance of treatment equipment for a period of approximately 15 years.

Coordination with agencies other than USEPA and CTDEP would not be required for MM-1. Legal coordination with property owners and the town would be necessary to implement the environmental land use restrictions and public education program for MM-2, MM-3A, MM-3B. Environmental land use restrictions, public education, and monitoring are readily implemented. Permits for off-Site disposal of residual materials and treated groundwater for MM-3A and MM-3B would be required and are easily obtainable.

Cost

The estimated present worth costs for each alternative are presented in ranges. The lower present worth cost is based on the estimated number of years that the alternative will achieve the groundwater cleanup levels in both the overburden and bedrock aquifers. The upper end of the range is based on 30 years in accordance with USEPA Guidance on Conducting RI/FS under CERCLA.

MM-1: \$183,405 to \$242,080
MM-2: \$945,382 to \$1,196,909
MM-3A: \$3,673,291 to \$4,584,181
MM-3B: \$3,819,545 to \$4,767,071

Alternative MM-1 is the least costly alternative. The cost to implement MM-2 is significantly less than the extraction and treatment alternatives (MM-3A and MM-3B) which are similar to each other. The increase in costs of alternatives MM-3A and MM-3B provide only a slight decrease in the time required to reduce toxicity, mobility, and volume than the other alternatives, based on groundwater modeling results.

State / Support Agency Acceptance (Byron: Do you have anything to add in these sections?)

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Community Acceptance

L. THE SELECTED REMEDY

1. Summary of the Rationale for the Selected Remedy

The selected remedy for the Barkhamsted-New Hartford Landfill is alternative number MM-2 Management/Natural Attenuation. This remedy, which addresses management of migration of contaminated Site groundwater, is the final component of a comprehensive remedy for the Site. The selected remedy addresses the low-level risks posed by Site groundwater. The source and all principal risks were addressed in a previous action. (BYRON: all your other paragraphs are indented)

The major components of this remedy include remediation of groundwater to cleanup levels by natural attenuation after approximately 15.6 years; installation of groundwater monitoring wells; institutional controls; a public education program; and long term monitoring of groundwater, surface water, and sediment.

2. Description of Remedial Components

The key components of the Selected Remedy, Management/Natural Attenuation, include:

- Long-term monitoring of groundwater, surface water (including seeps), and sediment
- Restoration of contaminated groundwater via natural attenuation
- Environmental land use restrictions
- Public education program
- Five year review

Long-term monitoring would include the installation of additional monitoring wells and periodic sampling and analysis of the groundwater, surface water, and sediment to evaluate changes over time. Once cleanup levels have been met, the groundwater monitoring system will be utilized to collect information to ensure that the cleanup levels are maintained and the remedy is protective. The Connecticut Remediation Standard Regulations (RSRs) require that all substances in the groundwater that are part of a release be remediated to background concentrations. For practical purposes, monitoring of the groundwater from under the landfill will be measured at wells located at the boundary of the landfill for compliance. Compliance with background must be demonstrated in accordance with Section 22a-133k-3(g)(3) of the RSRs, therefore long-term monitoring would continue until cleanup has been demonstrated in accordance with these regulations.

The currently listed background concentrations, based on data from the existing upgradient wells, are considered cleanup levels until a additional samples from appropriately

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located background wells can be collected to establish representative background concentrations in a manner consistent with the RSRs. DEP and EPA agreed to the use of these groundwater cleanup levels with the understanding that background concentrations in groundwater would be adjusted during the remedial design phase.

The groundwater cleanup levels would be achieved via natural attenuation under this alternative. Natural attenuation processes include advection, dispersion, sorption, dilution, volatilization, geochemical precipitation, biodegradation, radioactive decay, and chemical or biological stabilization, transformation, or destruction.

To the extent required by policy, USEPA will review the Site at least once every five years after construction completion, if any hazardous substances, pollutants or contaminants remain at the Site, to assure that the remedial action continues to protect human health and the environment.

The selected remedy may change somewhat as a result of monitoring the remedy. Changes to the remedy described in this ROD will be documented in a technical memorandum in the Administrative Record for the Site, an Explanation of Significant Differences (ESD) or a ROD Amendment, as appropriate.

3. Summary of the Estimated Remedy Costs

The information in this cost estimate summary table is based on the best available information regarding the anticipated scope of the remedial alternative. Changes in the cost elements are likely to occur as a result of new information and data collected during the Monitored Natural Attenuation remedy. Major changes may be documented in the form of a memorandum in the Administrative Record file, an ESD, or a ROD amendment. This is an order-of-magnitude engineering cost estimate that is expected to be within +50 to -30 percent of the actual project cost.

ITEM	TOTAL COST
Direct Capital Costs	
Monitoring Well Installation - Overburden	\$20,000
Monitoring Well Installation - Shallow Bedrock	\$30,000
Environmental Land Use Restrictions	\$5,000
Public Education Program	\$20,000
Engineering (20%)	\$36,000
Contingency (20%)	\$36,000

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Total Direct Capital Costs	\$147,000
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Annual Operation & Maintenance Costs		
Sampling Labor/Directs		\$30,000
Groundwater, Surface Water & Sediment Analyses		
- Natural attenuation analysis		\$8,000
- VOC analysis		\$10,000
- SVOC analysis		\$12,000
- Metals analysis		\$12,000
Groundwater, Surface Water & Sediment Reports		\$6,000
Miscellaneous		\$1,500
Public Education Program		\$2,500
	Total Annual O&M Costs	\$82,000
Five-Year Review (one-time cost every 5 yrs)	\$15,000	\$15,000
	Present Worth of Annual O&M Costs for 16 Years (i=7%)	\$798,382
	Present Worth of Annual O&M Costs for 30 Years (i=7%)	\$1,049,909
	TOTAL ESTIMATED COST FOR 16 YEARS	\$945,382
	TOTAL ESTIMATED COST FOR 30 YEARS	\$1,196,909
Assumptions:		
1. Costs assume semi-annual monitoring for (16 and 30 years) consisting of 20 groundwater samples, 5 surface water samples, and 5 sediment samples.		
2. The low end of the present worth range (16 years) is based upon the groundwater modeling results which estimates the time frame to achieve the groundwater cleanup levels (15.6 years in the overburden). The high end (30 years) is based upon the USEPA Guidance for Conducting RI/FS under CERCLA.		
3. Laboratory analysis to be performed consists of natural attenuation parameters and VOCs, SVOCs and metals analyses for ground water, VOCs and metals analyses for surface water, and metals for sediment.		
4. All sampling assumes a two-person crew to perform the work.		
5. Analytical costs include level 1 QA/QC with a trip blank for VOCs.		
6. Monitoring well installations may or may not be required.		

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4. **Expected Outcomes of the Selected Remedy**

The primary expected outcome of the selected remedy is that the area downgradient of the landfill will no longer present an unacceptable risk to humans via groundwater and will be suitable for unrestricted use. Approximately 16 years are estimated as the amount of time necessary to achieve the goals consistent with residential use. The expected outcome of the site itself is to remain as a refuse / recycling / disposal facility, with restricted use of land and groundwater at the landfill itself, unrestricted use in all other areas.

Groundwater Cleanup Levels

Cleanup levels have been established in groundwater for all chemicals of concern identified in the Baseline Risk Assessment found to pose an unacceptable risk to either public health or the environment. Cleanup levels have been set based on the ARARs (e.g., non-zero Drinking Water Maximum Contaminant Level Goals (MCLGs), MCLs, and more stringent State Remediation Standard Regulations) as available, or other suitable criteria described below. Periodic assessments of the protection afforded by remedial actions will be made as the remedy is being implemented and at the completion of the remedial action. At the time that Groundwater Cleanup Levels identified in the ROD and newly promulgated ARARs and modified ARARs which call into question the protectiveness of the remedy have been achieved and have not been exceeded for a period of three consecutive years, and as demonstrated in accordance with Section 22a-133k-3(g)(3) of the Connecticut RSRs, a risk assessment shall be performed on all residual groundwater contamination to determine whether the remedial action is protective. This risk assessment of the residual groundwater contamination shall follow USEPA procedures and will assess the cumulative carcinogenic and non-carcinogenic risks posed by all chemicals of concern (including but not limited to the chemicals of concern) via ingestion and dermal contact with groundwater. If, after review of the risk assessment, the remedial action is not determined to be protective by USEPA, the remedial action shall continue until either protective levels are achieved, and are not exceeded for a period of three consecutive years, or until the remedy is otherwise deemed protective or is modified. These protective residual levels shall constitute the final cleanup levels for this ROD and shall be considered performance standards for this remedial action.

Because the aquifer at and beyond the compliance boundary for the landfill is a Class IIB aquifer (GA) which is a potential source of drinking water, MCLs and non-zero MCLGs established under the Safe Drinking Water Act and more stringent State standards are ARARs. For practical purposes, a compliance boundary has been established as the wells around the perimeter of the landfill.

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Cleanup levels for known, probable, and possible carcinogenic chemicals of concern (Classes A, B, and C) have been established to protect against potential carcinogenic effects and to conform with ARARs. The MCLGs for Class A and B compounds are set at zero and are thus not suitable for use as cleanup levels. Therefore, MCLs and proposed MCLs have been selected as the cleanup levels for these classes of chemicals of concern. Conversely, the MCLGs for Class C compounds are greater than zero and can readily be confirmed. Consequently, MCLGs and proposed MCLGs have been selected as the cleanup levels for Class C chemicals of concern.

Cleanup levels for Class D and E chemicals of concern (not classified, and no evidence of carcinogenicity) have been established to protect against potential non-carcinogenic effects and to conform with ARARs. Like the Class C compounds, the MCLGs for these Classes are greater than zero and can readily be confirmed thereby allowing MCLGs and proposed MCLGs to be selected as the cleanup levels for these classes of chemicals of concern.

In situations where a promulgated State standard is more stringent than values established under the Safe Drinking Water Act, the State standard was used as the cleanup level.

Table 11 summarizes the Cleanup Levels for carcinogenic and non-carcinogenic chemicals of concern identified in groundwater.

Table 11: Groundwater Cleanup Levels*				
Carcinogenic Chemical of Concern	Cancer Classification	Cleanup Level (ug/l)	Basis	RME Risk
arsenic	A	5.0	Background Conc.	9.1×10^{-5}
1,4-dichlorobenzene	C	<10.0	Background Conc.	5.0×10^{-6}
Benzene	A	<0.5	Background Conc.	2.0×10^{-7}
1,2-dichloroethane	B2	<0.5	Background Conc.	5.8×10^{-7}
1,2-dichloropropane	B2	<0.5	Background Conc.	4.4×10^{-7}
chloroethane	B2	<1.0	Background Conc.	3.7×10^{-8}
chloroform	B2	<0.5	Background Conc.	4.0×10^{-8}
chloromethane	C	<1.0	Background Conc.	1.6×10^{-7}
dibromochloromethane	C	<0.5	Background Conc.	5.5×10^{-7}
methylene chloride	B2	<2.0	Background Conc.	1.9×10^{-7}
Trichloroethene	B2	<0.5	Background Conc.	7.8×10^{-8}
vinyl chloride	A	<1.0	Background Conc.	2.4×10^{-5}
bis(2-ethyl hexyl) phthalate	B2	<2.0	Background Conc.	8.9×10^{-7}
Sum of Carcinogenic Risk				1.2×10^{-4}

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Noncarcinogenic Chemicals of Concern Class D & E	Target Endpoint	Cleanup Level (ug/l)	Basis	RME Hazard Quotient
arsenic	Skin	5.0	Background Conc.	4.5×10^{-1}
chromium	---	50.0	Background Conc.	4.5×10^{-1}
lead	---	3.0	Background Conc.	---
manganese	CNS	50.0	Background Conc.	5.6×10^{-2}
acetone	Liver/Kidney	<10.0	Background Conc.	2.7×10^{-3}
benzene	---	<0.5	Background Conc.	5.2×10^{-3}
2-butanone	Developmental	<10.0	Background Conc.	4.6×10^{-4}
1,2-dichloroethane	---	<0.5	Background Conc.	4.7×10^{-4}
1,2-dichloropropane	Respiratory	<0.5	Background Conc.	1.4×10^{-2}
chloroethane	---	<1.0	Background Conc.	7.2×10^{-5}
chloroform	Liver	<0.5	Background Conc.	1.5×10^{-3}
chloromethane	---	<1.0	Background Conc.	---
dibromochloromethane	Kidney	<0.5	Background Conc.	7.3×10^{-4}
4-methyl-2-pentanone	Liver/Kidney	<5.0	Background Conc.	1.7×10^{-3}
methylene chloride	Liver	<2.0	Background Conc.	9.4×10^{-4}
toluene	Liver/Kidney	<0.5	Background Conc.	9.2×10^{-5}
trichloroethene	Liver/Kidney	<0.5	Background Conc.	2.7×10^{-3}
vinyl chloride	---	<1.0	Background Conc.	---
bis(2-ethylhexyl)phthalate	Liver	<2.0	Background Conc.	7.3×10^{-3}
1,4-dichlorobenzene	---	<10.0	Background Conc.	1.6×10^{-2}
2,4-dimethylphenol	Blood	<10.0	Background Conc.	1.5×10^{-2}
4-methylphenol	CNS	<10.0	Background Conc.	5.9×10^{-2}
Skin Hazard Index =				4.5×10^{-1}
Blood Hazard Index =				1.5×10^{-2}
Developmental Hazard Index =				4.6×10^{-4}
CNS Hazard Index =				1.2×10^{-1}
Respiratory Hazard Index =				1.4×10^{-2}
Liver/Kidney Hazard Index =				2.6×10^{-2}

* The cleanup level established for each chemical is the background concentration, per Connecticut RSRs, Section 22a-133k-3(a). During the RA Phase, USEPA and CTDEP will determine whether these concentrations represent background for this Site and will change these values, if necessary, through an ESD.

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All Groundwater Cleanup Levels identified in the ROD and newly promulgated ARARs and modified ARARs which call into question the protectiveness of the remedy and the protective levels determined as a consequence of the risk assessment of residual contamination, must be met at the completion of the remedial action at the points of compliance. At this Site, Cleanup Levels must be met for the entire Site, as measured at the compliance boundary (edge of the landfill) USEPA has estimated that the Cleanup Levels will be obtained within 16 years of issuance of this ROD.

M. STATUTORY DETERMINATIONS

The remedial action selected for implementation at the Barkhamsted-New Hartford Site is consistent with CERCLA and, to the extent practicable, the NCP. The selected remedy is protective of human health and the environment, will comply with ARARs and is cost effective. In addition, the selected remedy utilizes permanent solutions to the maximum extent practicable. Practicable alternate treatment technologies or resource recovery technologies were not identified for this remedy. The selected remedy does not satisfy the statutory preference for treatment that permanently and significantly reduces the mobility, toxicity or volume of hazardous substances as a principal element. In balancing the nine criteria, the lack of treatment is outweighed by modeling that shows that the contaminants of concern will be effectively reduced in toxicity through natural attenuation processes after a slightly longer period than would be needed to achieve clean-up requirements through available treatment technologies, at significantly less cost.

1. The Selected Remedy is Protective of Human Health and the Environment

The remedy at this Site will adequately protect human health and the environment by eliminating, reducing or controlling exposures to human and environmental receptors through monitored natural reductions in toxicity, engineering controls and institutional controls. More specifically, groundwater cleanup levels will be achieved through natural attenuation processes. Environmental land use restrictions would prohibit residential use of the Site, use of groundwater for drinking or any other purpose, and avoid disturbance of the landfill cap installed under the NTCRA. Environmental land use restrictions of downgradient properties would prohibit the installation of any wells and use of groundwater for any purpose. Any owner of property interests on the Site shall be required to create binding land use restrictions on their property needed to implement the remedy under applicable Federal, state, and local standards. On any property outside of the Site where the remedy calls for institutional controls to be implemented, any and all property rights needed to implement legally binding, land use restrictions for the remedy shall be acquired under applicable Federal, State, and local standards. A public education would be implemented to provide the community with information regarding the Site.

The selected remedy will reduce potential human health risk levels such that they do not

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exceed USEPA's acceptable risk range of 10^{-4} to 10^{-6} for incremental carcinogenic risk and such that the non-carcinogenic hazard is below a level of concern (HI will not exceed 1). It will reduce potential human health risk levels to protective ARARs levels, *i.e.*, the remedy will comply with ARARs and To Be Considered criteria. Implementation of the selected remedy will not pose any unacceptable short-term risks or cause any cross-media impacts.

Groundwater monitoring will be used to determine when the ARAR-based Groundwater Cleanup Levels identified in the ROD, as well as newly promulgated ARARs and modified ARARs that call into question the protectiveness of the remedy, have been achieved and have not been exceeded for a period of three consecutive years. At that time, a risk assessment shall be performed on the residual groundwater contamination to determine whether the remedy is protective. This risk assessment of the residual groundwater contamination shall follow USEPA procedures and will assess the cumulative carcinogenic and non-carcinogenic risks posed by ingestion and dermal contact with groundwater. If, after review of the risk assessment, the remedy is not determined to be protective by USEPA, the remedial action shall continue until protective levels are achieved and have not been exceeded for a period of three consecutive years, or until the remedy is otherwise deemed protective. These protective residual levels shall constitute the final cleanup levels for this Record of Decision and shall be considered performance standards for any remedial action.

2. The Selected Remedy Complies With ARARs

The selected remedy will comply with all federal and any more stringent state ARARs that pertain to the Site. In particular, this remedy will comply with the following federal ARARs:

- Safe Drinking Water Act

Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (MCLs), 40 CFR 141.11-141.16. The SDWA MCLs and non-zero MCLGs are relevant and appropriate because they are the basis for the Cleanup Levels for the Site groundwater, which is a potential future drinking water source.

Safe Drinking Water Act (SDWA) Maximum Contaminant Level Goals (MCLGs), 40 CFR 141.50-141.51. The SDWA MCLG are relevant and appropriate because they are health-based criteria to be considered for drinking water sources. Non-zero MCLGs are to be used as goals when MCLs have not been established.

In addition, the selected remedy will comply with the following more stringent state ARARs:

- State groundwater and surface water standards

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- State drinking water standards
- State groundwater remediation regulations

Connecticut Water Quality Standards (C.G.S. Section 22a-426): These standards are applicable because the groundwater classification of the Site is GA, and the state's goal is to restore the groundwater to a quality consistent with its use for drinking water without treatment.

Connecticut Standards for Quality and Adequacy of Public Drinking Water (RCSA Section 19-13-B101 through B102): These regulations are relevant and appropriate because, similar to the federal Safe Drinking Water Act, the regulations have established standards for water quality in private water supply systems and standards for quality of public drinking water.

Connecticut Remediation Standard Regulations (RCSA Section 22a-133K 1 through 3): These regulations are applicable because any substance that is part of a release at a Site must be remediated. Depending on the contaminant of concern, the cleanup standards vary from cleaning up to background concentrations to specific numeric cleanup criteria described in Section 22a-133k-3(d)(1) and (2).

A discussion of why these requirements are applicable or relevant and appropriate may be found in the FS Report in Tables 4-1, 4-2, and 4-3 of the ROD.

3. The Selected Remedy is Cost-Effective

In the Lead Agency's judgment, the selected remedy is cost-effective because the remedy's costs are proportional to its overall effectiveness (see 40 CFR 300.430(f)(1)(ii)(D)). This determination was made by evaluating the overall effectiveness of those alternatives that satisfied the threshold criteria (i.e., that are protective of human health and the environment and comply with all federal and any more stringent ARARs, or as appropriate, waive ARARs). Overall effectiveness was evaluated by assessing three of the five balancing criteria -- long-term effectiveness and permanence; reduction in toxicity, mobility, and volume through treatment; and short-term effectiveness, in combination. The overall effectiveness of each alternative then was compared to the alternative's costs to determine cost-effectiveness. The relationship of the overall effectiveness of this remedial alternative was determined to be proportional to its costs and hence represents a reasonable value for the money to be spent.

