



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

20712

REGION I

J.F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203-2211

Re-Solve
8.3

Date : July 20, 1993

Subject : Five Year Review - ReSolve, Inc.

From : Richard Cavagnero, Chief, Mass I Superfund Section

Through : Larry Brill, Chief, MA Waste Management Branch

To : Merrill S. Hohman, Director, Waste Management Division

The Five Year Review Report for the ReSolve, Inc. Site in North Dartmouth, MA has been completed and is presented herein for your signature. This Policy Review, as opposed to Statutory Review, was triggered by the December 12, 1983 RA start date for the First operable unit remedial action, which involved the excavation and offsite disposal of approximately 15000 cubic yards of soils and sediments. As you know, the Region concluded at the end of that Remedial Action that extensive residual contamination existed and that further remedial action would be necessary. A second ROD was signed in September of 1987 and Remedial Action is now underway pursuant to a Consent Decree entered on May 31, 1989.

Thus, since the Region had already determined that the First Operable Unit Remedial Action was not fully protective of human health and the environment and that additional remedial action would be necessary, this Five Year Review was a very limited, Level I analysis. It compared the exposure scenarios/land use, cleanup levels, and ARARs selected in the 1987 ROD versus current information. There have been no significant changes to ARARs or land use since the 1987 ROD and the Report concludes that the selected remedy should be protective upon completion of implementation.

Merrill S. Hohman
Approved *ACTING DIR*

Disapproved



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**FINAL
FIVE YEAR REVIEW REPORT**

TECHNICAL ASSISTANCE

**RE-SOLVE, INC. SUPERFUND SITE
NORTH DARTMOUTH, MASSACHUSETTS**

**Halliburton NUS Environmental Corporation
and
Badger Engineers, Inc.**

**EPA Work Assignment No. 35-1R18
EPA Contract No. 68-W8-0117
HNUS Project No. 2371**

June 1993



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FINAL
FIVE-YEAR REVIEW REPORT

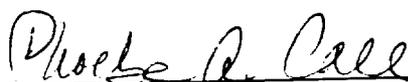
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1.0 INTRODUCTION

As requested by EPA through Halliburton NUS Environmental Corporation (HNUS) under Contract No. 68-W8-0117, Badger Engineers, Inc. (BEI) conducted a five-year review of the remedial action selected for the Re-Solve, Inc. Superfund Site in North Dartmouth, Massachusetts. Pursuant to Section 121 (c) of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), as amended, and Section 300.430 (f) (4) (ii) of the National Oil and Hazardous Substances Pollution Contingency Plan, reviews are mandated for all remedial actions which result in any hazardous substances remaining at the site. Reviews are conducted at least every five years after the initiation of the remedial action to assure that human health and the environment are being protected by the implemented remedial action.

The activities conducted for the five-year review were based on the Scope of Work prepared by EPA and dated August 14, 1992 and on the Draft Work Plan, Five-Year Review, Re-Solve, Inc. Site, prepared by HNUS and BEI and dated October 1992. Work conducted for this review was authorized under Work Assignment No. 35-1R18.

This five-year review was conducted because a Record of Decision (ROD) was signed for the Site in September 1987. Remedial design activities for the selected remedy are currently ongoing. The source control full-scale remedial action will begin later this year and is expected to be completed approximately two years later. The management of migration full-scale remedial action will begin following completion of the source control remedial action and is expected to last approximately ten years.

1.1 Scope of the Five-Year Review

Activities conducted to complete the five-year review included:

- Document Review: Applicable site-related documents were reviewed to become familiar with the site history and status. The following documents or files were reviewed:
 - Records of Decision signed on July 1, 1983 and on September 24, 1987;
 - Consent Decree (May 31, 1989);
 - Administrative Record (EPA Records Center); and
 - Available analytical results to date on influent and effluent soil samples from the soil treatment unit, influent and effluent water and effluent air samples from the water

treatment plant (used during the source control remedy), influent and effluent water samples from the management of migration pilot test, and air samples collected and air monitoring during intrusive site activities.