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MATRIX OF COST AND EFFECTIVENESS DATA FOR THE BARKHAMSTED-NEW HARTFORD LANDFILL SUPERFUND SITE					
RELEVANT CONSIDERATION FOR COST-EFFECTIVENESS DETERMINATION: (Site characteristics relate to cost-effectiveness criteria)					
Alternative	Present Work Cost⁽¹⁾	Incremental Cost⁽¹⁾	Long-Term Effectiveness and Permanence	Reduction of TMV Through Treatment	Short-Term Effectiveness
1) MM-1: No Action <input type="checkbox"/>	\$183,400 to \$242,000	—	<ul style="list-style-type: none"> No reduction in long-term risk to human health and the environment 	<ul style="list-style-type: none"> Reduction of toxicity and volume through natural attenuation 	<ul style="list-style-type: none"> Small short-term risk to workers implementing site monitoring Short-term risk to community from potential exposure to contaminated groundwater
2) MM-2: Management/ Natural Attenuation, including institutional controls <input checked="" type="checkbox"/>	\$945,400 to \$1,196,900	+762,000 to +954,900	<ul style="list-style-type: none"> Reduction in long-term risk to human health through public education and land use restrictions 	<ul style="list-style-type: none"> Reduction of toxicity and volume through natural attenuation 	<ul style="list-style-type: none"> Small short-term risk to workers implementing site monitoring Reduction in short-term risk to community from potential exposure to contaminated groundwater through public education and land use restrictions
3) MM-3A: Collection Treatment (including air stripping and carbon adsorption) and Discharge of Groundwater <input checked="" type="checkbox"/>	\$3,673,300 to \$4,584,200	+3,027,900 to +3,387,300	<ul style="list-style-type: none"> Reduction in long-term risk to human health through public education and land use restrictions 	<ul style="list-style-type: none"> Reduction in toxicity, mobility, and volume through collection and treatment Generation of treatment residuals 	<ul style="list-style-type: none"> Some additional short-term risk to workers, environment, and community due to construction activities Reduction in short-term risk to community from potential exposure to contaminated groundwater through public education and land use restrictions Slightly shorter time to achieve remedial goals for groundwater
4) MM-3B: Collection, Treatment (including UV oxidation) and Discharge of Groundwater <input checked="" type="checkbox"/>	\$3,819,500 to \$4,767,000	+146,200 to +182,800	<ul style="list-style-type: none"> Reduction in long-term risk to human health through public education and land use restrictions 	<ul style="list-style-type: none"> Reduction in toxicity, mobility, and volume through collection and treatment Generation of treatment residuals 	<ul style="list-style-type: none"> Some additional short-term risk to workers, environment, and community due to construction activities Reduction in short-term risk to community from potential exposure to contaminated groundwater through public education and land use restrictions Slightly shorter time to achieve remedial goals for groundwater
COST-EFFECTIVENESS SUMMARY: (Summary of individual cost-effectiveness evaluations and relative cost-effectiveness determinations) <ul style="list-style-type: none"> Alternative 1 is not considered to be cost-effective. While Alternatives 2, 3 and 4 are considered to be cost-effective, Alternative 2 provides a potentially greater return on investment. 					
Key: ⁽¹⁾ The estimated present worth costs are presented in ranges. The lower end of the range is based on the estimated cleanup time for that alternative. The high end of the range is based on 30 years, in accordance with EPA Guidance on Conducting RI/FS under CERCLA					

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4. The Selected Remedy Utilizes Permanent Solutions and Alternative Treatment or Resource Recovery Technologies to the Maximum Extent Practicable (BYRON: something happened to the margins here and need to be fixed)

Once the Agency identified those alternatives that attain or, as appropriate, waive ARARs and that are protective of human health and the environment, USEPA identified which alternative utilizes permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. This determination was made by deciding which one of the identified alternatives provides the best balance of trade-offs among alternatives in terms of: 1) long-term effectiveness and permanence; 2) reduction of toxicity, mobility or volume through treatment; 3) short-term effectiveness; 4) implementability; and 5) cost. The balancing test emphasized long-term effectiveness and permanence and the reduction of toxicity, mobility and volume through treatment; and considered the preference for treatment as a principal element, the bias against off-Site land disposal of untreated waste, and community and state acceptance. The selected remedy provides the best balance of trade-offs among the alternatives.

All of the alternatives, except No Action (MM-1), provide some degree of long-term protectiveness through environmental land use restrictions and public education. Alternatives MM-3A and MM-3B may provide an additional degree of protection through groundwater extraction and treatment. All of the alternatives would address the contaminants of concern by reducing concentrations in the groundwater to the cleanup levels. Although the selected remedy, MM-2, would not employ treatment as a component of the remedy, cleanup levels would be achieved within a reasonable time-frame without generating treatment residuals. Reduction of toxicity, mobility, or volume would be equal for each of the alternatives. While the natural attenuation process in alternative MM-2 does not meet the criteria for reduction of toxicity, mobility, or volume, functionally at this site natural processes are expected to equal or exceed clean-up levels achieved by either of the treatment technologies proposed in alternatives MM-3A or MM-3B. The selected remedy does not involve construction, thereby resulting in no environmental impacts during the implementation of this alternative. Risk to workers during implementation of this remedy would be less than for those alternatives involving construction. All four alternative are easily implemented. The selected remedy was found to be the most cost-effective of the alternatives, except No Action.

5. The Selected Remedy Satisfies the Preference for Treatment Which Permanently and Significantly Reduces the Toxicity, Mobility or Volume of the Hazardous Substances as a Principal Element

While the MM-2 natural attenuation alternative does not meet this criteria, modeling shows that natural attenuation is expected to address the primary threat at the Site, contamination of groundwater, as defined by chemical concentrations in excess of drinking water standards and State groundwater remediation standards and groundwater quality criteria. Although active groundwater treatment is not being employed, it has been determined that remediation of the Site groundwater via natural processes, including advection, dispersion, sorption, dilution, volatilization, geochemical precipitation, and biodegradation, will effectively achieve cleanup levels within a time frame similar to other alternatives.

6. Five-Year Reviews of the Selected Remedy are Required.

Upon completion of this remedy, hazardous substances will remain on-Site under the landfill cap and will limit use of the property. For all other areas, no hazardous substances will remain on-Site above levels

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that prevent unlimited use or unrestricted exposure. This remedy will require greater than five years to achieve these levels; therefore, pursuant to CERCLA section 121(c) and as provided in the current guidance on Five Year Reviews (OSWER Directive 9355.7-03B-P, Comprehensive Five-Year Review Guidance, June 2001), EPA must conduct a policy five-year review. Therefore, the five-year review will be completed prior to five years from the date of construction completion. This is the final remedy for the Barkhamsted New-Hartford Landfill.

N. DOCUMENTATION OF NO SIGNIFICANT CHANGES

USEPA presented a proposed plan for monitored natural attenuation for remediation of the Site on June 20, 2001. The source control was addressed by the NTCRA. The management of migration portion of the preferred alternative included:

- Long-term monitoring of groundwater, surface water (including seeps), and sediment
- Restoration of contaminated groundwater via natural attenuation
- Environmental land use restrictions
- Public education program
- Five year review

USEPA reviewed all written and verbal comments submitted during the public comment period. It was determined that no significant changes to the remedy, as originally identified in the proposed plan, were necessary.

O. STATE ROLE

The Connecticut Department of Environmental Protection (CTDEP) has reviewed the various alternatives and has indicated its support for the selected remedy. The State has also reviewed the Remedial Investigation, Risk Assessment and Feasibility Study to determine if the selected remedy is in compliance with applicable or relevant and appropriate State environmental and facility siting laws and regulations. The State of Connecticut concurs with the selected remedy for the Barkhamsted-New Hartford Landfill Superfund Site. A copy of the declaration of concurrence is attached as Appendix A.

**A. BARKHAMSTED-NEW HARTFORD LANDFILL SUPERFUND SITE
RESPONSIVENESS SUMMARY**

The US Environmental Protection Agency (EPA) held a 30-day public comment period from June 20 to July 20, 2001, to provide an opportunity for public input on the Remedial Investigation (RI), Feasibility Study (FS), and Proposed Plan to address contamination at the Barkhamsted-New Hartford Landfill Superfund Site in Barkhamsted, CT. The EPA prepared the Proposed Plan based on the results of the RI and FS and other documents found in the Administrative Record. The RI identified the nature and extent of contamination, and the FS identified the alternatives considered for addressing the contamination. The Proposed Plan, issued on June 18, 2001, presented the EPA's preferred alternative for the Site. All documents that were used in the EPA's selection of the preferred alternative were placed in the Administrative Record which is available for public review at the Beardsley & Memorial Library in Winsted, CT, and at EPA Records Center in Boston, MA.

The purpose of this Responsiveness Summary is to document the EPA's responses to the questions and comments raised during the public comment period. The EPA considered all of the comments summarized in this document before selecting the final remedial alternative to address contamination at the site.

This comment period yielded one set of comments from the Connecticut Department of Environmental Protection (CTDEP), the comments follow with a response from EPA.

In addition, a copy of the transcript from the public hearing held on July 18, 2001 in Barkhamsted, CT is included as Attachment. Byron: this needs to be filled in

Summary of Comments from CTDEP

16. **Remedial Action Objectives for Groundwater** (Byron: is this the first comment? Why is the number 16 in front?—I think we should have "Comment No. 1" followed by "EPA's Response to Comment No. 1" for clarity purposes.)

In several locations (such as the second bullet point on page 10), the Proposed Plan incorrectly identifies one of the Remedial Action Objectives for groundwater as restoration to federal or state MCLs. The Connecticut Remediation Standard Regulations (RSRs), which are applicable ARARs, require remediation of groundwater to background, not Federal or State MCLs. Please see Section 22a-133k-3(a) of the RSRs, which states "remediation of a groundwater plume in a GA area shall...result in the reduction of each substance therein to a concentration equal to or less than the background concentration of ground water for such substance...."

The Remedial Action Objective for groundwater is more accurately identified on page 64 of the Feasibility Study as "restore ground water beyond the compliance boundary to MCLs, CT Remediation Standards"(meaning background).

EPA Response:

In the descriptions of the Remedial Action Objectives and the preferred alternative/selected alternative in the ROD document, we describe the Remedial Action Objective for Groundwater is background

concentrations in accordance with the RSRs. Byron: EPA's response does not seem to actually address the commenter's concern

17. Groundwater Cleanup Levels - Establishing Background Concentrations for Substances in Groundwater

The Preferred Alternative in the Proposed Plan references "Interim Groundwater Cleanup Levels" (Table 1) as the standards that must be met for a cleanup. The only reference to attaining background concentrations in groundwater is found in a note at the bottom of Table 1 in the Proposed Plan, which states "Note: the interim cleanup level established for each chemical is the background concentration (emphasis added). Further information on chemicals of concern can be found in the Feasibility Study."

This single reference to background in a note at the bottom of Table 1 in the Proposed Plan does not reflect the discussions between EPA and DEP last fall on the issue of background concentrations in groundwater. Please refer to a letter from Mary Jane O'Donnell (EPA) to Elsie Patton (DEP) dated 9/25/2000, which contains a Discussion of Background Concentration Limits at the Barkhamsted-New Hartford Landfill Superfund Site. As is reflected in this letter, DEP and EPA agreed that data from the existing upgradient wells (which either have not been sampled an appropriate number of times, have not been not sampled recently or consistently enough, or are in a less than ideal locations) could be used as interim cleanup levels) until a sufficient number of samples from appropriately located background wells can be collected to establish representative background concentrations in a manner consistent with the RSRs. DEP and EPA agreed to the use of interim groundwater cleanup levels with the understanding that background concentrations in groundwater would be finalized during the Remedial Design phase (after the ROD). DEP still believes that finalizing background concentrations after the ROD is a reasonable and acceptable approach, but is concerned that this approach is not reflected at all in the Proposed Plan.

DEP is also concerned that the note at the bottom of Table 1 in the Proposed Plan could be interpreted to infer that background concentrations (consistent with the requirements of the RSRs) have already been established for all of the substances listed, which is not the case.

EPA Response:

In the description of the preferred alternative/selected alternative in the ROD document, EPA has stated that Groundwater Cleanup Levels are based on the contaminant background concentrations and that EPA will verify and determine if the values currently indicated as background represent background for this site, and that the Groundwater Cleanup Levels will be adjusted if necessary based on sampling during the remedial design phase. Byron: please try to demonstrate how this statement takes care of CTDEP's concerns.

3. Explanation of Interim vs. Final Groundwater Cleanup Levels

In the Proposed Plan, there is no explanation of why interim groundwater cleanup levels are being used and how and when final (meaning other than interim) groundwater cleanup levels (e.g. background concentrations acceptable to DEP) for some or all of the substances in groundwater will be established. Please refer to the September 25, 2000 letter referenced above for a discussion of the background issue, and the identification of an approach that is acceptable to both EPA and DEP. In the Proposed Plan, the only discussion of any revision of groundwater cleanup levels refers to a final evaluation by EPA after attainment of the interim cleanup levels in Table 1 has been demonstrated. The Proposed Plan only indicates that the Interim Groundwater Cleanup Levels may be updated by EPA after groundwater monitoring indicates the

Interim Groundwater Cleanup Levels have been reached. This does not reflect DEP's understanding that Interim Groundwater Cleanup Levels were to be used until representative background concentrations could be established by monitoring appropriately located background wells for an appropriate period of time.

EPA Response:

EPA will be setting groundwater cleanup levels, based on the background determinations to date. EPA will adjust the background concentration values, where additional monitoring of appropriately located background wells for an appropriate period of time indicate a significant difference in background as necessary. Byron: I would back your statements up with sections where this is stated in the ROD.

4. Substances in groundwater which must be remediated

Pursuant to Section 22a-133k-3(a) of the RSRs, remediation of a groundwater plume in a GA area shall "result in the reduction of each substance therein to a concentration equal to or less than the background concentration of ground water for such substance". This requires all substances in groundwater that are part of a release to be remediated to background concentrations, not just those substances listed in Table 1 in the Proposed Plan as Contaminants of Concern (COCs) in groundwater.

EPA Response:

The description of the preferred alternative/selected alternative in the ROD document, includes a statement (where??—cite the section) that the RSRs require that all substances in groundwater that are part of a release be remediated to background concentrations, that compliance with background must be demonstrated in accordance with Section 22a-133k-3(g)(3) of the RSRs, and that any decision to discontinue groundwater monitoring must be made in accordance with Section 22a-133k-3(g)(3) of the RSRs.

5. Attainment of Proposed Cleanup Levels

Section 22a-133k-3(f) of the RSRs contains specific requirements for demonstrating compliance with background concentrations for groundwater in a GA area. Section 22a-133k-3(g)(3) of the RSRs contains specific requirements for the Discontinuation of Ground Water Monitoring (after completing post-remediation monitoring). It is not clear if the reference to a period of three years of monitoring that shows groundwater concentrations at or below background concentrations (on page 11 of the Proposed Plan) reflects the specific monitoring requirements of the sections of RSRs listed above.

EPA Response:

In the description of the preferred alternative/selected alternative in the ROD document, EPA has clarified that the process for establishing background concentrations during Remedial Design. In the section describing the outcome of the remedy in the ROD document, EPA states that the requirements of section 22a-113k-3(f) and (g) needs to be met.

BYRON: are these ALL the comments?

APPENDIX A

CTDEP Letter of Concurrence

APPENDIX B

REFERENCES

EPA. 1996. *Ecotox Thresholds*. ECO Update Vol.3, No.2. EPA 540/F-95/038.

EPA. 1999. *National Recommended Water Quality Criteria-Correction*. EPA 822-Z-99-001.

EPA. 2000. *Review and ecological assessment of the November/December 1999 and February 2000 surface water and seep contaminant concentration data for the Barkhamstead/New Hartford Landfill, New Hartford, Connecticut*. EPA Memorandum dated April 2, 2000 from P. Tyler to C. Pina-Sprenger.

MacDonald, D. D., C. G. Ingersoll, and T. A. Berger. 2000. *Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems*. Arch. Environ. Contam. Toxicol. 39: 20-31.

Metcalf & Eddy, Inc. 1996. *Barkhamstead-New Hartford Landfill Superfund Site Baseline Risk Assessment Part II Ecological Risk Assessment*. January, 1996.

Sample, B. E., D. M. Opresko, and G. W. Suter II. 1996. *Toxicological Benchmarks for Wildlife: 1996 Revision*. ES/ER/TM-86/R3. Oak Ridge National Laboratory, Oak Ridge, TN. June 1996.

Suter II, G. W. and C. L. Tsao. 1996. *Toxicological Benchmarks for Screening Potential Contaminants of Concern for Effects on Aquatic Biota: 1996 Revision*. ES/ER/TM-96/R2. Oak Ridge National Laboratory, Oak Ridge, TN. June, 1996.

APPENDIX C

Glossary of Terms and Acronyms

APPENDIX D

ARARs Tables

**TABLE 4-1b
BARKHAMSTED-NEW HARTFORD LANDFILL SUPERFUND SITE
BARKHAMSTED, CONNECTICUT**

**POTENTIAL STATE AND FEDERAL LOCATION-SPECIFIC ARARs
ALTERNATIVE MM-2 (Management/Natural Attenuation)**

Clean Water Act, Section 404	33 USC 1344; 40 CFR Part 230 and 33 CFR Parts 320-323	Applicable	These rules regulate the discharge of dredge and fill materials in wetlands and navigable waters. Such discharges are not allowed if practicable alternatives are available.	Any installation of discharge pipes which occurs within wetlands along the Unnamed Brook will meet the substantive standards of the provision. Measures will be taken to minimize adverse effects and to replace or restore protected wetland functions and values if required.
<u>Executive Order 11990 RE: Protection of Wetlands</u>	<u>Executive Order 11990; 40 CFR Part 6; Appendix A</u>	<u>Applicable</u>	<u>This Order requires Federal agencies to take action to avoid adversely impacting wetlands wherever possible, to minimize wetlands destruction and to preserve the values of wetlands, and to prescribe procedures to implement the policies and procedures of this Executive Order.</u>	<u>Any installation of discharge pipes or increases in downstream flow from the discharge which will effect wetlands along the Unnamed Brook or downstream waterbodies will meet the substantive standards of the provision. Measures to minimize adverse effects and to replace or restore protected wetland functions and values will be considered and incorporated into any plan or action wherever feasible.</u>
<u>Fish and Wildlife Coordination Act</u>	<u>16 USC Part 661 et. seq.; 40 CFR 122.49</u>	<u>Applicable</u>	<u>This order protects fish and wildlife when federal actions result in control or structural modification of a natural stream or body of water.</u>	<u>Appropriate agencies would be consulted prior to implementation to find ways to minimize adverse effects to fish and wildlife from any work in wetlands or the Unnamed Brook.</u>

<u>CT Inland Wetlands and Watercourses</u>	<u>CGS § 22a-37 thru 45, RCSA § 22a-39-1 through 15</u>	<u>Applicable</u>	<u>These rules regulate all activities in wetlands and watercourses.</u>	<u>Any installation of discharge pipes and discharge of waters which occurs within wetlands along the Unnamed Brook will meet the substantive standards of the provision. The substantive requirements of the CT standards will be met to address the alteration of wetlands and watercourses.</u>
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Table 4-2b
BARKHAMSTED-NEW HARTFORD SUPERFUND SITE, BARKHAMSTED, CONNECTICUT
POTENTIAL STATE AND FEDERAL CHEMICAL-SPECIFIC ARARs
ALTERNATIVE MM-2 (Management/Natural Attenuation)

Authority	Requirement	Status	Requirement Synopsis	Action Taken to Meet ARAR
GROUNDWATER				
Federal Requirements	Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (MCLs) 40 CFR §141.11 - 141.16	Relevant and Appropriate	MCLs have been promulgated for several common organic and inorganic contaminants. These levels regulate the concentration of contaminants in public drinking water supplies, but may also be considered relevant and appropriate for groundwater aquifers used for drinking water.	COPCs were compared to MCLs. MCLs were utilized to evaluate the clean-up criteria.
	Maximum Contaminant Level Goals (MCLGs) 40 CFR §141.50-141.51	Relevant and Appropriate	MCLGs are health-based criteria to be considered for drinking water sources. MCLGs are available for several organic and inorganic contaminants. Non-zero MCLGs are to be used as goals when MCLs have not been established.	When MCLs have not been established, non-zero MCLGs in the groundwater will be attained at the compliance boundary. A restriction on use of groundwater within the compliance boundary will be established and an appropriate monitoring program will be conducted until the groundwater concentrations are less than the MCLGs.
State Requirements	Standards for Quality and Adequacy of Public Drinking Water RCSA §19-13-B101 through B102	Relevant and Appropriate	Regulations similar to the Safe Drinking Water Act where by standards for water quality in private water supply systems and standards for quality of public drinking water have been established.	These standards will be compared to federal standards. If the state standards are more stringent than the federal standards, then the state standards will be met by the remedy.

Table 4-2b
BARKHAMSTED-NEW HARTFORD SUPERFUND SITE, BARKHAMSTED, CONNECTICUT
POTENTIAL STATE AND FEDERAL CHEMICAL-SPECIFIC ARARs
ALTERNATIVE MM-2 (Management/Natural Attenuation)

<u>Authority</u>	<u>Requirement</u>	<u>Status</u>	<u>Requirement Synopsis</u>	<u>Action Taken to Meet ARAR</u>
	Remediation Standard Regulations RCSA §22a-133k- 1through 3	Applicable	Substances that are part of a release at a site must be remediated. In some cases, groundwater must be remediated to background concentrations. For other cases, as described in §22a-133k-3(d)(1) and (2), the regulations provide specific numeric clean up criteria for a wide variety of contaminants in groundwater, surface water and soil vapor.	These standards will be compared to federal standards. If the state standards are more stringent than the federal standards, then the state standards will be met by the remedy. Under state standards, all substances in the groundwater plume will be remediated to background concentrations, unless conditions listed in §22a-133k-3(d)(1) and (2) are met.

TABLE 4-3b
BARKHAMSTED-NEW HARTFORD LANDFILL SUPERFUND SITE, BARKHAMSTED, CONNECTICUT
POTENTIAL STATE AND FEDERAL ACTION-SPECIFIC ARARs
ALTERNATIVE MM-2 (Management/Natural Attenuation)

Authority	Requirement	Status	Requirement Synopsis	Action Taken to Meet ARAR
GROUNDWATER				
Clean Water Act, Section 402, National Pollution Discharge Elimination System (NPDES)	33 USC 1342; 40 CFR 122 through 125	Applicable	These standards govern the protection of surface water sources	Standards will be used to evaluate monitoring results for surface water and sediments to determine if further remedial action is required to protect resources.
Hazardous Waste Management: TSD Standards	RCSA § 22a-449 (c) 104	Applicable	This section establishes standards for treatment, storage, and disposal facilities. The standards of 40 CFR 264 are incorporated by reference.	Any hazardous waste which is temporarily stored on this site as part of the remedy will be managed in accordance with the requirements of this section.
Hazardous Waste Management: TSD Standards	RCSA § 22a-449 (c) 104	Applicable	This section establishes standards for treatment, storage, and disposal facilities. The standards of 40 CFR 264 are incorporated by reference.	Any hazardous waste which is temporarily stored on this site as part of the remedy will be managed in accordance with the requirements of this section.

TABLE 4-3b
BARKHAMSTED-NEW HARTFORD LANDFILL SUPERFUND SITE, BARKHAMSTED, CONNECTICUT
POTENTIAL STATE AND FEDERAL ACTION-SPECIFIC ARARs
ALTERNATIVE MM-2 (Management/Natural Attenuation)

Authority	Requirement	Status	Requirement Synopsis	Action Taken to Meet ARAR
Hazardous Waste Management: Generator and Handler Requirements, Listing and Identification	RCSA § 22a-449(c) 100-101	Applicable	CT is delegated to administrate the federal RCRA statute through its state regulations. These sections establish standards for listing and identification of hazardous waste. The standards of 40 CFR 260-261 are incorporated by reference.	Hazardous waste determinations will be performed on all contaminated material generated during monitoring activities to determine that that levels of regulated constituents do not exceed applicable limits. Any contaminated materials which exceed applicable limits will be managed in accordance with requirements of these regulations, if necessary.
State Requirements	Water Quality Standards CGS §22a-426	Applicable	Connecticut's Water Quality Standards were adopted under this statute. They establish specific numeric criteria, and anti-degradation policies for groundwater and surface water. The groundwater classification of the Site is GA and the state's goal is to restore the groundwater to a quality consistent with its use for drinking without treatment.	Remedial activities will be under taken in a manner which is consistent with the anti-degradation policy in the water quality standards. If any remedial activities occur that are regulated under these provisions, the use of engineering controls and best management practices may be required to prevent or minimize adverse impacts to the waters of the state.
Connecticut	CT Council on Soil and Water Conservation	TBC	Technical and administrative guidance for development, adoption and implementation of erosion and sediment control program.	Guidelines will be followed to protect wetland and aquatic resources. Guidelines for Soil Erosion and Sediment Control

APPENDIX E

Administrative Record Index and Guidance Documents

APPENDIX E

Administrative Record Index for the Barkhamsted-New Hartford Landfill Superfund Site

Barkhamsted-New Hartford Landfill

NPL Site

Administrative Record
Index

ROD Signed: September, 28 2001

Prepared by
EPA New England
Office of Site Remediation and Restoration

With Assistance from
ASRC Aerospace
6301 Ivy Lane, Suite 300
Greenbelt, MD 20770

Introduction to the Collection

This is the administrative record file for the Barkhamsted-New Hartford Landfill Superfund site, Operable Unit 00, Sitewide, September 2001. The file contains site-specific documents used by EPA staff in selecting a response action at the site. The file is presented in two media: this compact disc and related oversized or non-print documents that are available for review through the EPA New England Superfund Records Center.

PLEASE NOTE:

The administrative record file is available for review at:

EPA New England Superfund Records Center
1 Congress Street, Suite 1100 (HSC)
Boston, MA 02114
(by appointment)
617-918-1440 (phone)
617-918-1223 (fax)

Beardsley Memorial Library
40 Munro Place
Winsted, CT 06098
(860) 379-6043

Questions about this administrative record file should be directed to the EPA New England site manager.

An administrative record file is required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA).

BARKHAMSTED-NEW HARTFORD LANDFILL
ADMINISTRATIVE RECORD FILE
ROD 9/2001

2. REMOVAL RESPONSE

1. MEMO : POLLUTION REPORT (POLREP) NO. 2 AND FINAL.
TO: MARY JANE O'DONNELL, US EPA REGION 1
AUTHOR: BYRON MAH, US EPA REGION 1
DOC ID: 24272 07/12/2001 5 PAGES

3. REMEDIAL INVESTIGATION (RI)

1. MEMO : MANUFACTURER'S SPECIFICATIONS FOR THE HORIBA U-22 WATER QUALITY MONITORING SYSTEM (A 11/10/99 FAX COVER SHEET IS ATTACHED).
AUTHOR: FIELD ENVIRONMENTAL INSTRUMENTS INC
DOC ID: 6842 2 PAGES
2. REPORT: BASELINE RISK ASSESSMENT, PART 1: HUMAN HEALTH RISK ASSESSMENT.
TO: US EPA REGION 1
AUTHOR: METCALF & EDDY INC
DOC ID: 2401 11/01/1995 207 PAGES
3. REPORT: BASELINE RISK ASSESSMENT, PART 2, ECOLOGICAL RISK ASSESSMENT.
TO: US EPA REGION 1
AUTHOR: METCALF & EDDY INC
DOC ID: 6209 01/01/1996 120 PAGES
4. REPORT: REMEDIAL INVESTIGATION (RI) REPORT, VOLUME 1.
TO: BARKHAMSTED PRP GROUP
AUTHOR: O'BRIEN & GERE ENGINEERS INC
DOC ID: 2691 02/01/1996 480 PAGES
5. REPORT: REMEDIAL INVESTIGATION (RI) REPORT, VOLUME 2 - APPENDICES A-E.
TO: BARKHAMSTED PRP GROUP
AUTHOR: O'BRIEN & GERE ENGINEERS INC
DOC ID: 2405 02/01/1996 308 PAGES
6. REPORT: REMEDIAL INVESTIGATION (RI) REPORT, VOLUME 3 - APPENDICES F-O.
TO: BARKHAMSTED PRP GROUP
AUTHOR: O'BRIEN & GERE ENGINEERS INC
DOC ID: 2406 02/01/1996 425 PAGES
7. MEMO : COMMENTS REGARDING THE REVIEW OF THE BASELINE RISK ASSESSMENT PART 2 AND THE SURFACE WATER AND LEACHATE ANALYTICAL SAMPLING ROUNDS.
TO: CAROLYN PINA-SPRINGER, US EPA REGION 1
AUTHOR: PATTI LYNNE TYLER, US EPA REGION 1
DOC ID: 6831 08/11/1999 2 PAGES

BARKHAMSTED-NEW HARTFORD LANDFILL
ADMINISTRATIVE RECORD FILE
ROD 9/2001

3. REMEDIAL INVESTIGATION (RI) (cont)

8. REPORT: REVIEW OF BASELINE RISK ASSESSMENT PART 2 AND THE SURFACE WATER AND LEACHATE ANALYTICAL SAMPLING ROUNDS.
TO: CAROLYN PINA-SPRINGER, US EPA REGION 1
AUTHOR: PATTI LYNNE TYLER, US EPA REGION 1
DOC ID: 6832 08/11/1999 8 PAGES
9. MEMO : COMMENTS REGARDING THE REVIEW OF THE DRAFT SAMPLING AND ANALYSIS PLAN.
TO: CAROLYN PINA-SPRINGER, US EPA REGION 1
AUTHOR: ANN AZADPOUR-KEELEY, US EPA RISK MANAGEMENT RESEARCH LAB
DOC ID: 6843 10/30/1999 3 PAGES
10. REPORT: QUALITY ASSURANCE PROJECT PLAN (QAPP).
AUTHOR: OBIEN & GERE ENGINEERS INC
DOC ID: 6849 11/01/1999 247 PAGES
11. MEMO : COMMENTS REGARDING THE REVIEW OF THE GROUND-WATER FLOW AND TRANSPORT MODELING RESULTS.
TO: CAROLYN PINA-SPRINGER, US EPA REGION 1
AUTHOR: ANN AZADPOUR-KEELEY, US EPA RISK MANAGEMENT RESEARCH LAB
DOC ID: 6845 03/01/2000 3 PAGES
12. REPORT: CONFERENCE CALL MEETING NOTES.
DOC ID: 6836 03/20/2000 2 PAGES
13. MEMO : COMMENTS REGARDING THE REVIEW OF THE EVALUATION OF NATURAL ATTENUATION.
TO: CAROLYN PINA-SPRINGER, US EPA REGION 1
AUTHOR: ANN AZADPOUR-KEELEY, US EPA RISK MANAGEMENT RESEARCH LAB
DOC ID: 6844 04/04/2000 10 PAGES
14. REPORT: COMMENTS REGARDING THE REVIEW AND ECOLOGICAL ASSESSMENT OF THE NOVEMBER/DECEMBER 1999 & FEBRUARY 2000 SURFACE WATER AND SEEP CONTAMINANT CONCENTRATION DATA
TO: CAROLYN PINA-SPRINGER, US EPA REGION 1
AUTHOR: PATTI LYNNE TYLER, US EPA REGION 1
DOC ID: 6834 04/12/2000 2 PAGES
15. REPORT: REVIEW AND ECOLOGICAL ASSESSMENT OF THE NOVEMBER/DECEMBER 1999 AND FEBRUARY 2000 SURFACE WATER AND SEEP CONTAMINANT CONCENTRATION DATA.
TO: CAROLYN PINA-SPRINGER, US EPA REGION 1
AUTHOR: PATTI LYNNE TYLER, US EPA REGION 1
DOC ID: 6835 04/12/2000 14 PAGES

BARKHAMSTED-NEW HARTFORD LANDFILL
ADMINISTRATIVE RECORD FILE
ROD 9/2001

3. REMEDIAL INVESTIGATION (RI) (cont)

16. MEMO : HUMAN HEALTH RISK SCREENING ANALYSIS FOR EXPOSURES TO
GROUNDWATER, SURFACE WATER AND SEEPS
TO: CAROLYN PINA-SPRINGER, US EPA REGION 1
AUTHOR: ANN MARIE BURKE, US EPA REGION 1
DOC ID: 6833 04/18/2000 25 PAGES
17. REPORT: HEALTH CONSULTATION, PUBLIC HEALTH IMPLICATIONS OF PRIVATE WELL
SAMPLING FROM WELLS NEAR THE BARKHAMSTED-NEW HARTFORD LANDFILL,
CERCLIS NO. CTD980732333
AUTHOR: US PUBLIC HEALTH SERVICE/ATSDR
DOC ID: 6837 06/14/2000 10 PAGES

4. FEASIBILITY STUDY (FS)

1. LETTER: UPDATED APPLICABLE OR RELEVANT & APPROPRIATE REQUIREMENTS (ARARS)
TABLES FOR THE FEASIBILITY STUDY (FS) (A 03/31/99 COVER LETTER IS
ATTACHED)
DOC ID: 6195 19 PAGES
2. MEMO : COMMENTS REGARDING THE STATUS OF THE LANDFILL CAP
TO: SITE FILE
AUTHOR: CAROLYN PINA-SPRINGER, US EPA REGION 1
DOC ID: 6198 04/20/1999 12 PAGES
3. LETTER: COMMENTS TO PRE-FINAL SITE INSPECTION CONDUCTED ON 06/04/1999.
TO: SHEILA GLEASON, CT DEPT OF ENVIRONMENTAL PROTECTION
AUTHOR: CAROLYN PINA-SPRINGER, US EPA REGION 1
DOC ID: 6197 06/21/1999 2 PAGES
4. LETTER: REQUEST FOR REVIEW OF CHANGES TO THE APPLICABLE OR RELEVANT &
APPROPRIATE STANDARDS (ARARS) TABLES.
TO: SHEILA GLEASON, CT DEPT OF ENVIRONMENTAL PROTECTION
AUTHOR: CAROLYN PINA-SPRINGER, US EPA REGION 1
DOC ID: 6194 06/25/1999 1 PAGE
5. MEMO : SUMMARY OF THE PRE-FINAL SITE INSPECTION.
TO: SITE FILE
AUTHOR: CAROLYN PINA-SPRINGER, US EPA REGION 1
DOC ID: 6199 07/07/1999 17 PAGES
6. REPORT: DRAFT QUALITY ASSURANCE PROJECT PLAN (QAPP) (A COVER LETTER IS
ATTACHED)
TO: BARKHAMSTED PRP GROUP
AUTHOR: OBRIEN & GERE ENGINEERS INC
DOC ID: 6207 10/01/1999 246 PAGES

BARKHAMSTED-NEW HARTFORD LANDFILL

ADMINISTRATIVE RECORD FILE

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4. FEASIBILITY STUDY (FS) (cont)

7. MEMO : SUMMARY OF SITE VISIT
TO: SITE FILE
AUTHOR: CAROLYN PINA-SPRINGER, US EPA REGION 1
DOC ID: 6196 11/22/1999 4 PAGES
8. LETTER: COMMENT ON APPLICABLE OR RELEVANT & APPROPRIATE REQUIREMENTS (ARARS) TABLES FOR FEASIBILITY STUDY (FS).
TO: CAROLYN PINA-SPRINGER, US EPA REGION 1
AUTHOR: SHEILA GLEASON, CT DEPT OF ENVIRONMENTAL PROTECTION
DOC ID: 6193 02/09/2000 2 PAGES
9. REPORT: DRAFT NOVEMBER/DECEMBER 1999 SAMPLING EVENT DATA VALIDATION REPORT (A 03/31/00 COVER LETTER IS ATTACHED)
TO: BARKHAMSTED PRP GROUP
AUTHOR: OBRIEN & GERE ENGINEERS INC
DOC ID: 6206 03/01/2000 312 PAGES
10. REPORT: FEBRUARY 2000 SAMPLING EVENT DATA VALIDATION REPORT
TO: BARKHAMSTED PRP GROUP
AUTHOR: OBRIEN & GERE ENGINEERS INC
DOC ID: 6205 03/01/2000 311 PAGES
11. SAMPLING & ANALYSIS DATA: TABLE 3 - TENTATIVELY IDENTIFIED COMPOUNDS FOR SEMIVOLATILES IN GROUND WATER SAMPLES OBTAINED DURING THE 02/00 SAMPLING EVENT (A 03/23/00 COVER LETTER IS ATTACHED)
AUTHOR: OBRIEN & GERE ENGINEERS INC
DOC ID: 6315 03/01/2000 16 PAGES
12. LETTER: TRANSMITTAL OF THE VALIDATION REPORT FOR 02/2000 SAMPLING EVENT.
TO: CAROLYN PINA-SPRINGER, US EPA REGION 1
AUTHOR: JAMES R HECKATHORNE, OBRIEN & GERE ENGINEERS INC
DOC ID: 6204 03/13/2000 1 PAGE
13. LETTER: RESPONSE TO COMMENTS ON DRAFT APPLICABLE OR RELEVANT & APPROPRIATE REQUIRMENTS (ARARS).
TO: SHEILA GLEASON, CT DEPT OF ENVIRONMENTAL PROTECTION
AUTHOR: CAROLYN PINA-SPRINGER, US EPA REGION 1
DOC ID: 6192 04/10/2000 2 PAGES
14. LETTER: LIST OF CHANGES REQUIRED TO UPDATE THE FEASIBILITY STUDY (FS) & THE APPLICABLE AND RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) TABLES.
TO: RICHARD BELL, TRW INC
AUTHOR: CAROLYN PINA-SPRINGER, US EPA REGION 1
DOC ID: 6191 04/12/2000 22 PAGES

BARKHAMSTED-NEW HARTFORD LANDFILL
ADMINISTRATIVE RECORD FILE
ROD 9/2001

4. FEASIBILITY STUDY (FS) (cont)

15. FACT SHEET: EPA PROPOSES LONG TERM CLEANUP.

AUTHOR: US EPA REGION 1

DOC ID: 19641 06/01/2001 18 PAGES

16. REPORT: FEASIBILITY STUDY, DRAFT (PART 1 OF 2 - TEXT).

TO: US EPA REGION 1

AUTHOR: OBRIEN & GERE ENGINEERS INC

DOC ID: 19715 06/01/2001 299 PAGES

17. REPORT: FEASIBILITY STUDY, DRAFT (PART 2 OF 2 - APPENDICES).

TO: US EPA REGION 1

AUTHOR: O'BRIEN & GERE ENGINEERS INC

DOC ID: 20950 06/01/2001 165 PAGES

5. RECORD OF DECISION (ROD)

1. REPORT: GROUND WATER USE AND VALUE DETERMINATION.

AUTHOR: ARTHUR J ROCQUE, CT DEPT OF ENVIRONMENTAL PROTECTION

DOC ID: 18562 05/03/2001 17 PAGES

2. LETTER: COMMENTS ON THE PROPOSED PLAN.

TO: BYRON MAH, US EPA REGION 1

AUTHOR: SHEILA GLEASON, CT DEPT OF ENVIRONMENTAL PROTECTION

DOC ID: 24269 07/20/2001 3 PAGES

3. LETTER: STATE CONCURRENCE WITH REMEDIAL ACTION.

TO: PATRICIA L MEANEY, US EPA REGION 1

AUTHOR: ARTHUR J ROCQUE, CT DEPT OF ENVIRONMENTAL PROTECTION

DOC ID: 24270 09/24/2001 1 PAGE

4. REPORT: RECORD OF DECISION.

AUTHOR: US EPA REGION 1

DOC ID: 24208 09/28/2001

8. POST REMEDIAL ACTION

1. REPORT: PRELIMINARY CLOSE OUT MEMORANDUM.

AUTHOR: US EPA REGION 1

DOC ID: 24209 09/01/2001 10 PAGES

BARKHAMSTED-NEW HARTFORD LANDFILL
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ROD 9/2001

13. COMMUNITY RELATIONS

1. FACT SHEET: FACT SHEET: COMMUNITY UPDATE
AUTHOR: US EPA REGION 1
DOC ID: 5768 03/01/2000 6 PAGES
2. PUBLIC MEETING RECORD: NOTICE OF PUBLIC COMMENT PERIOD.
AUTHOR: US EPA REGION 1
DOC ID: 19672 06/01/2001 1 PAGE
3. LETTER: TRANSMITTAL LETTER TO FIELD REPOSITORY ACCOMPANYING THE
ADMINISTRATIVE RECORD.
TO: MARY LEE BULAT, BEARDSLEY MEMORIAL LIBRARY
AUTHOR: HOLLY INGLIS, US EPA REGION 1
DOC ID: 19799 06/20/2001 1 PAGE
4. PUBLIC MEETING RECORD: PUBLIC MEETING REPORT
AUTHOR: FALZARANO COURT REPORTERS
US EPA REGION 1
DOC ID: 24207 07/18/2001

17. SITE MANAGEMENT RECORDS

1. FACT SHEET: EPA FACTS ABOUT ACTIVATED CARBON TREATMENT.
AUTHOR: US EPA HEADQUARTERS
DOC ID: 6847 06/01/1992 2 PAGES
2. FACT SHEET: EPA FACTS ABOUT AIR STRIPPING.
AUTHOR: US EPA HEADQUARTERS
DOC ID: 6848 06/01/1992 2 PAGES
3. FACT SHEET: EPA FACTS ABOUT PUMP-AND-TREAT.
AUTHOR: US EPA HEADQUARTERS
DOC ID: 6846 06/01/1992 2 PAGES
4. PHOTOGRAPH: CAP INSTALLATION, SAND LAYER & COMPLETED CAP.
AUTHOR: US EPA REGION 1
DOC ID: 6255 11/01/1998 1 PAGE

APPENDIX F

Transcript of the Public Hearing on July 18, 2001

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PUBLIC HEARING FOR THE
BARKHAMSTED-NEW HARTFORD LANDFILL
SUPERFUND SITE

JULY 18, 2001
7:40 P.M.