- Standards/ARARs Review: Federal regulations which were listed in the ROD were reviewed by BEI and updated by EPA with revisions promulgated subsequent to the implementation of the 1987 ROD, with respect to site-related contaminants of concern and components of the remedy listed in the ROD. State standards and regulations are under review by the Massachusetts Department of Environmental Protection (MADEP). Once completed, this information may be addressed by EPA, as appropriate, through another mechanism. Selected EPA Region I officials were interviewed regarding pertinent regulatory revisions promulgated subsequent to the 1987 ROD. The purpose of this review was to ensure that the selected remedy remains protective of human health and the environment, in light of revised standards such as lowered MCLs. Table 3-1 presents the applicable standards as listed in the 1987 ROD, with revisions effective as of January 1993.
- Building Inspector/Zoning Enforcement Officer and Planning Board Director Interviews: The Town of Dartmouth Building Inspector/Zoning Enforcement Officer and Planning Board Director were interviewed concerning the current site zoning and any proposed changes.

1.2 Description of the Remedy

In July 1983, a Record of Decision (ROD) was approved by the U.S. EPA Regional Administrator for the selection of a remedial action for the Re-Solve, Inc. Superfund Site (Site). This ROD called for a remedial action involving the excavation of approximately 15,000 cubic yards of PCB-contaminated soils for off-site disposal. Because studies conducted to evaluate the effectiveness of the remedial action indicated that extensive PCB contamination remained, the remedial action was terminated in 1985. Further investigation was undertaken to further define the extent of on-site PCB contamination and resulted in the signing of a second ROD in September 1987.

The selected remedy described in the 1987 ROD is "a comprehensive approach for site remediation which includes both a source control and management of migration component. The source control component entails:"

- "Excavation of 22,500 cubic yards of PCB-contaminated soils located in the unsaturated zone and treatment on-site in a mobile dechlorination facility. The health-based cleanup level for on-site soils contaminated with PCBs is 25 ppm. This cleanup level corresponds to a 10^{-5} cancer risk level. Soils will be treated in the dechlorination facility to a level of 25 ppm PCBs and then placed back on-site."
- "Excavation of 3000 cubic yards of PCB-contaminated sediments located in wetland resource areas to the north and east of the site and treatment on-site in the mobile dechlorination facility. The cleanup level for PCB-contaminated sediments is 1 ppm. Achievement of the target cleanup level will require the disturbance and temporary loss of areas classified as wetlands. The unavoidable impacts to these resource areas will be mitigated to the maximum extent possible and following such activities, a wetland restoration program will be implemented."
- "If dechlorination, based on the results of the pilot-scale studies is determined not to be implementable at the Re-Solve site, EPA will select on-site incineration as the principal treatment technology for this component of the selected remedy."
- "It is estimated that it will take two (2) years to treat 25,500 cubic yards of PCB-contaminated soils and sediments. This estimate is for construction/operation time only, and does not include the time for design, bidding and awarding of the construction contract."

"The management of migration component will be implemented upon completion of the source control component. This component entails:

- Active restoration of the overburden and bedrock aquifers contaminated with volatile organic compounds (VOCs) using on-site treatment involving air stripping and carbon adsorption. Groundwater will be treated to reduce contaminants to levels which result in an excess cancer risk of 1×10^{-5} , assuming additivity. EPA estimates that this target remediation level can be achieved within 10 years."
- "EPA has determined that it is technically infeasible to remediate PCBs located in the saturated zone soil matrix on-site and ensure that the resultant concentration in groundwater would attain a level that is equivalent to a 10^{-5} cancer risk level. However, treatment of VOCs will

render the PCBs relatively immobile, thus restricting contamination to the waste management area, only. Since PCBs will be present in groundwater in excess of the health-based cleanup level upon completion of groundwater remediation, it will be necessary to implement institutional controls on groundwater use within the waste management boundary."

Based on the results of pilot testing as documented in the Source Control Remedy Pre-Design Report, dated July 31, 1992, the Dechlorination Technology, as defined in the ROD, will achieve the remedial action objectives for the ReSolve site. However, the Source Control Pre-Design Report recommended that the DECHLOR system be completely decoupled from the full-scale dechlorination treatment system. Elimination of the DECHLOR system from the full-scale remediation thereby leaving only the X*TRAX system was recommended so that the full-scale remediation can be conducted in the most cost-effective, most technologically effective, and most environmentally safe manner. The larger than anticipated volume of DECHLOR residuals predicted by the results of the pilot test would thus be eliminated. Without DECHLOR the concentrated PCB-contaminated oil generated by the X*TRAX would be sent directly to an off-site TSCA-permitted incinerator.

EPA analysis of the results of the pilot testing against the six criteria specified in Section III.D. of the Scope of Work (SOW) found that the recommended modification is consistent with EPA's waste minimization philosophy and would be more cost-effective, environmentally sound and safe. The resultant treatment train will still be protective of human health and the environment.