Regional Refuse Disposal District No. 1
RRDD No. 1 Office Building
Barkhamsted-New Hartford Landfill
Route 44
Pleasant Valley, Connecticut

FALZARANO COURT REPORTERS
117 N. Saddle Ridge
West Simsbury, CT 06092
860.651.0258

1 MR. MURPHY: Good evening, everybody.
2 My name's Jim Murphy from the Environmental Protection
3 Agency. I want to welcome everyone to the formal
4 public comment period, public hearing on the
5 Barkhamsted-New Hartford Landfill Super Fund site
6 proposed plan.

7 We will take comment tonight from any
8 members of the public who are interested in commenting
9 on the plan. We have plans available in the back of
10 the room for anyone who doesn't have one, and on page 8
11 of the plan, I just want to point out that there is a
12 section about how comments can be made on the plan.

13 The public comment period was open June
14 20th, and it's running through this Friday, which is
15 July 20th, 30-day public comment period. EPA will
16 accept formal comments tonight orally or people may
17 present written comments tonight, and we will also
18 accept comments through Friday, either written --
19 postmarked by Friday -- or via e-mail or fax received
20 in our office by Friday.

21 Upon completion of the formal public
22 comment period, this Friday, July 20th, EPA will review
23 the public comments and we will respond to them in
24 what's called a responsiveness summary which is a
25 document that is part of the record of decision.

1 With that, I will also introduce the
2 people from EPA and DEP, and then we can open it up for
3 any public comments.

4 As I said, I'm Jim Murphy from EPA. On
5 my left is Byron Mah, who is a remedial project
6 manager/environmental engineer for EPA; Mary Jane
7 O'Donnell, supervisory environmental engineer, Office
8 of Site Remediation and Restoration, Connecticut
9 section chief; from DEP there is Christine Lacas and
10 Sheila Gleason.

11 At this point we will open it up for any
12 comments.

13 MR. TRICKEY: My name is David Trickey.
14 I'm the co-chairman of the Barkhamstead site PRP
15 Group.

16 We have worked with EPA and DEP for
17 about ten years now on the RIFS. Our group has
18 approximately 23 members, including the RRDD 1 landfill
19 and a number of private companies and public companies.
20 We have worked closely on the development of the
21 proposed alternative remedies, and on behalf of the PRP
22 Group, I do want to strongly endorse EPA's preferred
23 remedy, the alternative identified as MM-2 in the EPA
24 publication. We feel that it is based on a thorough
25 study, addresses the issues of environmental and human

1 health and safety, and is the preferred alternative for
2 this site.

3 I really have no comments other than
4 that, unless there are questions.

5 MR. MURPHY: Thank you, Mr. Trickey.

6 Any additional comments at this time?
7 Going once. Okay. There being no additional comments,
8 we will formally close the public comment period, and
9 thank you very much for coming.

10 MR. MAH: The hearing.

11 MR. MURPHY: The public hearing, the
12 comment period, will go until Friday, as I said. Thank
13 you, Byron. So we are all set on the hearing.

14 (Time noted: 7:44 p.m.)

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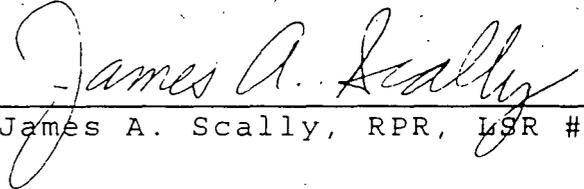
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CERTIFICATE

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I hereby certify that the foregoing 4 pages are a complete and accurate computer-aided transcription of my stenotype notes taken of the Public Hearing for the Barkhamsted-New Hartford Landfill Superfund Site at the Regional Refuse Disposal District No. 1, RRDD No. 1 Office Building, Route 44, Pleasant Valley, Connecticut, on July 18, 2001.


James A. Scally, RPR, LSR #80

APPENDIX B

**STATEMENT OF WORK
BARKHAMSTED - NEW HARTFORD LANDFILL SUPERFUND SITE
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APPENDIX B

STATEMENT OF WORK REMEDIAL ACTION BARKHAMSTED - NEW HARTFORD LANDFILL SUPERFUND SITE September 2002

I. INTRODUCTION AND PURPOSE

This Statement of Work ("SOW") defines the response activities and deliverable obligations that the Performing Settling Defendant is obligated to perform in order to implement the Work required under the Consent Decree at the Barkhamsted - New Hartford Landfill Superfund Site in Barkhamsted, Connecticut (the "Site"). The activities described in this SOW are based upon the United States Environmental Protection Agency's ("EPA") Record of Decision ("ROD") for the Site signed by the Director of the Office of Site Remediation and Restoration, EPA Region I, on September 28, 2001.

II. DEFINITIONS

The Site shall refer to the definition of "Site" as provided in the Consent Decree. Other definitions provided in the Consent Decree are incorporated herein by reference. In addition, the following definitions shall apply to this SOW:

- A. "Ambient Water Quality Criteria" shall mean those concentration values of toxic pollutants in navigable waters that, based on available data, will not result in adverse impacts on important aquatic life or on consumers of such aquatic life.
- B. "Institutional Controls" shall mean the land use and deed restrictions and other regulations and controls set forth in the Consent Decree and this SOW in those areas delineated on Appendix C of the Consent Decree lying within the "Zone of Groundwater Protection."
- C. "Groundwater Cleanup Levels" shall mean those numerical criteria specifying the degree of cleanup to be achieved in the groundwater at the Site. These criteria are set forth in Table 11 of the ROD and in Section IV hereto.
- D. "Performance Standards" shall mean the criteria specifying the degree and method of cleanup to be achieved at the Site, including all location, chemical, and action-specific applicable or relevant and appropriate standards, requirements, criteria and limitations identified in the ROD and the SOW or by EPA prior to Certification of Completion of the Work, and all other health or environmentally related numerical standards in the SOW. Performance Standards include all Groundwater Cleanup Levels, including but not

limited to MCLs, and background concentrations as required by the Regulations of Connecticut State Agencies (“R.C.S.A.”).

- E. “Points of Compliance” for attainment of Performance Standards shall mean the edge of the landfill in accordance with the EPA approved Demonstration of Compliance Plans for groundwater, surface water, and sediments.
- F. “Supervising Contractor” shall mean the business entity retained by the Performing Settling Defendant and selected in the manner specified in Paragraph 10 (Selection of the Supervising Contractor) of the Consent Decree to undertake and complete the work required by this Consent Decree. Each contractor and subcontractor shall be qualified to do those portions of the work for which it is retained.

III. SELECTED REMEDY

The ROD sets forth the selected remedy for the Barkhamsted-New Hartford Landfill Site.

The selected remedy involves the restoration of contaminated groundwater by monitored natural attenuation (“MNA”). Institutional controls will be used to restrict the future use of the Site and prevent ingestion and dermal contact with groundwater. Groundwater contamination at the Site, which includes volatile and semi-volatile organic compounds, and low concentrations of metals, constitutes a low-level threat. As a result of previous actions at the Site, groundwater is the only medium requiring remedial action. All source materials and principal threats have been addressed under the previous action. It is anticipated that the selected remedy is the final site remedy.

Previous actions at the Site, conducted as a Non-time Critical Removal Action (“NTCRA”) lead by the Connecticut Department of Environmental Protection (“CTDEP”) addressed source materials and principal threat wastes. This was accomplished through the consolidation of source material, construction of a landfill cap, and the installation of a leachate collection system. ~~The selected response action addresses the remaining low-level threat wastes at the Site by~~ treating the wastes via naturally occurring, in-situ processes (natural attenuation) to achieve the cleanup levels.

The major components of this remedy are:

1. Remediation to Performance Standards by natural attenuation involving naturally occurring in-situ processes; natural attenuation is expected to last approximately sixteen years before groundwater will meet applicable standards;
2. Installation of groundwater monitoring wells in the down-gradient part of the plume;
3. Institutional Controls to prevent ingestion and contact with contaminated groundwater. Institutional controls for this Site include environmental land use restrictions on present and future uses, and groundwater use restrictions;

4. A public education program involving informational meetings and/or mailings to discuss potential Site hazards;
5. Long Term Monitoring of groundwater, surface water, and sediment to evaluate changes over time and to evaluate the success of the remedial action; and
6. Five-year Review.

IV. PERFORMANCE STANDARDS

The Performing Settling Defendant shall implement the remedy in accordance with all federal and state applicable or relevant and appropriate requirements ("ARARs"), as set forth in Table 4 of Appendix D in the ROD. The Performing Settling Defendant shall implement the remedy in order to assure that all ARARs identified in the ROD are complied with and that all Performance Standards, including Maximum Contaminant Levels ("MCLs") and Connecticut Groundwater Protection Criteria ("GWPC") and Pollutant Mobility Criteria ("PMC"), are attained through natural attenuation.

A. Cleanup Levels

1. Groundwater

Groundwater Cleanup Levels are specified by EPA in Table 11 of the ROD and summarized as follows:

Groundwater Cleanup Levels*				
Carcinogenic Chemical of Concern	Cancer Classification	Cleanup Level (ug/l)	Basis	RME Risk
arsenic	A	5.0	Background Conc.	9.1×10^{-5}
1,4-dichlorobenzene	C	<10.0	Background Conc.	5.0×10^{-6}
Benzene	A	<0.5	Background Conc.	2.0×10^{-7}
1,2-dichloroethane	B2	<0.5	Background Conc.	5.8×10^{-7}
1,2-dichloropropane	B2	<0.5	Background Conc.	4.4×10^{-7}

chloroethane	B2	<1.0	Background Conc.	3.7×10^{-8}
chloroform	B2	<0.5	Background Conc.	4.0×10^{-8}
chloromethane	C	<1.0	Background Conc.	1.6×10^{-7}
dibromochloro- methane	C	<0.5	Background Conc.	5.5×10^{-7}
methylene chloride	B2	<2.0	Background Conc.	1.9×10^{-7}
Trichloroethene	B2	<0.5	Background Conc.	7.8×10^{-8}
vinyl chloride	A	<1.0	Background Conc.	2.4×10^{-5}
bis(2-ethyl hexyl) phthalate	B2	<2.0	Background Conc.	8.9×10^{-7}
Sum of Carcinogenic Risk				1.2×10^{-4}
<hr/>				
Noncarcinogenic Chemicals	Target	Cleanup Level (ug/l)	Basis	RME Hazard Quotient
arsenic	Skin	5.0	Background Conc.	4.5×10^{-1}
chromium	---	50.0	Background Conc.	4.5×10^{-1}
lead	---	3.0	Background Conc.	---
manganese	CNS	50.0	Background Conc.	5.6×10^{-2}
acetone	Liver/Kidney	<10.0	Background Conc.	2.7×10^{-3}
benzene	---	<0.5	Background Conc.	5.2×10^{-3}

Noncarcinogenic Chemicals	Target	Cleanup Level (ug/l)	Basis	RME Hazard Quotient
2-butanone	Developmental	<10.0	Background Conc.	4.6×10^{-4}
1,2-dichloroethane	—	<0.5	Background Conc.	4.7×10^{-4}
1,2-dichloropropane	Respiratory	<0.5	Background Conc.	1.4×10^{-2}
chloroethane	—	<1.0	Background Conc.	7.2×10^{-5}
chloroform	Liver	<0.5	Background Conc.	1.5×10^{-3}
chloromethane	—	<1.0	Background Conc.	----
dibromochloromethane	Kidney	<0.5	Background Conc.	7.3×10^{-4}
4-methyl-2-pentanone	Liver/Kidney	<5.0	Background Conc.	1.7×10^{-3}
methylene chloride	Liver	<2.0	Background Conc.	9.4×10^{-4}
toluene	Liver/Kidney	<0.5	Background Conc.	9.2×10^{-5}
trichloroethene	Liver/Kidney	<0.5	Background Conc.	2.7×10^{-3}
vinyl chloride	---	<1.0	Background Conc.	----
bis(2-ethylhexyl)phthalate	Liver	<2.0	Background Conc.	7.3×10^{-3}
1,4-dichlorobenzene	---	<10.0	Background Conc.	1.6×10^{-2}
2,4-dimethylphenol	Blood	<10.0	Background Conc.	1.5×10^{-2}

Noncarcinogenic Chemicals	Target	Cleanup Level (ug/l)	Basis	RME Hazard Quotient
4-methylphenol	CNS	<10.0	Background Conc.	5.9×10^{-2}
Skin Hazard Index =				4.5×10^{-1}
Blood Hazard Index =				1.5×10^{-2}
Developmental Hazard Index =				4.6×10^{-4}
CNS Hazard Index =				1.2×10^{-1}
Respiratory Hazard Index =				1.4×10^{-2}
Liver/Kidney Hazard Index =				2.6×10^{-2}

* Pursuant to Section 22a-133k-1 to 3 of the R.C.S.A., the cleanup level established for each chemical is the background concentration. During the Remedial Action (RA) Phase, EPA in consultation with CTDEP will determine whether these concentrations represent background for this Site and will change these values, if necessary, through an Explanation of Significant Differences (ESD).

All Performance standards, and newly promulgated ARARs and modified ARARs which call into question the protectiveness of the remedy and the protective levels determined as a consequence of the risk assessment of residual contamination, must be met at the completion of the remedial action at the "Points of Compliance". At this Site, Groundwater Cleanup Levels must be met for the entire Site, as measured at the "Points of Compliance" (edge of the landfill).

Pursuant to the approved requirements of the Demonstration of Remedial Action Completion Plan for groundwater, the Performing Settling Defendant shall ensure that the contaminants in Site groundwater are reduced through natural attenuation until all Performance standards are achieved in Site groundwater. The Performing Settling Defendant must demonstrate that they have achieved compliance according to the evaluation procedure defined in 40 C.F.R. Section 264 and the requirements of the approved Demonstration of Remedial Action Completion Plan for groundwater. Using such procedures, the Performing Settling Defendant shall demonstrate that each of the Performance standards have not been exceeded for a period of three consecutive years by submitting the results in the Demonstration of Remedial Action Completion Report in accordance with Section V.B.2. of this SOW. If EPA approves the Demonstration of Remedial Action Completion Report for groundwater and agrees that the Performance Standards have been achieved for three years, a risk assessment shall be performed by EPA (or by the Performing Settling Defendant if approved by EPA) on the residual groundwater contamination.

Cleanup levels have been established in groundwater for all chemicals of concern identified in the Baseline Risk Assessment found to pose an unacceptable risk to either public health or the environment. The Performing Settling Defendant shall tabulate and submit the data collected for the remedy as necessary for EPA (or by the Performing Settling Defendant if approved by EPA)

to conduct a risk assessment. Cleanup levels have been set based on the ARARs (e.g., non-zero Drinking Water Maximum Contaminant Level Goals (MCLGs), MCLs, and more stringent State Remediation Standard Regulations) as available, or other suitable criteria described below. Periodic assessments of the protection afforded by remedial actions will be made as the remedy is being implemented and at the completion of the remedial action. At the time that Performance Standards and newly promulgated ARARs and modified ARARs which call into question the protectiveness of the remedy have been achieved and have not been exceeded for a period of three consecutive years, and as demonstrated in accordance with Section 22a-133k-3(g)(3) of the Connecticut RSRs, a risk assessment shall be performed on all residual groundwater contamination to determine whether the remedial action is protective. This risk assessment of the residual groundwater contamination shall follow EPA procedures and will assess the cumulative carcinogenic and non-carcinogenic risks posed by all chemicals of concern (including but not limited to the chemicals of concern) via ingestion and dermal contact with groundwater. If, after review of the risk assessment, the remedial action is not determined to be protective by EPA, the remedial action shall continue until either protective levels are achieved, and are not exceeded for a period of three consecutive years, or until the remedy is otherwise deemed protective or is modified. These protective residual levels shall constitute the final cleanup levels and shall be considered performance standards for this remedial action.

Because the aquifer at and beyond the "Points of Compliance" for the landfill is a Class IIB aquifer (GA) which is a potential source of drinking water, MCLs and non-zero MCLGs established under the Safe Drinking Water Act and more stringent State standards are ARARs. For practical purposes, "Points of Compliance" has been established as the wells around the perimeter of the landfill.

In situations where a promulgated State standard is more stringent than values established under the Safe Drinking Water Act, the State standard shall be used as the cleanup level.

V. REMEDIAL ACTION

The Remedial Action activities required for the Site shall include, but are not limited to, (A) a Remedial Action Work Plan to include a Project Operation Plan ("POP"), a Long-Term Monitoring Plan for groundwater, surface water, and sediments and (B) Demonstration of Remedial Action Completion Plans and Report to be submitted for groundwater, surface water, and sediments. The Performing Settling Defendant shall submit to EPA and the CTDEP the required deliverables as stated herein for each of these Remedial Action activities. Each deliverable shall be subject to review and approval or modification by EPA, after reasonable opportunity for review and comment by the CTDEP, in accordance with Section XI of the Consent Decree, EPA Approval of Plans and Other Submissions.

A. Remedial Action Work Plan

Within 45 days of EPA issuance of an authorization to proceed pursuant to Paragraph 11 of the Consent Decree, the Performing Settling Defendant shall submit a Remedial Action Work Plan to EPA for review and approval, after reasonable opportunity for review and comment by the

CTDEP in accordance with Section XI of the Consent Decree. This Remedial Action Work Plan shall include:

1. Project Operations Plan (“POP”). The POP shall include, but not be limited to, the following:
 - a. a Site Management Plan (“SMP”);
 - b. a Sampling and Analysis Plan (“SAP”) which includes:
 - (1) a Quality Assurance Project Plan (“QAPP”); and
 - (2) a Field Sampling Plan (“FSP”)
 - c. a site-specific Health and Safety Plan (“HSP”); and
 - d. a Community Relations Support Plan (“CRSP”).

The Performing Settling Defendant shall prepare this POP in accordance with Attachments A and B.

2. Long-Term Monitoring Plan. The long-term monitoring program shall include sampling and analytical methods that are appropriate for groundwater, surface water, seeps, and sediment sampling and that accurately measure hazardous constituents in the samples. To the extent that it meets applicable requirements, the data from this sampling may also be used in the Long-Term Monitoring Program documented in the Operation and Maintenance Manual for the Barkhamsted Landfill pursuant to the Non-Time Critical Removal Action previously performed at the Site, at a minimum, the Long-Term Monitoring Plan shall require the following:
 - a. Installation of additional multi-level groundwater monitoring wells in the down gradient area to evaluate compliance with Performance Standards, as approved by EPA.
 - b. Monitoring of the groundwater in the existing and additional monitoring well network at the Site, to evaluate the horizontal and vertical extent of the Site plume. Quarterly monitoring for the first two years of the monitoring program will evaluate the concentrations, distribution and migration of VOCs, semi-VOCs and metals. During the subsequent three years, the Performing Settling Defendant shall monitor the groundwater semi-annually during the Spring and the Fall periods. After such five year period, and as determined by EPA, the number of wells, monitoring frequency and list of analytes monitored in the groundwater will be evaluated by EPA and the State; and may, in EPA’s discretion be modified. Water level measurements and standard field parameters (i.e.,

temperature, pH, conductance) in each well must also be taken during each sampling event.

- c. Regular and proper maintenance of all monitoring wells. Well abandonment, where necessary, shall be performed in accordance with all applicable State laws and regulations.
- d. Periodic monitoring of surface water and sediments in the un-named brook to evaluate potential adverse impacts of contaminated groundwater discharge to those surface water bodies or as directed by EPA. Monitoring should also include measurement of water levels at appropriate measuring points. Annual reporting will also include a comparison to appropriate Ambient Water Quality Criteria.
- e. Installation and maintenance of additional warning signs at the perimeter of the Site as directed by EPA
- f. Within 60 days of the collection of any samples, Performing Settling Defendant shall submit to EPA reports that include, at a minimum, the following:
 - (1) All documentation, including, but not limited to, monitoring results.
 - (2) Certification by the Performing Settling Defendant as to whether or not any of the contingencies, as described below in Section V.A.3 of this SOW, have occurred.
 - (3) Tabulation and summary of all analytical data and field notes, including water level measurements, and QA/QC documentation of these results.
 - (4) Maps for groundwater illustrating contaminant concentrations, water level elevations and head distributions.
 - (5) For data concerning all areas of the Site, a comparison of analytical data to previous data, to ARARs, and to the results of the modeling presented in the Site Feasibility Study.
- g. Changes in the frequency of the sampling or changes in the location of wells to be sampled shall be approved by EPA (in consultation with the State) for all evaluations and further sampling required. The Performing Settling Defendant shall submit a POP,

in accordance with Attachment B, to EPA along with the required plans. Alternatively, the Performing Settling Defendant may provide an addendum for a previously submitted POP to address the particular sampling plan.

At five year intervals, the data report submitted by the Performing Settling Defendant shall be a cumulative monitoring report which will include the above described information as well as a summary of all data collected in the previous five year period in table format, an interpretation of the data (i.e., identify trends and bias) as compared to the existing contaminant data base, and graphs of concentration versus time.

3. **Additional Reporting Requirements.** There are two contingencies that will trigger the additional reporting requirements described below. They are as follows:

- a. **Newly constructed wells.** The initial sampling and analysis of newly constructed wells.

- b. **At EPA's discretion.** EPA shall also have the discretion to direct additional sampling, where EPA deems further information is required.

In the event that any of the contingencies described above are triggered, the Performing Settling Defendant shall submit the following plans and reports to EPA for review and approval, after reasonable opportunity for review and comment by the CTDEP, pursuant to Section XI of the Consent Decree:

Data validation: Within 30 days after Performing Settling Defendant obtain sampling results which trigger any of the contingencies set forth above Performing Settling Defendant shall submit to EPA for review and approval, after reasonable opportunity for review and comment by the CTDEP, an evaluation of the validity of the sampling results in accordance with the POP to EPA. If such evaluation demonstrates that the sampling results are invalid, and EPA approves the evaluation, Performing Settling Defendant shall resample and or re-analyze as necessary.

B. Demonstration of Remedial Action Completion

1. **Demonstration of Remedial Action Completion Plans for Groundwater, Surface Water and Sediments**

At the time the Performing Settling Defendant can reasonably predict the time that remediation will be complete, the Performing Settling Defendant shall submit to EPA a Demonstration of Remedial Action Completion Plan for Groundwater,

Surface Water, and Sediments. At a minimum, these plans shall detail how the Performing Settling Defendant will demonstrate that the Performance standards have been met in the Site groundwater, surface water, and sediments. The Demonstration of Remedial Action Completion Plan shall include, but not be limited to: sampling locations, sampling frequencies and sampling duration, and statistical, modeling or other data interpretation techniques used to evaluate compliance with the Performance standards.

The Demonstration of Remedial Action Completion monitoring programs shall be implemented within 30 days of EPA approval of the Demonstration of Remedial Action Completion plans for Groundwater, Surface Water, and Sediments.

2. Demonstration of Remedial Action Completion Report for Groundwater, Surface Water, and Sediments

Within 60 days of the completion of the period necessary to demonstrate compliance with the Performance standards, as determined by section V.B.1 above, the Performing Settling Defendant shall submit to EPA for approval a Demonstration of Compliance Report for groundwater, surface water, and sediments. This report shall contain all information necessary to demonstrate compliance with the Performance standards. In addition, the Demonstration of Remedial Action Completion Report shall also include all data, collected and tabulated, necessary for EPA (or the Performing Settling Defendant if approved by EPA) to conduct the risk assessment as specified in Section IV of this SOW.

3. Certification of Remedial Action Completion of Groundwater, Surface Water and Sediments

If EPA determines that the Performance standards have been achieved, and have not been exceeded for a period of three consecutive years, and as demonstrated in accordance with Section 22a-133k-3(g)(3) of the Connecticut RSRs, EPA (or by the Performing Settling Defendant if approved by EPA) will perform a risk assessment on all residual contamination to determine whether the remedial action is protective. This risk assessment of the residual contamination shall follow EPA procedures and will assess the cumulative carcinogenic and non-carcinogenic risks posed by all pollutants including but not limited to substances through ingestion and dermal contact with groundwater. The risk assessment will also include an evaluation of ecological risk. If after conduction the risk assessment, EPA determines that the risks are within EPA's risk management standard for carcinogens and non-carcinogens and are protective from an ecological perspective, these protective residual levels shall constitute the final cleanup levels and shall be considered Performance standards for this remedial action.

Within 60 days after EPA issues a Certificate of Remedial Action Completion, the Performing Settling Defendant shall prepare a

final remedial action report as described in "Close Out Procedures for National Priorities List Sites", EPA 540-R-98-016, dated January 2000. The report shall follow the outline found in Exhibit 2-3 of the previously referenced document or other updated EPA guidance.

C. Five-Year Site Reviews

Every five years after the anniversary date (January 5, 1998) of actual remedial action on-site construction and until EPA Certification of Completion with performance standards, the Performing Settling Defendant shall submit to EPA for approval Five-Year Review Reports in accordance with Section 300.430(f)(4)(ii) of the National Contingency Plan.

The Performing Settling Defendant will conduct studies and collect data, as requested by EPA, necessary to prepare CERCLA mandated Five-Year Review reports of the Site for EPA to determine if the Remedial Action continues to be protective of human health and the environment. Each report shall be developed consistent with EPA OSWER Directive No. 9355.703 B7 (June 2001), Comprehensive Five-Year Review Guidance or other updated EPA guidance on performing Five-Year Site Reviews.

VI. SITE ACCESS AND INSTITUTIONAL CONTROLS

Within 60 days of entry of the Consent Decree, the Performing Settling Defendant shall submit to EPA for review and approval an Access and Institutional Controls Plan which will detail how the below listed requirements will be implemented. The Site Access and Institutional Controls Plan shall be implemented according to the schedule approved in the plan and pursuant to Section IX of the Consent Decree.

A. Site Access

The Performing Settling Defendant shall use Best Efforts to secure all access for Performing Settling Defendant, as well as for the United States, its representatives, including, but not limited to EPA, the State and their contractors, as necessary to perform the Remedial Action as provided in Section IX of the Consent Decree. Site access shall be obtained prior to implementation of the Remedial Action and pursuant to Section IX of the Consent Decree.

B. Institutional Controls

As provided in the Consent Decree, the Performing Settling Defendant shall use Best Efforts, as defined in the Consent Decree, to implement Institutional Controls to prevent the use of contaminated groundwater, to prohibit residential use of the Site, to prevent contamination from spreading to new areas, to limit the use and disturbance of contaminated soils under the cap, to require EPA approval of any construction activities

that may disturb the contaminated soils at the Site, and to bind and inform future purchasers of property with respect to the restrictions associated with the Site, in accordance with Section IX of the Consent Decree. These Institutional Controls must meet applicable Connecticut Environmental Land Use Restriction Regulations (R.C.S.A. Section 22a-133q). The Performing Settling Defendant will also issue Institutional Controls reports which describe the status of each institutional control at a frequency defined in the access and institutional controls plan.

Any Remedial Action taken by the Performing Settling Defendant pursuant to the Consent Decree shall not limit the authority of EPA or the CTDEP to undertake any response actions under CERCLA or Connecticut General Statutes or Regulations of the Connecticut State Agencies.

The following Institutional Controls shall apply to the Site:

1. Restrictions relating to property within the “zone of (groundwater) protection” identified in Appendix C of the Consent Decree. Such restrictions shall run with the land and shall be binding upon any and all persons who subsequently acquire any interest or portion thereof, to the extent permitted under Connecticut law. The area of land that falls within this zone of protection includes property owned by RRDD#1, Town of Barkhamsted, the Metropolitan District Commission, and a small piece of property owned by Timothy C. Morris. These restrictions include, but are not limited to, the following:
 - a. the Site affected by contamination above cleanup levels, shall not be developed for residential use; (RRDD#1 entire contiguous property, Town of Barkhamsted);
 - b. all plans for development of the property shall be submitted to EPA for approval; See R.C.S.A Section 22a-133k-3(c)(5)(A); (RRDD#1 entire contiguous property, Town of Barkhamsted);
 - c. contaminated groundwater underlying the Site, and all areas within the “zone of groundwater protection” identified in Appendix C of the Consent Decree, as well as any parcel where groundwater contamination above Performance Standards may migrate to, shall not be withdrawn for any purpose unless otherwise provided for in this SOW. Groundwater supply wells shall not be installed or otherwise operated in a manner that would conflict with the natural attenuation of groundwater at the Site or that would conduct contaminated groundwater from the Site; (all properties);
 - d. contaminated soils under the landfill cap or soils below the water table shall not be disturbed, except pursuant to a plan approved by EPA; (all properties);

- e. no use or activity shall be permitted which will disturb any of the remedial measures implemented at the Site. Remedial measures implemented at the Site include, but are not limited to: the installation of groundwater monitoring wells, long-term monitoring of groundwater, surface water, and sediments; (all properties);

Prior to securing any Institutional Control, the Performing Settling Defendant shall submit the draft documents constituting the Institutional Control (e.g., deed restrictions, etc.) to EPA for its approval, after a reasonable opportunity for review and comment by the CTDEP in accordance with Section XI of the Consent Decree. In the case of Environmental Land Use Restrictions ("ELURs"), the agreement must be approved by the Commissioner of the CTDEP prior to recording.

EPA shall have the option at any time to modify or expand the zone to which Institutional Controls apply, or to require more stringent Institutional Controls, in order to protect human health or the environment, or to prevent the alteration or acceleration of the movement of contaminated groundwater from beneath the Site in a manner that may adversely affect the Remedial Action. EPA's determination will be based on available data and will be in accordance with the requirements of the Consent Decree and this SOW.

During the course of the remediation, the Performing Settling Defendant shall conduct yearly reviews (during January of each year) to monitor the implementation of the Institutional Controls specified above, and report such findings to EPA and the CTDEP.

VII. SUBMISSIONS REQUIRING AGENCY APPROVAL

- A. All plans, deliverables and reports identified in the SOW for submittal to EPA shall be delivered to EPA and the CTDEP in accordance with the Consent Decree and this SOW. All such plans, deliverables and reports shall be subject to review and approval or modification by EPA after reasonable opportunity for review and comment by the CTDEP, pursuant to Section XI of the Consent Decree (EPA Approval of Plans and Other Submissions). The Performing Settling Defendant shall provide EPA with three (3) copies of each deliverable and the CTDEP with one (1) copy, unless otherwise directed by EPA.
 - 1. Any plan, deliverable, or report submitted to EPA and CTDEP for approval by EPA shall be marked "Draft" on each page and shall include, in a prominent location in the document, the following disclaimer: "Disclaimer: This document is a DRAFT document prepared by the Performing Settling Defendant under a government Consent Decree. This document has not undergone formal review by the EPA and the CTDEP. The opinions, findings, and conclusions expressed are

those of the author and not those of the U.S. Environmental Protection Agency and the CTDEP."

2. Upon approval or modification by EPA, in consultation with the CTDEP, all plans, work plans, or reports required by the Consent Decree or this SOW shall be incorporated into the Consent Decree and shall be enforceable thereunder.

**ATTACHMENT A
SCHEDULE OF
DELIVERABLES/MILESTONES**

<u>Deliverable/Milestone</u>	<u>Due Date</u>
<u>REMEDIAL ACTION WORK PLAN</u>	Within 45 days of EPA issuance of an authorization to proceed pursuant to Paragraph 11 of the Consent Decree
Implementation of the Remedial Action	Within 30 days after EPA approval of the Remedial Action Work Plan, provided that Site access has been obtained
Monitoring Reports	60 days after sample collection.
<u>ADDITIONAL REPORTS</u>	To be performed in accordance with with Section V if any Remedial contingency is triggered.
 <u>DEMONSTRATION OF REMEDIAL ACTION COMPLETION PLANS AND REPORTS</u>	
Plans	Upon reasonable prediction of the date of attainment of the Performance standards
Implementation of Demonstration of Compliance Program	Within 30 days of approval of the Demonstration of Remedial Action Completion Plans
Reports	Within 60 days after three years from implementation of the EPA approved Demonstration of Remedial Action Completion Plans
<u>FIVE YEAR SITE REVIEWS</u>	Every five years of the anniversary date of actual remedial action on-site construction start (January 5, 1998)
 <u>ACCESS AND INSTITUTIONAL CONTROLS</u>	
Access and Institutional Controls Plan	Within 60 days of entry of the Consent Decree
Secure Site Access	Prior to implementation of the Remedial Action

Implementation of Institutional
Controls and Submittal of
Institutional Controls Reports

According to the schedule approved in the
Access and Institutional Controls Plan and
pursuant to the Statement of Work (Appendix B)

ATTACHMENT B

PROJECT OPERATIONS PLAN

Before any field activities commence on the Site, Performing Settling Defendant shall submit several site-specific plans to establish procedures to be followed by the Performing Settling Defendant in performing field, laboratory, and analysis work and community and agency liaison activities. These site-specific plans include the:

- A. Site Management Plan (“SMP”);
- B. Sampling and Analysis Plan (“SAP”);
- C. Health and Safety Plan (“HSP”); and
- D. Community Relations Plan (“CRP”).

These plans shall be combined to form the Site Project Operations Plan (“POP”). The four components of the POP are described in A. through D. herein.

The format and scope of each Plan shall be modified as needed to describe the sampling, analyses, and other activities that are carried out as the RA progresses. EPA may modify the scopes of these activities at any time during the RA at the discretion of EPA in response to the evaluation of RD/RA results, changes in RA requirements, and other developments or circumstances.

The final POP submitted under the Administrative Order by Consent for the RI/FS was accepted by EPA. This POP may be revised as needed for RA.

A. Site Management Plan (“SMP”)

The SMP shall describe how the Performing Settling Defendant will manage the project to complete the Work required at the Site. The overall objective of the Site Management Plan is to provide EPA and the CTDEP with a written understanding and commitment of how various project aspects such as access, security, contingency procedures, management responsibilities, waste disposal, budgeting, and data handling are being managed by the Performing Settling Defendant. Specific objectives and provisions of the Site Management Plan shall include, but are not limited to the following:

1. Provide a map and list of properties, the property owners, and addresses of owners to whose property access may be required.
2. Clearly indicate the exclusion zone, contamination reduction zone, and clean area for on-site activities.
3. Provide contingency and notification plans for potentially dangerous activities associated with the RA.

4. Communicate to EPA, CTDEP and the public the organization and management of the RA, including key personnel and their responsibilities.
5. Provide a list of contractors and subcontractors of the Performing Settling Defendant in the RA and description of their activities and roles.
6. Provide for the proper disposal of materials used and wastes generated during the RA (e.g., drill cutting, extracted groundwater, protective clothing, disposable equipment). These provisions shall be consistent with the off-site disposal aspects of SARA, RCRA, and applicable state laws. The Performing Settling Defendant, or their authorized representative, or another party acceptable to EPA and CTDEP, shall be identified as the generator of wastes for the purpose of regulatory or policy compliance.
7. Provide plans and procedures for organizing, manipulating, and presenting the data generated and for verifying its quality before and during the RA.

The last item shall include a description of the computer data base management systems that are compatible with hardware available to EPA Region personnel for handling media-specific sampling results obtained from the groundwater, and if applicable, surface water and sediment monitoring. The description shall include data input fields, examples of data base management output from the coding of all sample data, appropriate quality assurance/quality control to ensure accuracy, and capabilities of data manipulation. To the degree possible, the data base management parameters shall be compatible with the EPA Region I data storage and analysis system.

B. Sampling and Analysis Plan (SAP)

The purpose of the Sampling and Analysis Plan is to ensure that sampling data collection activities will be comparable to and compatible with previous EPA and CTDEP data collection activities performed at the Site while providing a mechanism for planning and approving field activities.

The overall objectives of the sampling and analysis plan are as follows:

- a. to document specific data quality objectives, procedures, and rationales for field work and sample analytical work;
- b. to provide a mechanism for planning and approving Site and laboratory activities;
- c. to ensure that sampling and analysis activities are necessary and sufficient; and
- d. to provide a common point of reference for all parties to ensure the comparability and compatibility of sampling and analysis activities to meet the stated project objectives.

The first SAP shall be the framework of all anticipated field activities (e.g., sampling objectives, evaluation of existing data, standard operating procedures) and contain specific information on the field work (e.g., sampling locations and rationale, sample numbers and rationale, analyses of samples). During the Remedial Action, the SAP shall be revised as necessary to cover each round of field or laboratory activities.

The SAP consists of two parts: (1) a Quality Assurance Project Plan (QAPP), and (2) the Field Sampling Plan (FSP). The QAPP shall follow the requirements in QA/R-5 and the "Region I, EPA-New England Compendium of Quality Assurance Project Plan Requirements and Guidance". The FSP will contain all of the standard operating procedures (SOPs) and other documentation to support specific sections of the QAPP. In some cases where there are unique FSP components for special applications, they will be added to the QAPP in the appropriate sections. In addition, the FSP and QAPP should be submitted as a single document (although they may be bound separately to facilitate use of the FSP in the field).

The SAP shall specify in the QAPP/FSP provisions for notifying EPA and CT DEP two (2) weeks before initiation of each field sampling or monitoring activities. The plan shall also allow split, replicate, or duplicate samples to be taken by EPA, CT DEP (or their contractor personnel or other government agencies working with EPA). At the request of EPA or CT DEP, the Respondent shall provide these samples in appropriate containers to the government representatives. Identical procedures shall be used to collect the Respondent's, EPA, and CTDEP samples unless otherwise specified by EPA or CT DEP. These provisions will be outlined and added to EPA-NE QAPP Sections 8 and 9.

Guidance on the topics covered in the QAPP and FSP and their integration into each of these plans and the integration of the QAPP and the FSP into the SAP can be found in the following several references which shall be used to develop the SAP:

EPA Requirements for Quality Assurance Plans, EPA QA/R-5 (EPA/240/B-01/003) March 2001

Region I, EPA-New England Compendium of Quality Assurance Project Plan Requirements and Guidance (U.S. EPA-New England Region I Quality Assurance Unit Staff, Office of Environmental Measurement and Evaluation; October 1999 Final).

Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (OSWER Directive 9355.3-01, EPA/540/G-89/004, October 1988);

Guidance for the Data Quality Objectives Process, EPA QA/G-4 (, EPA/600/r-96/055, September 1994);

Draft Data Quality Objectives Decision Errors Feasibility Trials (DEFT) Software EPA/600/R-96/056, September 1994)

Guidance for the Data Quality Objectives Process for Hazardous Waste, EPA QA/G-4HW Draft

Guidance for Preparing Standard Operating Procedures(SOPs) EPA QA/G-6 (EPA/240/B-01/004) March 2001

Region I, EPA-New England Data Validation Functional Guidelines for Evaluating Environmental Analyses, Revised December 1996

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (EPA Pub. SW-846, Third Edition, 1996). Most recent update.

Guidance for Data Quality Assessment: Practical Methods for Data Analysis, EPA QA/G-9 (EPA/600/R-96-084, QA 97 Version, January 1998)

B.1. Quality Assurance Project Plan (“QAPP”)

The Quality Assurance Project Plan (“QAPP”) shall document in writing the site-specific objectives, policies, organizations, functional activities, sampling and analysis activities and specific quality assurance/quality control activities designed to achieve the data quality objectives (“DQOs”) of the Remedial Action. The QAPP developed for this project shall document quality control and quality assurance policies, procedures, routines, and specifications.

Project activities throughout the Remedial Action shall comply with the QAPP. QAPP sampling and analysis objectives and procedures shall be consistent with EPA Requirements QAPP for Environmental Data Operations (EPA QA/R-5) and appropriate EPA handbooks, manuals, and guidelines including Region I, EPA-New England Compendium of Quality Assurance Project Plan Requirements and Guidance (October 1999 Final)(the “Compendium”), Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (EPA Pub. SW-846, Third Edition, latest update) (CLP Routine Analytical Services, RAS, latest Statement of Work should be used) and Guidelines Establishing Test Procedures for the Analysis of Pollutants (40 CFR, Part 136), Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, (EPA-600/4-84-041 April 1984). All sampling and analysis activities shall be performed in compliance with the most up to date EPA guidance documents. EPA reserves the right to review, and modify sampling and analytical methods for this site as necessary.

All the QAPP elements identified in EPA QA/R-5 and the “Compendium” must be addressed.

As indicated in EPA QA/R-5 and the “Compendium”, a list of essential elements must be considered in the QAPP for the Remedial Action. If a particular element is not relevant to a project and therefore excluded from the QAPP, specific and detailed reasons for exclusion must be provided.

Information in a plan other than the QAPP may be cross-referenced clearly in the QAPP provided that all objectives, procedures, and rationales in the documents are consistent, and the reference material fulfills requirements of EPA/QA/R-5. Examples of how this cross reference might be accomplished can be found in the Guidance for the Data Quality Objectives Process (EPA/600/R-96/055) and the Data Quality Objectives decision Errors Feasability Trials(DEFT)

Software (EPA/600/R-96/056). EPA-approved references, or equivalent, or alternative methods approved by EPA shall be used, and their corresponding EPA-approved guidelines should be applied when they are available and applicable.