As described in EPA's October 15, 1992 letter, "EPA's Written Notice of Decision on the Implementability of the Dechlorination Technology Based on the Performance of Source Control Pre-Design Pilot Testing" to Michael Last of the ReSolve Executive Committee, a request from the ReSolve Site Group to decouple the DECHLOR from the scope of operations during full-scale remediation will be submitted to EPA. EPA will then modify the Preauthorization Decision Document and Scope of Work (SOW) and prepare and publish an Explanation of Significant Differences to formally decouple the DECHLOR from the full-scale remediation.

The Site soil and sediment cleanup standard includes only PCBs. Site-related groundwater indicator compounds identified in the ROD include trichloroethylene (TCE), tetrachloroethylene (PCE), and methylene chloride. Treatment to 5 ppb for TCE, PCE, and methylene chloride is expected to reduce other compounds identified in groundwater to non-detectable levels. Additional groundwater cleanup standards identified in the Consent Decree include all Maximum Contaminant Levels (MCLs) established under the Safe Drinking Water Act in effect at the time of the entry of the Consent Decree (May 31, 1989), including, but not limited to, lead,

vinyl chloride, p-dichlorobenzene, and 1,1-dichloroethylene. The three indicator compounds and these four additional compounds are referred to as the Site contaminants of concern in this report.

2.0 SITE DESCRIPTION AND BACKGROUND

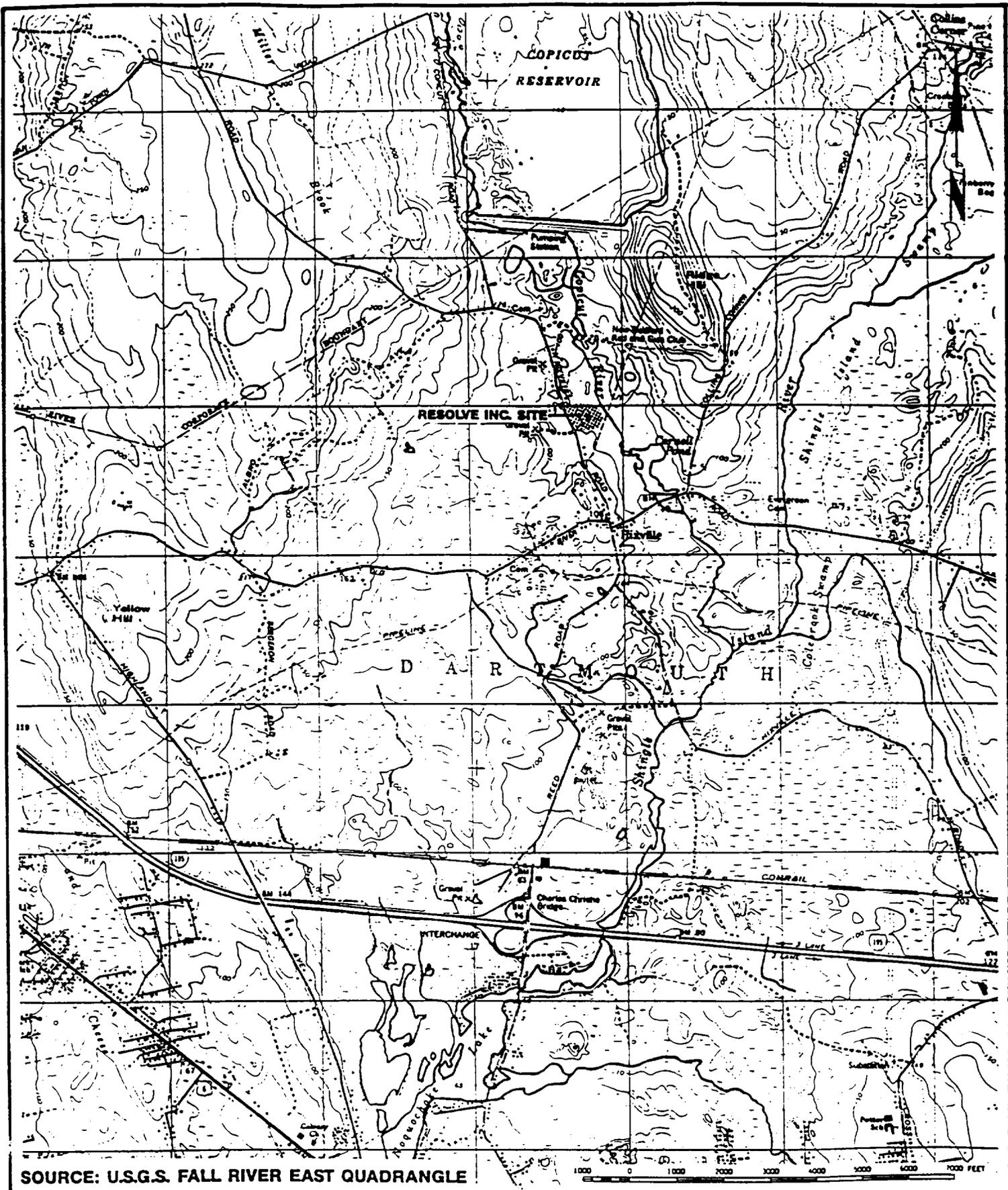
The Re-Solve, Inc. Superfund Site (Site) is a former waste chemical reclamation facility that was closed in 1980. The Site is located on a six-acre parcel in North Dartmouth, Massachusetts and was placed on the Final NPL on September 8, 1983. A site locus figure is presented in Figure 2-1. A Remedial Investigation/Feasibility Study (RI/FS) was completed in 1983 and was followed by a ROD signed on July 1, 1983. The main contaminants at the site are polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), and metals. The Responsible Parties (RPs) formed an executive committee and assumed responsibility for site remediation.

The subsequent remedial action involved excavation of 15,000 cubic yards of PCB-contaminated soils for off-site disposal. Concurrent with the on-site activity, an off-site RI/FS was conducted to assess the extent of contamination that had migrated beyond the boundaries of the Site. The final draft of the off-site RI was completed in February 1985. Studies conducted to evaluate the effectiveness of the remedial action specified in the 1983 ROD indicated that extensive PCB contamination remained. The remedial action was terminated in April 1985 and a Supplemental RI undertaken to further define the extent of on-site PCB contamination.

This second RI/FS was completed in June of 1987. A second ROD was signed on September 24, 1987. The second ROD allows for site security, excavation and treatment of PCB-contaminated soils and sediments by on-site dechlorination, and treatment of VOC-contaminated groundwater by an on-site process involving metals removal, air stripping, and carbon adsorption.

On May 31, 1989, a Consent Decree was entered which resolved the liability of 224 generator parties (Settling Defendants) who contributed hazardous substances to the Site. In September of 1989, the United States entered into two administrative settlements with additional generator parties.

The present remedial design efforts, which are now underway for both Source Control (SC) and Management of Migration (MOM), are being undertaken to implement the remedies specified in the 1987 ROD. It became apparent during planning prior to the SC pilot test that dewatering during the source control excavations would be necessary. Therefore, a water treatment plant was designed and constructed for use during the source control remedy. The results of the on-site source control dechlorination pilot-scale tests, which were conducted in May and June 1992, and the on-site MOM pilot-scale tests which were conducted in 1990, show that the



SOURCE: U.S.G.S. FALL RIVER EAST QUADRANGLE

RESOLVE INC. SITE

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**FIGURE 2-1
SITE LOCATION MAP**

dechlorination technology and the groundwater treatment technology are implementable at the Site. The MOM Pre-Design Report was issued on December 21, 1990, and the SC Pre-Design Report, Revision One was issued on October 2, 1992.

However, as described in Section 1.2, the full-scale dechlorination technology is being modified to completely decouple the DECHLOR system from the scope of operations during the full-scale remediation. The concentrated PCB-contaminated oil generated by the X*TRAX would be sent directly to an off-site TSCA-permitted incinerator. This change will eliminate generation of the higher than anticipated volume of DECHLOR process residuals and result in a more cost-effective, environmentally sound and safe remediation. The resultant treatment train will remain protective of human health and the environment.

3.0 **STANDARDS REVIEW AND UPDATE**

The National Contingency Plan (NCP) requires that applicable or relevant and appropriate Federal criteria, advisories, and guidance and State standards be considered during the evaluation of proposed remedial action alternatives. Federal environmental laws which are applicable or relevant and appropriate to the recommended source control and management of migration alternatives at the Re-Solve Site were listed in the 1987 ROD as follows:

- Resource Conservation and Recovery Act (RCRA)
- Clean Water Act
- Safe Drinking Water Act
- Executive Order 11990 (Protection of Wetlands)
- Toxic Substances Control Act (TSCA)
- Clean Air Act

The 1987 ROD (pages 68 through 71, copies of which are contained in Appendix A of this report) describes the applicable or relevant and appropriate requirements (ARARs) of portions of the above-referenced federal environmental laws to the Site. These portions of the federal environmental laws were reviewed and several EPA officials were interviewed regarding any changed regulations. No changes made to the ROD-specified portions of the above-referenced laws since the signing of the 1987 ROD were found that would be expected to endanger the remedy's protectiveness of human health and the environment.