Laboratory QA/AC Procedures

The QA/QC procedures and SOPs for any laboratory (both fixed and mobile) used during the Remedial Action shall be included in the Respondent's QAPP. When this work is performed by a contractor to a private party, each laboratory performing chemical analyses shall meet the following requirements:

- 1) be approved by the CT Laboratory Evaluation Program, if available;
- 2) have successful performance in one of EPA's National Proficiency Sample Programs (i.e., Water Supply or Water Pollution Studies or the CT's proficiency sampling program);
- 3) be familiar with the requirements of 48 CFR Part 1546 contract requirements for quality assurance; and
- 4) have a QAPP for the laboratory including all relevant analysis. This plan shall be referenced as part of the contractor's QAPP.

Data Validation Procedures

The Respondent is required to certify that a representative portion of the data has been validated by a person independent of the laboratory according to the Region I, EPA-New England Data Validation Functional Guidelines for Evaluating Environmental Analyses Revised December 1996 (amended as necessary to account for the differences between the approved analytical methods for the project and the current Contract Laboratory Program Statements of Work (CLP SOW)). A data validation reporting package as described in the guidelines cited above must be delivered at the request of the EPA project manager. Approved validation methods shall be contained in the QAPP.

The independent validator shall not be the laboratory conducting the analysis and should be a person with a working knowledge of or prior experience with EPA data validation procedures. The independent validator shall certify that the data has been validated, discrepancies have been resolved if possible, and the appropriate qualifiers have been provided.

Data Package requirements:

The Respondent must require and keep the complete data package and make it available to EPA on request in order for EPA to conduct an independent validation of the data. The complete data package shall consist of all results, the raw data, and all relevant QA/QC information. The forms contained in the data validation functional guidelines must be utilized

to report the data when applicable. Raw data includes the associated chromatograms and the instrument printouts with area and height peak results . The peaks in all standards and samples must be labeled. The concentration of all standards analyzed with the amount injected must be included. All laboratory tracking information must also be included in the data package.

The forms contained in Chapter 1 of SW-846 (Third Edition 1996 and future updates) or the current CLP SOW forms must be utilized to report the data when applicable. Raw data includes the associated chromatograms and the instrument printouts with area and height peak results. The peaks in all standards and samples must be labeled. The concentration of all standards analyzed with the amount injected must be included. All internal and external laboratory sample tracking information must be included in the data package.

B.2. Field Sampling Plan (FSP)

The objective of the Field Sampling Plan is to provide EPA, CTDEP and all parties involved with the collection and use of field data with a common written understanding of all fieldwork and the standard procedures that will be used to collect samples and to supplement the sampling rationale information found in the QAPP. The FSP shall address the Remedial Action objectives and conform to the procedures in Section 2 of this document and the National Contingency Plan (“NCP”).

The FSP shall define in detail the sampling and data gathering methods used on a project. The FSP should be written so that a field sampling team unfamiliar with the Site would be able to gather the samples and field information required. Guidance for the selection of field methods, sampling procedures, and custody can be acquired from the Compendium of Superfund Field Operations Methods, (OSWER Directive 9355.0-12, EPA/540/P-87/001), which is a compilation of demonstrated field techniques that have been used during remedial response activities at hazardous waste sites.

The FSP shall define in detail the sampling and data gathering procedures that will be used in the collection of groundwater samples. This includes a description of the monitoring wells, the pumps (including the tubing), the measuring devices (field instruments, water level indicators, etc.) and the sampling procedure. Wherever possible, the EPA Region 1 Low Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells, July 30, 1996, procedure shall be used to collect the groundwater samples. If natural attenuation of chlorinated solvents are to be monitored, then the following parameters need to be added to the list of contaminants being monitored at the site: dissolved oxygen, nitrate, nitrite, iron II (Ferrous ion), sulfate, sulfide, dissolved gases (methane, ethane and ethene), oxidation/reduction potential (“ORP”), pH, temperature, chloride, BTEX, trichloroethene, DCE, vinyl chloride, 1,1,1-trichloroethane, and chloroethane. Additional parameters may need to be added to this list to demonstrate that the natural attenuation is occurring at the site. Also, include maps showing the monitoring wells location in relationship to the contaminant plume and the location of the background monitoring wells. Guidance on the natural attenuation process can be found in Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Groundwater (EPA/600/R-98/128, September 1998).

The FSP shall supplement the site-specific sample collection information in the QAPP and shall include the following information only if the QAPP does not contain the information and two documents are required to be delivered. (Information provided in Sections 5 - 10 of the QAPP):

Site Background. (EPA-NE QAPP Sections 5, 6, and 7) The analysis of the existing Site details must be included in the FSP. This analysis shall include a conceptual Site model. A conceptual Site model includes a description of the Site and surrounding areas and a discussion of known and suspected contaminant sources, probable transport pathways, and other information about the Site. The FSP shall also include descriptions of specific data gaps and ways in which sampling is designed to fill those gaps.

Sampling Objectives. (EPA-NE QAPP Sections 7 and 8) Specific objectives of a sampling effort that describe the intended uses of data must be clearly and succinctly stated.

Sample Location, Analytes, and Frequency. (EPA-NE QAPP Section 8) This section of the sampling plan identifies each sample matrix to be collected and the constituents to be analyzed. Tables shall be used to clearly identify the number of samples to be collected along with the appropriate number of replicates and blanks. Figures shall be included to show the locations of existing or proposed sample points.

Sample Designation. (EPA-NE QAPP Section 10) A sample numbering system shall be established. The sample designation should include the sample or well number, the sample round, the sample matrix (e.g. surface soil, groundwater, surface water, sediment, soil boring), and the name of the Site.

Sampling Equipment and Procedures. (EPA-NE QAPP Section 9) Sampling procedures must be clearly written. Step-by-step instructions for each type of sampling are necessary to enable the field team to gather data that shall meet the Data Quality objectives (DQOs). A list should include the equipment to be used and the material composition (e.g., Teflon, stainless steel) of equipment along with decontamination procedures.

Sample Handling and Analysis. (EPA-NE QAPP Section 10) A table shall be included that identifies sample preservation methods, types of sampling jars, shipping requirements, and holding times. Examples of paperwork such as traffic reports, chain of custody forms, packing slips or Analysis Request forms, and sample tags filled out for each sample as well as instructions for filling out the paperwork must be included. Field documentation methods including field notebooks and photographs shall be described.

Each Field Sampling Plan submitted as a part of the Work Plan for the Remedial Action shall be sufficiently detailed to carry out the study, and shall provide data needed to address the objective of the study and to complete the study. Each study shall be designed to achieve a high performance on the first attempt. Each work plan shall be related (by cross-references) to the other requirements in the Project Operations Plan.

In the Field Sampling Plan for the Remedial Action, the Respondent shall include plans that describe how each of the following and other necessary studies shall be addressed during the Remedial Action. See Section 3 of this document to facilitate understanding of the type and quality of the deliverable required for each activity of the Site characterization.

- 1) site survey;
- 2) soils and sources of contaminants;
- 3) subsurface and hydrogeological factors for overburden and bedrock;
- 4) surface water and sediment sampling

The complete results of these studies shall be described in the Remedial Action Report.

C. Health and Safety Plan (“HSP”)

The objective of the site-specific Health and Safety Plan is to establish the procedures, personnel responsibilities and training necessary to protect the health and safety of all on-site personnel during the RA. The plan shall provide for routine but hazardous field activities and for unexpected Site emergencies.

The site-specific health and safety requirements and procedures in the HSP shall be updated based on an ongoing assessment of Site conditions, including the most current information on each medium. For each field task during the RA, the HSP shall identify:

1. possible problems and hazards and their solutions;
2. environmental surveillance measures;
3. specifications for protective clothing;
4. the appropriate level of respiratory protection;
5. the rationale for selecting that level; and
6. criteria, procedures, and mechanisms for upgrading the level of protection and for suspending activity, if necessary.

The HSP shall also include the delineation of exclusion areas on a map and in the field. The HSP shall describe the on-site person responsible for implementing the HSP for the Performing Settling Defendant' representatives at the Site, protective equipment personnel decontamination procedures, and medical surveillance. The following documents shall be consulted:

1. Interim Standard Operations Safety Guides (Hazardous Response Support Division, Office of Emergency and Remedial Response EPA, Wash. D.C. 1982);
2. Superfund Public Health Evaluation Manual (OSWER Directive 9285.41, EPA/540/1-861060, EPA 1986);
3. Hazardous Waste Operations and Emergency Response (Department of Labor, Occupational Safety and Health Administration, (OSHA) 29 CFR Part 1910); and
4. Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities: Appendix B (NIOSH/OSHA/EPA 1986).

OSHA regulations at 29 CFR 1910 and Chapter 9 of the Interim Standard Operating Safety Guide, which describes the routine and emergency provisions of a site-specific health and safety plan, shall be the primary reference used by the Performing Settling Defendant in developing and implementing the Health and Safety Plan.

The measures in the HSP shall be developed and implemented to ensure compliance with all applicable state and Federal occupational health and safety regulations. The HSP shall be updated at the request of EPA during the course of the RA and as necessary.

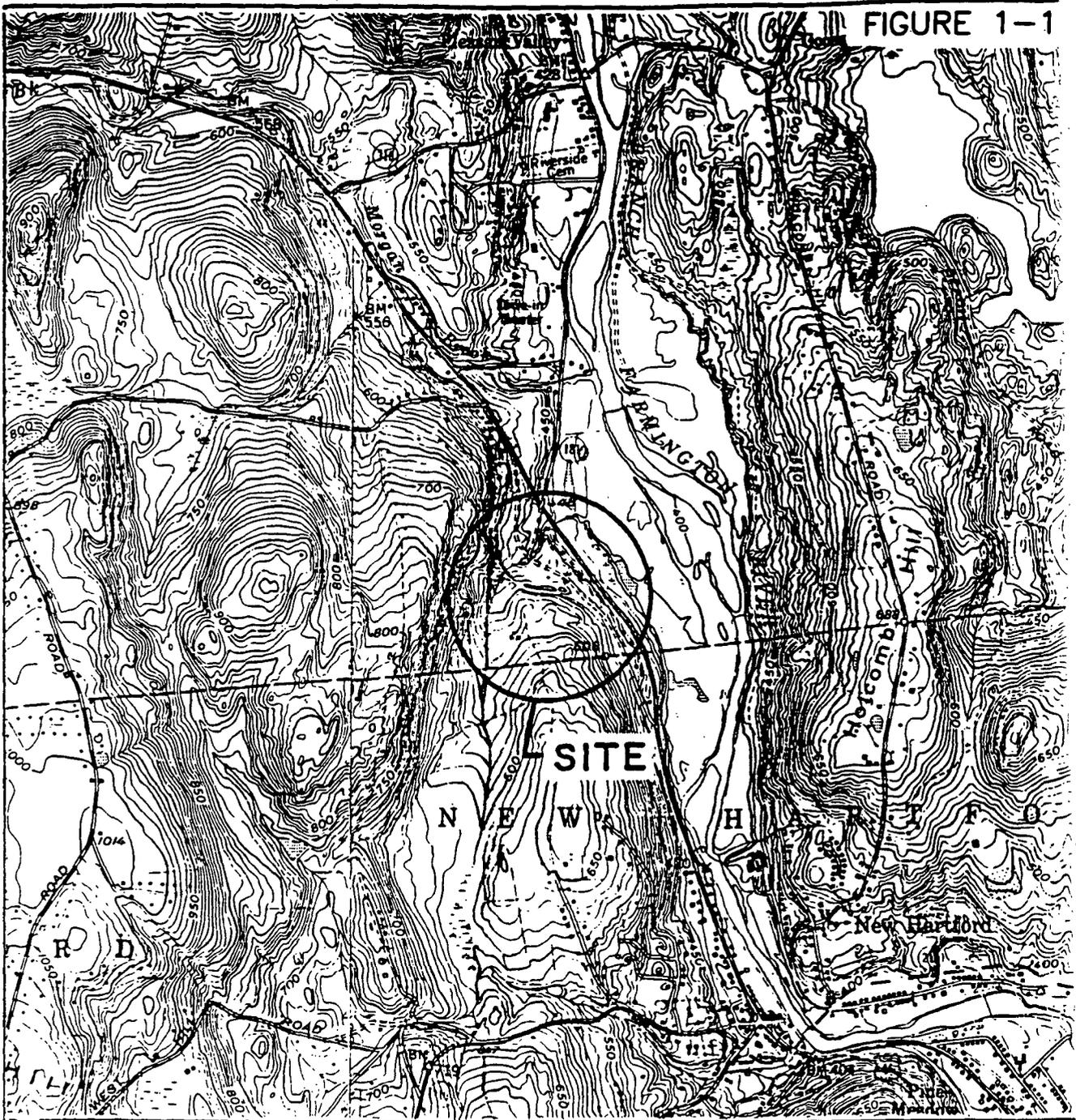
D. Community Relations Plan (CRP)

The Performing Settling Defendant shall develop a Community Relations Plan (“CRP”), whose objective is to inform the community of imminent or completed remedial action, the progress of the cleanup or potential Site hazards. This activities shall be at the request of EPA and include, but not limited to:

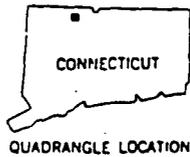
1. participation in public informational or technical meetings, including the provision of presentations, logistical support, visual aids and equipment;
2. publication and copying of fact sheets or updates
3. assistance in placing EPA public notices in print.

APPENDIX C

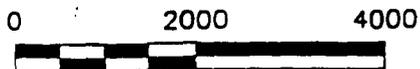
**Barkhamsted-New Hartford Landfill Superfund Site
Barkhamsted, CT**



BARKHAMSTED - NEW HARTFORD
LANDFILL SUPERFUND SITE



SITE LOCATION MAP



APPROX. SCALE IN FEET

ADAPTED FROM USGS WINSTED CONN. AND NEW HARTFORD CONN. QUADRANGLE
7.5 MINUTE SERIES, (1956 PHOTOREVISED 1984)



FIGURE 1-24



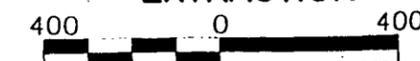
LEGEND

- RRDD#1 PROPERTY LINE
- TOWN LINE
- MW 55 MONITORING WELL LOCATIONS

NOTE: 1) 4-METHYLPHENOL PLUME HAS ATTENUATED TO CONCENTRATIONS BELOW THE INTERIM CLEANUP LEVEL
 2) PROPERTY OWNER INFORMATION IS BASED UPON PLATE 12 OF THE LANDFILL SITE INVESTIGATION REPORT (FUSS & O'NEILL, INC.)

**BARKHAMSTED-NEW HARTFORD
 LANDFILL SUPERFUND SITE
 BARKHAMSTED, CONNECTICUT**

**SIMULATED
 SHALLOW BEDROCK
 4-METHYLPHENOL PLUME
 15.9 YEARS AFTER
 LANDFILL CAPPING UNDER
 GROUND WATER
 EXTRACTION**



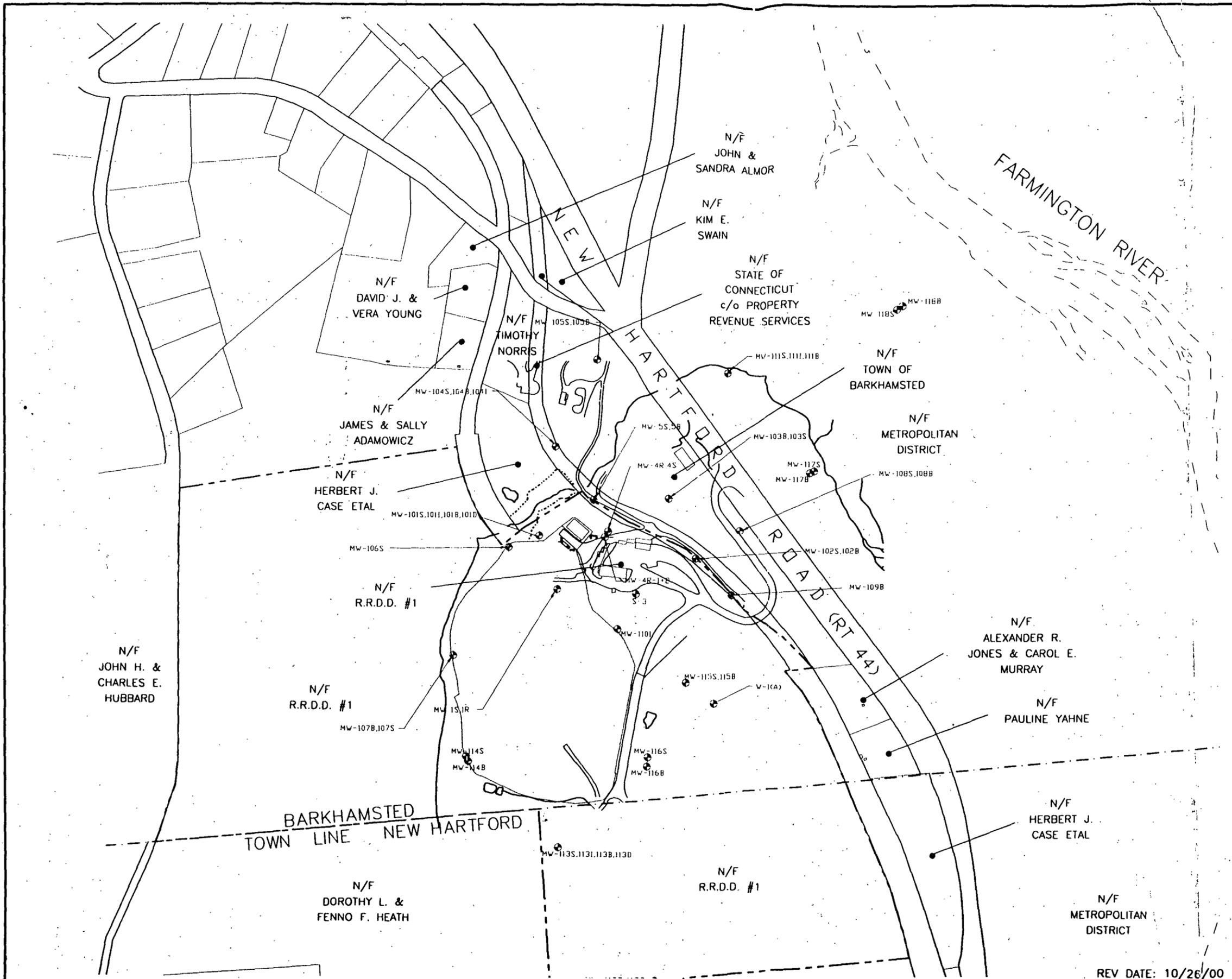
SCALE IN FEET

DATE: OCTOBER 2000

FILE NO. 5268.22708.047



REV DATE: 10/26/00



APPENDIX D

Settling Defendants

Performing Settling Defendant

- 1) Regional Refuse Disposal District No. 1 ("RRDD#1")

Contributing Settling Defendants

- 1) Axil Corporation
- 2) Banner Spring Corporation
- 3) Barden Corporation
- 4) BNB Manufacturing Company, Inc.
- 5) BPL, Inc.
- 6) Devrex Cutter Grinding, Inc.
- 7) Duralite Inc.
- 8) Dynamics Corporation of America, subsidiary of CTS Corporation
- 9) Fairchild Auto-Mated Parts, Inc.
- 10) Howmet Corporation
- 11) Ikon Office Solutions, Inc.
- 12) Kaman Music Corporation (Ovation Instruments Division)
- 13) Fred J. Potter Company
- 14) Manafort Brothers, Inc.
- 15) MedPointe Healthcare, Inc.
- 16) MSI Inc.
- 17) NewellRubbermaid, Inc.
- 18) Northwest Connecticut Manufacturing Company, Inc.
- 19) Phelps Dodge High Performance Conductors of SC & GA, Inc.
- 20) Pitney Bowes
- 21) Reynolds & Reynolds Company
- 22) SKF USA Inc.
- 23) Son-Chief Electrics, Inc.
- 24) Southport Industries, Inc.
- 25) Sterling Engineering Corporation
- 26) Sterling Name Tape Company
- 27) The Capital Product Company
- 28) The Hurley Manufacturing Company
- 29) Three-Five Systems, Inc.
- 30) TRW Inc.
- 31) T.S. Skilton and Sons

APPENDIX E

**NPL Listing Document
54 Fed. Reg. 41015**

**Barkhamsted-New Hartford Landfill Superfund Site
Barkhamsted, CT**

NATIONAL PRIORITIES LIST, NEW FINAL SITES (BY RANK), OCTOBER 1989

NPL		State	Site Name	City/County
Group ¹	Rank			
2	60	NJ	Brook Industrial Park.....	Bound Brook
3	138	CA	Brown & Bryant, Inc. (Arvin Plant).....	Arvin
5	224	NE	Lindsay Manufacturing Co.....	Lindsay
6	257	NC	National Starch & Chemical Corp.....	Salisbury
6	278	VA	Culpeper Wood Preservers, Inc.....	Culpeper
7	310	CA	Fairchild Semiconducts (S. San Jose).....	South San Jose
7	315	NY	Tri-Cities Barrel Co., Inc.....	Port Crane
8	385	IA	Electro-Coatings, Inc.....	Cedar Rapids
9	420	AZ	Motorola, Inc. (52nd Street Plant).....	Phoenix
9	424	VA	Buckingham County Landfill.....	Buckingham
9	429	IN	Prestolite Battery Division.....	Vincennes
13	639	CA	J.H. Baxter & Co.....	Weed
14	661	IL	Ilada Energy Co.....	East Cape Girardeau
14	664	TX	Dixie Oil Processors, Inc.....	Friendswood
14	678	MI	Kysor Industrial Corp.....	Cadillac
14	679	CA	Lorentz Barrel & Drum Co.....	San Jose
16	760	ME	Union Chemical Co., Inc.....	South Hope
16	765	PA	Recticon/Allied Steel Corp.....	East Coventry Twp
16	772	FL	City Industries, Inc.....	Orlando
16	796	NC	Benfield Industries, Inc.....	Hazelwood
17	850	WA	American Crossarm & Conduit Co.....	Chehalis
18	881	GA	Marzora Inc./Chevron Chemical Co.....	Tifton
18	876	MO	Conservation Chemical Co.....	Kansas City

* State top priority site.
¹ Sites are placed in groups corresponding to groups of 50 on the final NPL.
 Number of New Final Sites: 23.