The State has identified state requirements that are more stringent than the federal ARARs described in the 1987 ROD. The state requirements for the Site are found in Table IV of Appendix A to the 1987 ROD. A copy of this table is contained in Appendix A of this report. These state requirements include Massachusetts regulations in the areas of air quality control, wetlands, water supply, hazardous waste, and water pollution control. MADEP is reviewing these regulations as part of the Five-Year Review. MADEP's determination regarding revisions to these laws that may affect the remedy may be addressed by EPA, as appropriate, through another mechanism.

3.1 **Resource Conservation and Recovery Act**

The 1987 ROD stated that the applicable or relevant and appropriate RCRA regulations are those concerning closure performance standards and groundwater protection requirements. The RCRA regulations cited in the ROD were reviewed during the five-year review. No

changes to these regulations were found that may affect the selected remedy.

Mr. Robert Cianciarulo, who was EPA Region I's Land Ban Coordinator until September 1992 and is now an EPA Remedial Project Manager, was interviewed for this five-year review. RCRA Land Ban regulations have become effective since the 1987 ROD. Mr. Cianciarulo indicated that RCRA Land Ban regulations would apply if the materials to be treated onsite are considered listed or characteristic hazardous waste. He considers it unlikely, however, that the materials to be treated would be considered listed hazardous waste.

3.2 Clean Water Act

The 1987 ROD stated that regulations promulgated under Section 404(b)(1) of the Clean Water Act apply to the selected remedy. These regulations were reviewed and no changes that would affect the selected remedy were found.

The discharge of treated water from the water treatment system (WTS) during the source control remedy has called for the inclusion of Clean Water Act regulations dealing with discharges to surface water as an ARAR for the selected remedy. In order to comply with National Pollutant Discharge Elimination System (NPDES) regulations, the RPs prepared and submitted a Wastewater Treatment System Permit Equivalency Submittal, Revision 1, dated December 23, 1991, which was approved by EPA. This submittal presents effluent discharge levels based on Federal Ambient Water Quality Criteria. Minor exceedances of some effluent discharge limits for the WTS operating during Source Control activities have occurred. During start-up of the WTS, the maximum pH level of 9.0 was exceeded (9.37) in Batch 1. The Source Control Pre-Design Report, Revision 1 (PDR) states that final effluent pH is now constantly monitored and can be adjusted with hydrochloric acid. The effluent sample from Batch 3 during start-up contained a concentration of bis(2-ethylhexyl)phthalate (420 ppb) above the approved discharge level (100 ppb). This was determined to be due to contamination introduced either during the sampling or the laboratory analysis.

A minor exceedance of the effluent limits for iron and manganese occurred during full operation of the WTS in an effluent sample collected on June 2, 1992. Specifically, the iron concentration of 3.1 ppm was higher than the approved limit of 3.0 ppm, and the manganese concentration of 4.3 ppm was above the approved limit of 0.5 ppm. The high iron and manganese problem was eliminated, reportedly, by the replacement of the spent carbon and replacement of corroded metal plumbing fixtures in the carbon beds with PVC fixtures. Results from subsequent samples did not exceed the effluent discharge levels. However, the manganese problem reappeared in October 1992, when the WTS was operated continuously for a period of three or four weeks. The WTS was operated for

brief periods during November and December 1992. Manganese levels of around 3.0 ppm were seen in the WTS effluent in October and November 1992, and 1.7 ppm in December 1992. The RP contractor plans to correct the manganese exceedances by installing larger sand filters, and changing the carbon in the primary carbon bed. These improvements are scheduled to occur in February 1993.

3.3 Safe Drinking Water Act

Federal drinking water standards for site contaminants of concern in effect in 1987 were presented in the ROD and are shown in Table 3-1 for comparison with current (January 1993) federal drinking water standards. The federal drinking water standards are the Maximum Contaminant Levels (MCLs) as defined in the Safe Drinking Water Act.

Since the entry of the Consent Decree on May 31, 1989, several new MCLs have been established for contaminants of concern at the Site, namely tetrachloroethylene (5 ug/l) and methylene chloride (5 ug/l). Because the groundwater cleanup levels for both tetrachloroethylene and methylene chloride were set at 5 ug/l in the ROD, these new MCLs do not affect the remedy.

In June 1992, EPA promulgated treatment methods in the Final National Primary Drinking Water Standards for lead. This relevant and appropriate regulation establishes treatment techniques that are to be used when an action level of 15 ppb of lead is exceeded at ten percent of the taps sampled. This regulation does not contain a requirement to attain a specific cleanup level; the rule contemplates that cleanup levels will be determined based on site-specific analysis. Therefore, the subject Action Level of 15 ug/l for lead would be considered a "To Be Considered" (TBC) and does not affect the remedy.

3.4 Executive Order 11990 (Protection of Wetlands)

Executive Order 11990 was reviewed; no changes have been made to the order since the 1987 ROD. Mr. Edward Reiner, an EPA Region I official in the Wetland Protection Program, was interviewed for this five-year review. Mr. Reiner indicated that the selected remedy appears to be in compliance with federal wetland regulations as long as wetlands that are disturbed during the remedial action are subsequently restored. However, Mr. Reiner also indicated that additional wetland ARARs should have been included in the 1987 ROD. These additional ARARs include:

- Executive Order 11988 (Protection of Floodplains) - This executive order was signed on the same date as Executive Order 11990, and states that floodplain values should not be damaged. The selected remedy is in accordance with this order as excavated areas will be restored to their original elevation.

TABLE 3-1
DRINKING WATER STANDARDS COMPARISON: 1993/1987
FINAL FIVE-YEAR REVIEW REPORT
RE-SOLVE, INC. SITE
NORTH DARTMOUTH, MASSACHUSETTS
(all units in ug/l)

CONTAMINANTS OF CONCERN	1993 MCLs	1987 MCLs
Trichloroethylene	5	5
Tetrachloroethylene	5	None
Methylene chloride	5	None
Lead	50	50
Vinyl Chloride	2	2
p-Dichlorobenzene	75	75 ⁽¹⁾
1,1-Dichloroethylene	7	7

NOTES:

(1) In effect at signing of Consent Decree (May 31, 1989)

MCL Maximum Contaminant Level (from Safe Drinking Water Act)

- Fish and Wildlife Coordination Act - This act gives the federal Fish and Wildlife Service the option to be involved with wetland alterations. It appears that the Fish and Wildlife Service should be notified of planned site activities involving wetlands.
- Memorandum of Agreement between EPA and the Department of the Army Concerning the Determination of Mitigation under the Clean Water Act, Section 404(b)(1) - This memorandum was signed on February 6, 1990 (effective February 7, 1990) and provides additional guidance on the cited Clean Water Act section regarding avoidancy, minimization, and compensatory mitigation of wetlands disturbances. Mr. Reiner indicated that the selected remedy appears to comply with this memorandum.

3.5 Toxic Substances Control Act

The 1987 ROD considers the TSCA disposal requirements, specifically the criteria detailed in 40 C.F.R. 761.70 pertaining to thermal destruction, to be applicable for site remediation if incineration is selected as the source control treatment technology. However, these criteria are not applicable to the Site because on-site dechlorination has been shown to be implementable as the source control treatment technology.

TSCA regulations concerning the storage of PCBs recently have been determined to be ARARs for the Site. An EPA letter dated November 23, 1992 (see Appendix B) states that the TSCA regulations at 40 C.F.R. 761.65 (a), (b), and (c) set forth substantive requirements for the storage of PCBs at concentrations of 50 ppm or greater prior to disposal. EPA analyzed the RP contractor's proposed procedures for the temporary storage of drums containing PCBs in excess of 50 ppm and determined that, in addition to following their proposed procedures, the RP contractor would be required to implement an additional measure. "That measure is to cover completely the drums, which are currently being stored by the WTS pad, with a tarpaulin (e.g., waterproofed canvas) to prevent rain water from reaching the closed drums at all times until the commencement of the full-scale remediation."

EPA's November 23, 1992 letter also states that State regulatory requirements regarding temporary waste storage (described in a MADEP letter dated October 29, 1992) (see Appendix B) must be followed. The applicable State Hazardous Waste Management Regulations include requirements for an impervious storage surface, spill/leak containment, posting of signs, marking of the storage area, allowable storage time, stacking and handling of containers, and weekly logged inspections. The November 23, 1992 EPA letter states that the only exception to these storage requirements is that the wastes discussed in the RP's September 25, 1992 letter to

EPA, which is contained in Appendix B, (i.e., filter cake generated from the XTRAX and the DeChlor units, and from the water treatment system (WTS) filter press) may be stored for longer than ninety (90) days until the commencement of the full-scale remediation at which time regulation 310 CMR 30.340 (2) will become fully applicable to the Site. Any type of waste that does not fall under the types described above would have to comply with regulation 310 CMR 30.340 (2), effective as of November 23, 1992. The RP contractor has complied with the above federal and state storage requirements.