[FR Doc. 89-23338 filed 10-3-89; 8:45 am]
 BILLING CODE 6560-50-M

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 300

[FRL 3655-6]

National Priorities List for Uncontrolled Hazardous Waste Sites—Final Rule 10/04/89

AGENCY: Environmental Protection Agency.

ACTION: Final rule.

SUMMARY: The Environmental Protection Agency ("EPA") is amending the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"), 40 CFR Part 300, which was promulgated on July 16, 1982, pursuant to section 105 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 ("CERCLA"). CERCLA has since been amended by the Superfund Amendments and Reauthorization Act of 1986 ("SARA") and is implemented by Executive Order 12580 (52 FR 2923, January 29, 1987). CERCLA requires that the NCP include a list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States, and that the list be revised at least annually. The National Priorities List ("NPL"), initially promulgated as Appendix B of the NCP

on September 8, 1983 (48 FR 40658), constitutes this list and is being revised today by the addition of 70 sites, including 11 Federal facility sites. Based on a review of public comments on these sites, EPA has decided that they meet the eligibility requirements of the NPL and are consistent with the Agency's listing policies. In addition, today's action removes four sites from the proposed NPL. Information supporting these actions is contained in the Superfund Public Dockets.

Elsewhere in this Federal Register is another final rule that adds 23 sites to the NPL that meet EPA's eligibility requirements and listing policies and removes 27 sites from the proposed NPL that do not, at this time, appear to come within the categories of Resource Conservation and Recovery Act ("RCRA") facilities that EPA considers appropriate for the NPL.

These two rules result in a final NPL of 981 sites, 52 of them in the Federal section; 213 sites are proposed to the NPL, 63 of them in the Federal section. Final and proposed sites now total 1,194.

EFFECTIVE DATE: The effective date for this amendment to the NCP shall be November 3, 1989. CERCLA section 305 provides for a legislative veto of regulations promulgated under CERCLA. Although *INS v. Chadhn* 402 U.S. 919, 103 S. Ct. 2764 (1983), cast the validity of the legislative veto into question, EPA has transmitted a copy of this regulation to the Secretary of the Senate and the Clerk of the House of Representatives. If any action by Congress calls the

effective date of this regulation into question, the Agency will publish a notice of clarification in the Federal Register.

ADDRESSES: Addresses for the Headquarters and Regional dockets follow. For further details on what these dockets contain, see Section I of the "Supplementary Information" portion of this preamble.

- Tina Maragousis, Headquarters, U.S. EPA CERCLA Docket Office, OS-245, Waterside Mall, 401 M Street, SW., Washington, DC 20460, 202/382-3046
- Evo Cunha, Region 1, U.S. EPA Waste Management Records Center, HES-CAN 6, J.F. Kennedy Federal Building, Boston, MA 02203, 617/565-3300
- U.S. EPA, Region 2, Document Control Center, Superfund Docket, 26 Federal Plaza, 7th Floor, Room 740, New York, NY 10278, Latchmin Serrano, 212/264-5540, Ophelia Brown, 212/264-1154
- Diane McCreary, Region 3, U.S. EPA Library, 5th Floor, 841 Chestnut Building, 9th & Chestnut Streets, Philadelphia, PA 19107, 215/597-0580
- Gayle Alston, Region 4, U.S. EPA Library, Room G-6, 345 Courtland Street, NE., Atlanta, GA 30365, 404/347-4210
- Cathy Freeman, Region 5, U.S. EPA, 5 HS-12, 230 South Dearborn Street, Chicago, IL 60604, 312/883-6214
- Deborah Vaughn-Wright, Region 6, U.S. EPA, 1445 Ross Avenue, Mail Code 6H-MA, Dallas, TX 75202-2733, 214/655-6740

TABLE 1.—NATIONAL PRIORITIES LIST, NEW FINAL SITES (BY RANK), OCTOBER 1989—Continued

	NPL	State	Site Name	City/County
	Group ¹ Rank			
10.....	473	FL	Sydney Mine Sludge Ponds.....	Brandon
10.....	474	NM	Cimarron Mining Corp.....	Carrizozo
10.....	489	MO	St Louis Airport/HIS/Fut Coatings.....	St. Louis County
10.....	497	RJ	Rose Hill Regional Landfill.....	South Kingstown
11.....	504	CT	Barkhamsted-New Hartford Landfill.....	Barkhamsted
11.....	513	FL	Chemform, Inc.....	Pompano Beach
11.....	516	SC	Lexington County Landfill Area.....	Cayce
11.....	519	UT	Utah Power&Light/American Barrel.....	Salt Lake City
11.....	546	VA	Saunders Supply Co.....	Chuckatuck
12.....	553	SC	Rochester Property.....	Travelers Rest
12.....	574	VT	Transistor Electronics, Inc.....	Bennington
12.....	585	DE	Dover Gas Light Co.....	Dover
12.....	590	PA	North Penn—Area 2.....	Hatfield
12.....	596	NM	Pagan Salvage.....	Los Lunas
13.....	601	CA	Fresno Municipal Sanitary Landfill.....	Fresno
13.....	615	CA	Jasco Chemical Corp.....	Mountain View
13.....	619	VA	Dixie Caverns County Landfill.....	Salem
13.....	635	PA	Bell Landfill.....	Terry Township
14.....	662	WI	Sauk County Landfill.....	Excelsior
14.....	677	CT	Durham Meadows.....	Durham
14.....	687	MO	Kem-Pest Laboratories.....	Cape Girardeau
14.....	696	MI	Albion-Sheridan Township Landfill.....	Albion
15.....	736	NC	Geigy Chemical Corp (Aberdeen Pft).....	Aberdeen
16.....	752	LA	D.L. Mud, Inc.....	Abbeville
16.....	762	CA	Montrose Chemical Corp.....	Torrance
16.....	785	CA	Synertek, Inc. (Building 1).....	Santa Clara
16.....	793	FL	Wingate Road Munic incmeral Dump.....	Fort Lauderdale
17.....	822	PA	Eastern Diversified Metals.....	Homstown
17.....	840	NJ	Witco Chemical Corp. (Oakland Pft).....	Oakland
18.....	870	GA	Firestone Tire (Albany Plant).....	Albany
18.....	889	TN	Mallory Capacitor Co.....	Waynesboro
19.....	910	DE	Sussex County Landfill No. 5.....	Laurel
19.....	927	PA	CryoChem, Inc.....	Worman

* State top priority site.
¹ Sites are placed in groups corresponding to groups of 50 on the final NPL.
 Number of New Final Sites: 59.

NATIONAL PRIORITIES LIST, FEDERAL FACILITY SITES, NEW FINAL (BY GROUP), OCTOBER 1989

NPL Group ¹	State	Site Name	City/County
1.....	WA	Hanford 200-Area (USDOE).....	Benton County
1.....	WA	Hanford 300-Area (USDOE).....	Benton County
1.....	CO	Rocky Flats Plant (USDOE).....	Golden
2.....	PA	Naval Air Develop Center (8 Areas).....	Warminster Township
2.....	OH	Wnght-Patterson Air Force Base.....	Dayton
6.....	WA	Hanford 100-Area (USDOE).....	Benton County
12.....	WA	Hanford 1100-Area (USDOE).....	Benton County
14.....	PR	Naval Security Group Activity.....	Sabana Seca
15.....	WA	Naval Undersea Warf Sta (4 Areas).....	Keyport
15.....	NC	Camp Lejeune Military Reservation.....	Onslow County
17.....	MD	Aber Prov Ground-Michaelsville Lf.....	Aberdeen

* State top priority site.
¹ Sites are placed in groups corresponding to groups of 50 on the final NPL.
 Number of New Final Federal Facility Sites: 11.

EPA read all comments received on these sites, including late comments. In past rules, EPA responded even to late comments. However, given the volume and number of late comments received and the need to make final decisions on all currently proposed sites prior to the date that the revised HRS takes effect.

EPA was not able to respond to all late comments received for sites in this rule. EPA has responded (in the Support Document) to those comments received no later than October 31, 1988 for all sites included in this final rule which were proposed in Updates #2, 3, 5, 6, and 7, and to those comments received

no later than September 12, 1989 for sites in this final rule which were proposed in Update #8. (EPA had previously indicated at the time of proposal of Update #7 and Update #8 that it may no longer be able to consider late comments (53 FR 23990, June 24, 1988 and 54 FR 19527, May 5, 1989)).

APPENDIX F

Draft Access and Institutional Controls Environmental Land Use Restrictions

**Barkhamsted-New Hartford Landfill Superfund Site
Barkhamsted, CT**

DECLARATION OF ENVIRONMENTAL LAND USE RESTRICTION AND GRANT OF EASEMENT

This Declaration of environmental land use restriction and Grant of Easement is made this day of, December 29, 1999, between Regional Refuse Disposal District No. 1 ("the Grantor") and the Commissioner of Environmental Protection of the State of Connecticut ("the Grantee").

WITNESSETH:

WHEREAS, Grantor is the owner in fee simple of certain real property (the "Property") known as Regional Refuse Disposal District No. 1 Route 44, Towns of Barkhamsted and New Hartford, designated as Lot 14A Block 18 on the tax map 49 of the Town of Barkhamsted, more particularly described on Exhibit A which is attached hereto and made a part hereof; and

WHEREAS, the Grantee has determined that the environmental land use restriction set forth below is consistent with regulations adopted by him pursuant to Section 22a-133k of the Connecticut General Statutes; and

WHEREAS, the Grantee has determined that this environmental land use restriction will effectively protect public health and the environment from the hazards of pollution; and

WHEREAS, the Grantee's written approval of this environmental land use restriction is contained in the document attached hereto as Exhibit B (the "Decision Document") which is made a part hereof; and

WHEREAS, the property or portion thereof identified in the class A-2 survey ("the Subject Area") which survey is attached hereto as Exhibit C which is made a part hereof, contains pollutants and

WHEREAS, to prevent exposure to or migration of such pollutants and to abate hazards to human health and the environment, and in accordance with the Decision Document, the Grantor desires to impose certain restrictions upon the use, occupancy, and activities of and at the Subject Area, and to grant this environmental land use restriction to the Grantee on the terms and conditions set forth below; and

WHEREAS, Grantor intends that such restrictions shall run with the land and be binding upon and enforceable against Grantor and Grantor's successors and assigns;

NOW, THEREFORE, Grantor agrees as follows:

1. Purpose. In accordance with the Decision Document, the purpose of this environmental land use restriction is to assure that the engineered control described in Exhibit D attached hereto is not disturbed and is properly maintained to prevent human exposure to soils at the Subject Area polluted with substances in concentrations exceeding the direct exposure criteria established in R.C.S.A. sections 22a-133k-1 through 22a-133k-3, inclusive, and/or that water does not infiltrate soils at the Subject Area polluted with substances in concentrations exceeding the pollutant mobility criteria established in R.C.S.A. sections 22a-133k-1 through 22a-133k-3, inclusive.

2. Restrictions Applicable to the Subject Area: In furtherance of the purposes of this environmental land use restriction, Grantor shall assure that use, occupancy, and activity of and at the Subject Area are restricted as follows:

A. Use. No residential use of the Subject Area shall be permitted.

B. Ground water. Ground water at the Subject Area shall not be used for drinking or other domestic purposes.

C. Disturbances. Soil at the Subject Area shall not be disturbed in any manner, including without limitation, excavation, trenching, and/or grading.

D. Construction. No building shall be constructed on the Subject Area.

3. Except as provided in Paragraph 4 below, no action at the Subject Area shall be taken, allowed, suffered, or omitted if such action or omission is reasonably likely to:

i. Create a risk of migration of pollutants or a potential hazard to human health or the environment; or

ii. Result in a disturbance of the structural integrity of any engineering controls designed or utilized at the Property to contain pollutants or limit human exposure to pollutants.

4. Emergencies. In the event of an emergency which presents a significant risk to human health or the environment, the application of Paragraph 3 above may be suspended, provided such risk cannot be abated without suspending such Paragraph and the Grantor:

i. Immediately notifies the Grantee of the emergency;

ii. Limits both the extent and duration of the suspension to the minimum reasonably necessary to adequately respond to the emergency;

iii. Implements all measures necessary to limit actual and potential present and future risk to human health and the environment resulting from such suspension; and

iv. Implements a plan approved in writing by the Grantee, on a schedule approved by the Grantee, to ensure that the Subject Area is remediated in accordance with R.C.S.A. sections 22a-133k-1 through 22a-133k-3, inclusive, or restored to its condition prior to such emergency.

5. Release of Restriction; Alterations of Subject Area. Grantor shall not make, or allow or suffer to be made, any alteration of any kind in, to, or about any portion of any of the Subject Area inconsistent with this environmental land use restriction unless the Grantor has first recorded the Grantee's written approval of such alteration upon the land records of Towns of Barkhamsted and New Hartford. The Grantee shall not approve any such alteration and shall not release the Property from the provisions of this environmental land use restriction unless the Grantor demonstrates to the Grantee's satisfaction that Grantor has remediated the Subject Area in accordance with R.C.S.A. sections 22a-133k-1 through 22a-133k-3, inclusive.

6. Grant of Easement to the Grantee. Grantor hereby grants and conveys to the Grantee, his agents, contractors, and employees, and to any person performing pollution remediation activities under the direction thereof, a non-exclusive easement (the "Easement") over the Subject Area and over such other parts of the Property as are necessary for access to the Subject Area or for carrying out any actions to abate a threat to human health or the environment associated with the Subject Area. Pursuant to this Easement, the Grantee, his agents, contractors, and employees, and any person performing pollution remediation activities under the direction thereof, may enter upon and inspect the Property and perform such investigations and actions as the Grantee deems necessary for any one or more of the following purposes:

i. Ensuring that use, occupancy, and activities of and at the Property are consistent with this environmental land use restriction;

ii. Ensuring that any remediation implemented complies with R.C.S.A. sections 22a-133k-1 through 22a-133k-3, inclusive;

iii. Performing any additional investigations or remediation necessary to protect human health and the environment;

iv. Ensuring the structural integrity of any engineering controls described in this Environmental land use restriction and Grant of Easement and their continuing effectiveness in containing pollutants and limiting human exposure to pollutants.

7. Notice and Time of Entry onto Property. Entry onto the Property by the Grantee pursuant to this Easement shall be upon reasonable notice and at reasonable times, provided that entry shall not be subject to these limitations if the Grantee determines that immediate entry is necessary to protect human health or the environment.

8. Notice to Lessees and Other Holders of Interests in the Property. Grantor, or any future holder of any interest in the property, shall cause any lease, grant, or other transfer of any interest in the Property to include a provision expressly requiring the lessee, grantee, or transferee to comply with this environmental land use restriction and Grant of Easement. The failure to include such provision shall not affect the validity or applicability to the Property of this environmental land use restriction and Grant of Easement.

9. Persons Entitled to Enforce Restrictions. The restrictions in this environmental land use restriction on use, occupancy, and activity of and at the Property shall be enforceable in accordance with section 22a-133p of the General Statutes.

10. Severability and Termination. If any court of competent jurisdiction determines that any provision of this environmental land use restriction or Grant of Easement is invalid or unenforceable, such provision shall be deemed to have been modified automatically to conform to the requirements for validity and enforceability as determined by such court. In the event that the provision invalidated is of such nature that it cannot be so modified, the provision shall be deemed deleted from this instrument as though it had never been included herein. In either case, the remaining provisions of this instrument shall remain in full force and effect. Further, in either case, the Grantor shall submit a copy of this restriction and of the judgement of the Court to the Grantee in accordance with R.C.S.A. section 22a-133q-1(1). This environmental land use restriction shall be terminated if the Grantee provides notification pursuant to R.C.S.A. section 22a-133q-1(1).

11. Binding Effect. All of the terms, covenants and conditions of this environmental land use restriction and grant of easement shall run with the land and shall be binding on the Grantor, the Grantor's successors and assigns, and each owner and any other party entitled to possession or use of the Property during such period of ownership or possession.

12. Terms Used Herein. The definitions of terms used herein shall be the same as the definitions contained in sections 22a-133k-1 and 22a-133q-1 of the Regulations of Connecticut State Agencies as such sections existed on the date of execution of this environmental land use restriction.

EXHIBIT B**ENVIRONMENTAL LAND USE RESTRICTIONS (ELUR)
DECISION DOCUMENT****Site description**

The Site is a landfill located adjacent to and southwest of Route 44 within the Towns of Barkhamsted and New Hartford, Connecticut. The landfill, owned and operated by Regional Refuse Disposal District #1 (RRDD #1), had been used for solid waste disposal since April 1974 under a Solid Waste Permit (#005-2L) from the Connecticut Department of Environmental Protection (CTDEP) for operation of a sanitary landfill. RRDD#1 is a corporate entity created by the communities Barkhamsted, Colebrook, New Hartford, and Winchester. Since 1988, until discontinuance of landfilling operations in October 1993, use of the landfill consisted of non-processible and bulky waste disposal, community recycling collection, and yard waste composting.

Site history/Operational background

The Barkhamsted Site was utilized for the disposal of solid waste between April 1974 and August 1988. Since August 1988, the landfill has been utilized only for the disposal of bulky and non-processible waste with the exception of a period during November and December 1988 when the CRRA Mid-Connecticut Waste to Energy Plant was inoperable. Recycling activities have been conducted at the site since it was opened.

RRDD#1 was formed in May 1970 by the communities of Barkhamsted, Colebrook, New Hartford, and Winchester. On September 21, 1972, RRDD#1 received CTDEP solid waste permit #005-2L based on plans prepared by W.G. Weaver and Associates (1971 and 1971) and the Barkhamsted Property was subsequently purchased on September 27, 1972. According to these plans, landfilling was to occur in a 24.7-acre area bounded on the west by a 50-foot buffer along the Unnamed Brook, the town line on the south, and the eastern portion of the railroad right of way on the east. The bulky waste disposal area, or stump dump, was to be separated from the main disposal area. This area was to be north of the landfill operation building at a location which is currently paved between the landfill office and the transfer station. The original Weaver plans also called for the construction of a fluid pit, although a location was not specified. The plans called for the construction of terraces with a grade of two percent to be formed by flattening the natural slopes. Individual cells were to be constructed on the terraces, with solid waste landfilling to be initiated on the western side of the northern toe of the existing landfill. Cell construction required 6 inches of cover between the cells. Filling was to proceed east along the front of the landfill and then proceed to the south.

An amendment to the RRDD#1 solid waste permit was issued on January 17, 1974, following submission of a revised operation and management plan dated January 2, 1974. The amendment addressed modifications to service area and entrance road designs as well as to the stump and brush disposal area. The amended permit required that all wastes with the exception of stumps and brush be excluded from a 50-foot wide zone between the Unnamed Brook and the landfill. No refuse was to be allowed to come into contact with the Unnamed Brook.

The landfill became operational in April 1974. According to CTDEP solid waste landfill inspection reports from the period of 1974 to 1979, problems were reported regarding a lack of daily cover material. Bulky wastes and brush were noted and the wastes were frequently left uncovered. Ponding of water on the landfill surface was also reported to be a problem. The ponding of water is believed to have created an increase in the amount of leachate resulting from the infiltration of water. Brush and bulky waste were

observed to be encroaching on the 50-foot buffer zone which had been established between the landfill and the Unnamed Brook in the original plans for the landfill.