The PCB Coordinator (Mr. Anthony Palermo) in the Toxic Substances Control section of EPA Region I noted two major changes to the TSCA regulations since 1987 that may affect the Site. Notification rules that became effective on April 4, 1990 (40 C.F.R. 761.202) require that, among others, facilities that store PCBs (in concentrations greater than 50 ppm) longer than 30 days complete a Notification of PCB Activity Form (Form # 7710-53). This form is completed only once for a facility and is submitted to EPA Headquarters. As the purpose of this form is to notify EPA of facilities that deal with PCBs, it may not be necessary for Superfund sites (since EPA already is aware of them). The second TSCA change involves federal manifesting requirements for the transportation of PCB wastes, which became effective on February 5, 1990 under 40 C.F.R. 761.207. Most PCB shipments prior to this federal requirement already were manifested since most states required it.

3.6 Clean Air Act

The 1987 ROD states that the Site must attain the particulate PM₁₀ standard (for particles with an aerodynamic diameter less than or equal to a nominal 10 micrometers), which is a National Ambient Air Quality Standard (NAAQS) in the Clean Air Act. Perimeter site air monitoring during source control activities has not recorded any exceedances of this standard. In addition, air monitoring and sampling at the site perimeter during the source control and MOM activities have not recorded VOC levels of concern.

3.7 Additional Compliance Issues

The effluent results for the MOM on-site pilot-scale groundwater treatment system test, which was conducted from August 27 to October 6, 1990, appeared to show no exceedances of the cleanup levels for Site contaminants of concern.

All of the analytical results for the soil treated during the Source Control pilot test were well below the cleanup level of 25 ppm PCB. No wetland sediments have been treated to date. However, only wetland sediments that contain greater than 25 ppm PCB will require treatment. Sediments requiring treatment are expected to

attain the cleanup level of 25 ppm PCB as well. Sediments contaminated with between 1 ppm and 25 ppm PCB will be backfilled in the Waste Management Area.

Section XI of the Consent Decree calls for the Settling Defendants to submit to EPA and the Commonwealth written monthly progress reports by the tenth day of every month. The reports are to include "all results that have been verified by the quality assurance, quality control procedures established pursuant to Section IX of this Consent Decree of sampling and tests and all other technical and analytical data received by Settling Defendants during the course of the Work", among other items. The monthly progress reports, in general, have been submitted after the tenth day of the month, and, in some instances, several months later. The reports do not describe all sampling results (e.g., WTS results are often not included, and results of internal RP contractor sampling, such as during the Source Control Pilot Test, have not been included). In addition, recent reports have included only source control activities. The Consent Decree does not appear to limit the monthly progress reports to active on-site activities (MOM design activities are ongoing).

3.8 Zoning and Deed Restrictions

Mr. David Silvero, the Town of Dartmouth Building Commissioner and Zoning Enforcement Officer, and Mr. Donald Perry, the Town of Dartmouth Planning Board Director, were interviewed for this five-year review. The Site is located within an Aquifer Protection District Area 3, according to Town of Dartmouth zoning by-laws. According to town zoning by-laws, the purpose of the Aquifer Protection District is to protect existing and potential groundwater supplies and recharge areas, particularly those areas which contribute to the public water supply. Area 3 is the least restrictive of the three area designations and includes potential groundwater development areas and those areas that provide recharge to Area 2 (which is the recharge area generated by a public water supply well). Commercial, industrial, and residential development are permitted in Area 3 with certain restrictions.

Mr. Perry indicated that the Area 3 in which the Site is located was designated as such due to future potential public groundwater usage in the area. Currently, all town public water supply wells are located south of Route 6, which is approximately three miles south of the Site. However, the Site is also subject to the underlying zoning, Single-residence A, which is more restrictive than the Aquifer Protection District Area 3 by-laws. This underlying zoning has not changed since 1987 and allows only single-family residential and agricultural uses.

No changes to the Site's Aquifer Protection District area designation or to the Site's underlying zoning are anticipated.

The current designations are not expected to adversely affect the remedy.

The SOW (page 15) calls for the Settling Defendants to obtain deed restrictions with respect to the Waste Management Area to provide for the following:

- "i. no intrusive earthwork activities beyond six inches and only for superficial regrading;
- ii. no off-site trucking of on-site soils;
- iii. desired landscaping to be done by bringing fill onsite;
- iv. all plans for development to be approved by EPA and the Commonwealth;
- v. residential development restrictions."