In 1981, the USEPA conducted a preliminary assessment for the site based on a 1980 CTDEP inspection, and recommend that a site inspection take place. USEPA's site inspection reported that a ground water sample collected and analyzed prior to the site inspection contained total xylene (92 ppb), toluene (870 ppb), 1,1-dichloroethane (86 ppb), 4-methyl-2-pentanone (1700 ppb), and vinyl chloride (170 ppb). In addition, the site inspection reported that industrial oily metal grinding sludges disposed of at the site contained cadmium, chromium, copper, lead, manganese, nickel and zinc. Leachate from the landfill was observed discharging into the Unnamed Brook during this site inspection.

A modification to the landfill operating permit was issued on December 16, 1983 based on an updated Operation and Maintenance Plan prepared by Roger H. Whitney, Inc. in 1982 and updated in 1983. According to this updated plan, landfilling of solid waste was to be limited to an area bounded by the Unnamed Brook buffer on the west, the town line on the south, the main access road on the east, and the railroad right of way on the north. This plan also allowed for a 1,000-foot buffer zone between the landfill and a domestic well located to the east on U.S. Route 44. Therefore, the area available for landfilling was reduced to approximately 10 acres. The plan called for filling to be conducted by constructing cells 9 feet high and 35 feet wide. Cell construction was to be initiated at the northern portion of the landfill, proceeding from east to west with rows of cells to be constructed from north to south. The direction of row construction was to be reversed following completion of the fourth lift of cells.

On February 27, 1990, a minor amendment was granted to the RRDD#1 solid waste permit allowing the landfill to accept dewatered sludge from the Winsted Publicly Owned Treatment Works (POTW). The sewage sludge was brought to the site and incorporated into the landfill cover material.

Landfill closure was implemented in November 1992 in accordance with the Landfill Closure Plan (Fuss & O'Neill 1992). In addition, water quality monitoring was revised in accordance with a minor amendment to Permit No. SW-0005-2L). RRDD#1 ceased accepting wastes for on-site disposal in October 1993. Final landfill closure was approved by CTDEP in January 1995.

A Remedial Action Plan (RAP) was developed and approved by the CTDEP and USEPA in 1997. The RAP included the construction of a cap and leachate collection system to contain the waste located at the site. The construction of the cap and leachate collection system was completed in June 1999.

Landfill waste characterization

Industrial wastes, including metal grinding waste, oily sludge with metal grinding and degreasers, barrels containing unspecified amounts of chlorinated hydrocarbons and methyl-ethyl-ketone, and keratin (a food processing waste) were accepted at the site. Dry metal grinding waste was utilized on site roads and incorporated into the landfill daily cover. CTDEP records state that an industrial waste pit was operated at the site during the first year of landfill operation (Fuss & O'Neill, 1991b). Information on the pit location, materials placed in the pit, and its duration of use is limited. Fuss & O'Neill reported that a 1988 CTDEP document refers to chemical pit operation in the 1970s that received "oily sludge with metal grindings and degreasers". A drum crushing operation was reportedly located proximal to a scrap metal area north of the toe of the landfill and northwest of the landfill garage. The 1988 CTDEP document states that one half of the barrels received at the site contained unspecified amounts of chlorinated hydrocarbons or methyl-ethyl-ketone. There are also reports of the rejection of wastes, such as cutting oils, from the landfill during 1974. The time period for which the waste pit was utilized and its location are not precisely known. Reference was made to the location of the waste pit near the existing metal grinding deposit area at the north toe of the landfill in 1974. Metal grinding wastes also appear to have

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been disposed of at a variety of locations at the site, including north of the toe of the landfill, in the vicinity of a stone arch, and on roadbeds to the east of the landfill. Metal grinding wastes were also used as daily cover on the landfill. Therefore, the location of the industrial waste pit cannot be accurately identified.

The types and quantities of industrial wastes handled at the site were not well documented in RRDD#1 records. In March 1981, RRDD#1 was requested by the CTDEP to eliminate hazardous waste from the facility. In July 1981, the CTDEP formally approved metal grinding waste for disposal at RRDD#1 since testing indicated that these wastes were not characteristically hazardous. The CTDEP stipulated that the metal grinding wastes be kept separate from other refuse. A cell for metal grinding wastes was specified in the operational plans originally prepared by Roger H. Whitney, Inc. in 1982. This cell was to be constructed at the southern portion of the landfill, and metal grindings which had been deposited on an unnamed access road on the eastern portion of the site were scheduled to be relocated to this cell. The cover material in the metal grinding cell was to consist of a soil-lime mixture in order to raise the pH and minimize metal leaching to the subsurface. The plan also proposed that the metal grinding wastes be mixed with cover materials in the cells due to the non-hazardous nature of these materials. A new metal grindings cell was required by the middle of 1984. At that time, some metal grindings were apparently stored on-site in 55-gallon drums. Existing documents report that metal grinding waste was sometimes received heated and placed in piles exceeding 10 feet in height.

In 1983, two complaints were received concerning the presence of a large number of drums at the landfill. The first complaint, in April 1983, resulted in CTDEP requesting that 25 drums, which reportedly contained used motor oil, be relocated from the vicinity of the oak tree southeast of the landfill to a paved area on-site. Fuss & O'Neill reported that the CTDEP collected a composite sample from the drums. The sample reportedly exhibited a low flashpoint (77 C) and relatively high levels of lead and cadmium. In November 1983, at least 30 drums were found proximal to the scrap metal area north of the toe of the landfill and northwest of landfill garage. Approximately twenty of these drums reportedly contained styrene and were removed from the site with CTDEP approval. A representative of Pitney Bowes indicated that the contents of the remainder of the drums were not hazardous. The drums were scheduled for crushing, an operation which was apparently centered in this area of the site. Following investigation into this complaint, the CTDEP formally notified RRDD#1 that the landfill could not accept hazardous materials for storage or disposal. The landfill, however, has accepted waste oil for recycling throughout its operation. Handling of both waste oil and batteries for recycling was reported to and acknowledged by the CTDEP in September 1986.

In 1989 a 4,000 gallon underground storage tank (UST) which reportedly contained diesel fuel was removed and replaced with an above ground 2,000 gallon storage tank (AST). The UST was located west to northwest of the landfill office building beneath what is now the landfill maintenance building. No indication of petroleum release was recorded at the time of removal.

Restrictions applied to the landfill site

Activities within the limits of the landfill cap and leachate collection system located inside of the 6-foot high chain link fence ("Subject Area") will be restricted to operation and maintenance, including mowing, well sampling, and repair of the cap system as required. Activities that are not a part of the operation and maintenance activities will not be allowed within the limits of the Subject Area without prior approval from the CTDEP. No residential, commercial or industrial activities will be allowed within the limits of the Subject Area.

Reason for the ELUR

The approved RAP for the site consisted of the construction of a cap and leachate collection system. The cap was designed to minimize precipitation infiltration and potential exposure to the waste. The leachate

collection system was designed to collect leachate from the landfill side slopes. Taking the RAP and Connecticut Regulation 22a-133k-2(f)(2)(B)(iv) into consideration, the reason for implementation of an ELUR is to prevent disturbance, maintain, and protect the integrity of the approved engineered control. The ELUR will ensure that the integrity of the engineered control is not compromised in the future. The ELUR will also ensure that the ELUR Area is not used for any residential, industrial or commercial activity in the future.

I:/div71/projects/6455002/5/decision document.doc

EXHIBIT D

ENVIRONMENTAL LAND USE RESTRICTIONS (ELUR) ENGINEERED CONTROL DESCRIPTION

The engineered controls for the Barkhamsted Site includes a landfill cap system and a leachate collection system. The landfill cap system was installed over the waste materials to minimize direct contact with the waste materials and to reduce the amount of leachate being generated by the infiltration of incident precipitation. The leachate collection system was installed to collect leachate expressed as surface outbreaks, thus protecting the integrity of the cap and adjacent surface waters. The storage system provides containment and storage of collected leachate for periodic removal and disposal.

Landfill Cap

A landfill cap was installed at the Barkhamsted Site, as shown on Exhibit C attached herewith. The landfill cap installed at the Site consists of the following, from the bottom up:

- *Base layer.* To the maximum extent possible, the existing 2-ft thick landfill cover reportedly installed and completed in October 1994 was utilized as the base layer component of the landfill cap. The surface of the existing cover was prepared for use by clearing and grubbing vegetation, and scraping up to 6-in of embankment material to provide a surface that was free of organic, irregularities, protrusions, and any abrupt changes in grade that could damage the geocomposite gas venting layer.
- *Geocomposite gas venting layer.* A geocomposite gas venting layer consisting of a geonet bonded on each side by a non-woven, needle-punched geotextile was installed over the base layer. The geocomposite gas venting layer has the dual purpose of venting gas generated from the decomposing municipal solid wastes and conveying leachate generated from side-slope seeps to the perimeter leachate collection trench.
- *Low-permeability barrier layer.* A 12-in silty sand layer, having a maximum permeability of 1×10^{-4} cm/sec, was installed above the geocomposite gas venting layer. The silty sand layer is the lower component of a two-component low-permeability barrier system designed to divert or impede the vertical percolation of water coming into contact with it.
- *Flexible membrane cover.* The flexible membrane cover (FMC) consists of a 40-mil textured linear low density polyethylene (LLDPE) geomembrane. The flexible membrane cover is the upper component of a two-component low-permeability barrier system designed to divert or impede the vertical percolation of water coming into contact with it.
- *Geocomposite drainage layer.* A geocomposite drainage layer consisting of a geonet bonded on each side by a non-woven, needle-punched geotextile was installed above the flexible membrane cover. The geocomposite was installed to intercept water from

precipitation that percolates down through the layers above, and to transport this water to a safe discharge outlet.

- *Frost protection layer.* An 18-in thick frost protection layer was installed over the geocomposite drainage layer. The frost protection layer provides support to the vegetative layer and protects the flexible membrane cover from external forces.
- *Vegetated topsoil layer.* A 6-in topsoil layer was placed above the frost protection layer and then vegetated. The vegetated top soil layer provides adequate water-holding capacity to attenuate rainfall/snowmelt infiltration to the drainage layer, sustain vegetation through dry periods, and minimize the potential for surface crack formation and erosion.

Leachate collection and storage system

A leachate collection system was installed along the eastern, western, and northern perimeter of the landfill cap system. The leachate collection system consists of a trench backfilled with crushed stone. The collection trench is lined with a geotextile filter fabric to minimize the migration of fine-grained materials into the trench. The bottom and outboard sides of the leachate collection trench are lined with a geomembrane liner in addition to the geotextile filter fabric. Perforated 6-in diameter high density polyethylene (HDPE) pipe is installed in the trench to convey collected leachate to the leachate storage system. A minimum of 4.5 ft of cover was placed over the pipe invert to protect the pipe from frost action. The geocomposite gas venting layer of the cap system is tied into the leachate collection trench so that surface seeps will be conveyed through the gas venting layer into the collection trench.

The leachate collection trench was installed in two sections that share a common low point (MH-4). One section starts at its high point (MH-1) and is sloped down-gradient to the low point (MH-4) located near the existing office and recycling area. The other section starts at its high point (MH-7) and is sloped down-gradient to the shared low point (MH-4).

Collected leachate flows by gravity through the collection system. Manholes were installed along the leachate collection system at 300 ft intervals and at major changes in grade or direction to permit inspection and cleaning. HDPE manholes were used in lieu of concrete to minimize the potential buildup of solids which may precipitate from the leachate.

From the shared low point (MH-4) of the two sections of the leachate collection system, leachate flows by gravity through a solid 6-in diameter HDPE carrier pipe, contained within a 10-inch diameter HDPE secondary containment pipe (normally dry), to the emergency shut-off valve vault. At the emergency shut-off valve vault, the secondary containment pipe is terminated to accommodate the overflow pipe and a 6-in diameter motor-operated pinch valve. A sump with a stem-type float is provided in the emergency shut-off valve vault to detect leaks that may occur in the piping upstream or within the emergency shut-off valve vault. The main control panel used to control the emergency shutoff valve is located adjacent to the emergency shutoff valve vault.

With the emergency (pinch) valve in its normally open position, the leachate is directed by gravity through a 3-in diameter solid HDPE carrier pipe contained within a 6-in diameter HDPE secondary containment pipe to a 15,000 gallon, buried, double-walled, horizontal storage tank, located behind the maintenance and office building, as shown on Exhibit C.

When the emergency (pinch) valve is in the closed position, leachate builds up in the solid leachate collection pipe towards MH #4 until the liquid level is high enough to cause leachate to be directed into the overflow pipe (located within the emergency shut-off valve vault, immediately upstream of the emergency pinch valve) and into the 100,000 gallon temporary storage pond.

The piping between the emergency valve vault and the buried tank is secondarily contained. Secondary containment is terminated at the tank within the secondary containment chambers. Piping is connected at the manhole lids within secondary containment chambers. A leak sensor is provided within the secondary containment chamber. Piping within the chamber is single walled, and the pipes leaving the tank are contained within double walled piping systems with the transition from single-walled to double-walled occurring either within the secondary containment chamber, or above grade.

The underground storage tank is equipped with: a 3-in fill line; a continuous liquid level monitor; a high level float switch; a 3-in vent line; a 4-in manual gauging station; an interstitial leak detection system to monitor the interstitial space between the inner and outer shell of the tank; and a 3-in withdrawal port.

The underground storage tank also contains a level alarm system to notify operations personnel by alarm. The tank level alarm system is programmed to indicate high liquid level in the storage tank. A moisture sensing, interstitial leak detection system is installed within the tank. The leak detection system will communicate with the operations personnel in conjunction with the tank level alarm system.

DECLARATION OF ENVIRONMENTAL LAND USE RESTRICTION
AND GRANT OF EASEMENT

This Declaration of environmental land use restriction and Grant of Easement is made this _____ day of _____, _____, between The Town of Barkhamsted ("the Grantor") and the Commissioner of Environmental Protection of the State of Connecticut ("the Grantee").

WITNESSETH:

WHEREAS, Grantor is the owner in fee simple of certain real property (the "Property") known as Town of Barkhamsted, Town Garage, Route 44, located in the Town of Barkhamsted, Litchfield County designated as Map # 49, Block # 18, Lot # 10 on the tax map of the Town of Barkhamsted, Litchfield County, more particularly described on Exhibit A which is attached hereto and made a part hereof; and

WHEREAS, the Grantee has determined that the environmental land use restriction set forth below is consistent with regulations adopted by him pursuant to Section 22a-133k of the Connecticut General Statutes; and

WHEREAS, the Grantee has determined that this environmental land use restriction will effectively protect public health and the environment from the hazards of pollution; and

WHEREAS, the Grantee's written approval of this environmental land use restriction is contained in the document attached hereto as Exhibit B (the "Decision Document") which is made a part hereof; and

WHEREAS, the groundwater beneath the property or portion thereof identified in the class A-2 survey ("the Subject Area") which survey is attached hereto as Exhibit C which is made a part hereof, contains pollutants; and

WHEREAS, to prevent exposure to or migration of such pollutants and to abate hazards to human health and the environment and in accordance with the Decision Document, the Grantor desires to impose certain restrictions upon the use, occupancy, and activities of and at the Property, and to grant this environmental land use restriction to the Grantee on the terms and conditions set forth below; and

WHEREAS, Grantor intends that such restrictions shall run with the land and be binding upon and enforceable against Grantor and Grantor's successors and assigns;

NOW, THEREFORE, Grantor agrees as follows:

1. Purpose. In accordance with the Decision Document, the purpose of this environmental land use restriction is to assure that the groundwater at the Property is not utilized for drinking or other purposes.

2. Restrictions Applicable to the Subject Area. In furtherance of the purposes of this environmental land use restriction, Grantor shall assure that use, occupancy, and activity of and at the Property are restricted as follows:

A. Groundwater. Groundwater at the Property shall not be used for drinking or other purposes.

3. Except as provided in Paragraph 4 below, no action shall be taken, allowed, suffered, or omitted if such action or omission is reasonably likely to:

i. Create a risk of migration of pollutants or a potential hazard to human health or the Environment.

4. Emergencies. In the event of an emergency which presents a significant risk to human health or the environment, the application of Paragraphs 2 and 3 above may be suspended, provided such risk cannot be abated without suspending such Paragraphs and the Grantor:

- i. Immediately notifies the Grantee of the emergency;
- ii. Limits both the extent and duration of the suspension to the minimum reasonably necessary to adequately respond to the emergency;
- ii. Implements all measures necessary to limit actual and potential present and future risk to human health and the environment resulting from such suspension; and
- iii. Implements a plan approved in writing by the Grantee, on a schedule approved by the Grantee, to ensure that the Subject Area is remediated in accordance with R.C.S.A. sections 22a-133k-1 through 22a-133k-3, inclusive, or restored to its condition prior to such emergency.

5. Release of Restriction; Alterations of Property. Grantor shall not make, or allow or suffer to be made, any alteration of any kind in, to, or about any portion of any of the Property inconsistent with this environmental land use restriction unless the Grantor has first recorded the Grantee's written approval of such alteration upon the land records of Barkhamsted, Connecticut. The Grantee shall not approve any such alteration and shall not release the Property from the provisions of this environmental land use restriction unless the Grantor demonstrates to the Grantee's satisfaction that the Property has been remediated in accordance with R.C.S.A. sections 22a-133k-1 through 22a-133k-3, inclusive.

6. Grant of Easement to the Grantee. Grantor hereby grants and conveys to the Grantee, his agents, contractors, and employees, and to any person performing pollution remediation activities under the direction thereof, a non-exclusive easement (the "Easement") over the Property as are necessary for access to the Property or for carrying out any actions to abate a threat to human health or the environment associated with the Property. Pursuant to this Easement, the Grantee, his agents, contractors, and employees, and any person performing pollution remediation activities under the direction thereof, may enter upon and inspect the Property and perform such investigations and actions as the Grantee deems necessary for any one or more of the following purposes:

- i. Ensuring that use, occupancy, and activities of and at the Property are consistent with this environmental land use restriction;
- ii. Ensuring that any remediation implemented complies with R.C.S.A. sections 22a-133k-1 through 22a-133k-3, inclusive;
- iii. Performing any additional investigations or remediation necessary to protect human health and the environment;

7. Notice and Time of Entry onto Property. Entry onto the Property by the Grantee pursuant to this Easement shall be upon reasonable notice and at reasonable times, provided that entry shall not be subject to these limitations if the Grantee determines that immediate entry is necessary to protect human health or the environment.

Personally appeared _____, _____ of _____,
signer and sealer of the foregoing instrument, and acknowledged the same to be his/her free act and
deed, and the free act and deed of said corporation, before me.

Notary Public/Commissioner of the Superior Court

Date

Arthur J. Rocque, Jr.
Commissioner of Environmental Protection

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF CONNECTICUT

FILED
JUN 19 12 04 PM '03
U.S. DISTRICT COURT
NEW HARTFORD, CONNECTICUT

UNITED STATES OF AMERICA,)
)
)
Plaintiff,)
)
v.)
)
REGIONAL REFUSE DISPOSAL)
DISTRICT NO. 1, *et al.*,)
)
Defendants.)

CIVIL ACTION NO.

303CV0084 PCD

NOTICE OF LODGING

Plaintiff, the United States of America, hereby notifies the Court that it is lodging herewith, on the same date it is filing the Complaint herein, a Consent Decree for the recovery of costs incurred, and for the performance of response actions at the Barkhamsted-New Hartford Landfill Superfund Site ("Site") located adjacent to and southwest of Route 44, in the Towns of Barkhamsted and New Hartford, Connecticut. This suit was filed pursuant to Sections 106(a), 107(a), 107(l), and 113 of the Comprehensive Environmental Recovery and Liability Act of 1980 ("CERCLA"), as amended, 42 U.S.C. §§ 9606, 9607, and 9613. The Consent Decree is being lodged with the Court pending solicitation and consideration of public comments.

Consistent with Department of Justice policy, 28 C.F.R. § 50.7, and 42 U.S.C. § 9622(d), the Department of Justice will publish in the Federal Register a notice of the lodging of this Consent Decree. This publication will initiate a required 30 day comment period. The United States will advise the Court when the public comment period has expired. During the pendency

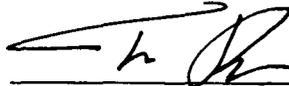
of the public comment period, no action is required of the Court.

After the close of the public comment period, the United States will evaluate any comments received and will move for entry of the Consent Decree, unless the comments disclose facts or considerations which indicate that the proposed Decree is inappropriate, improper or inadequate.

Respectfully submitted,

THOMAS L. SANSONETTI
Assistant Attorney General
Environment and Natural Resources Division
U.S. Department of Justice
Washington, D.C. 20530

1/7/03
Date



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