A primary purpose of the deed restrictions is to prohibit the use of the Waste Management Area, including the groundwater thereunder, after completion of the Remedial Action. Section X of the Consent Decree states that "If such restrictions or controls are not obtained within ninety (90) days of the date of entry of this Consent Decree, Settling Defendants shall promptly notify the United States and the Commonwealth." It has not been confirmed whether the above deed restrictions actually have been obtained.

3.9 Institutional Controls

Institutional controls concerning site security (described in the SOW appended to the Consent Decree) have been put in place on-site. These institutional controls include fencing, a secured front gate, bilingual warning signs along the perimeter fence and Site boundary, and the provision of bilingual warning signs to the Dartmouth Board of Health for placement along the Copicut River and Cornell Pond. It should be noted that a flexible plastic fence is used to enclose the portion of the Waste Management Area's southern boundary near the site trailers rather than the chain link security fence that encloses the remainder of the Waste Management Area. The SOW appended to the Consent Decree does not define the type of fence to be used to enclose the Waste Management Area.

4.0

FIVE-YEAR REVIEW SUMMARY OF FINDINGS

The primary purpose of this five-year review is to evaluate whether the remedial action selected for the Re-Solve, Inc. Site remains protective of public health and the environment. The review focused on both the effectiveness of the technology and on the specific performance levels established in the ROD. As discussed in Section 3, available sampling and analytical data appear to indicate that the pilot-scale source control (dechlorination technology) and management of migration (groundwater treatment technology) operations achieved the cleanup performance levels established in the ROD and Consent Decree. The remedy, therefore, is expected to be protective of public health and the environment upon completion. Changes in federal environmental laws since the 1987 ROD do not appear to adversely affect the effectiveness of the remedy. As noted in Section 3, state standards and regulations are under review by the the MADEP. Once completed, this information may be addressed by EPA, as appropriate, through another mechanism. Changes in Site ARARs (federal) since the 1987 ROD were discussed in Section 3 and are summarized below:

- Clean Water Act regulations concerning discharges to surface water (National Pollutant Discharge Elimination System, or NPDES) should be considered an ARAR for the selected remedy because treated water is being discharged to the Copicut River during source control. This was not included as an ARAR in the 1987 ROD because the treatment and discharge of water was not anticipated at that time. NPDES regulations are being followed through compliance with the Site's Wastewater Treatment System Permit Equivalency Submittal, Revision One, dated December 23, 1991. Manganese discharge levels frequently exceed approved effluent levels; planned changes to the water treatment system are expected to correct this minor problem.
- Several new federal MCLs for Site contaminants of concern were established since the 1987 ROD: tetrachloroethylene (5 ug/l) and methylene chloride (5 ug/l). The Site groundwater cleanup levels had been set at 5 ug/l for tetrachloroethylene and methylene chloride in the 1987 ROD. The lead MCL has not been changed from 50 ppb, but in June 1992, EPA promulgated a "To Be Considered" Action Level of 15 ug/l for lead. The lead MCL (50 ppb) continues to be the cleanup performance level used at the Site.
- The following additional wetlands ARARs, not specified in the ROD, appear applicable to the selected remedy:

- Executive Order 11988 (Protection of Floodplains)
- Fish and Wildlife Coordination Act
- Memorandum of Agreement signed on February 6, 1990 between EPA and the Department of the Army Concerning the Determination of Mitigation under the Clean Water Act, Section 404(b)(1)

The selected remedy appears to comply with these additional ARARs.

- EPA has determined that TSCA regulations dealing with the storage of PCBs and State Hazardous Waste Management Regulations regarding temporary waste storage are additional ARARs for the Site. These additional ARARs are being followed at the Site. In addition, two major changes made to TSCA regulations since 1987 may be considered as additional ARARs for the Site: 1) facilities that store PCBs at concentrations of 50 ppm or greater longer than 30 days are required to complete and submit a Notification of PCB Activity Form to EPA Headquarters; and 2) a manifest is now required for the shipment of PCB wastes.

As indicated in Section 3.0, no zoning changes at the Site are anticipated. The Consent Decree called for the Settling Defendants to obtain deed restrictions to prohibit the use of the Waste Management Area, including the groundwater thereunder, after completion of the Remedial Action. These deed restrictions were to be obtained within ninety days of the date of entry of the Consent Decree (May 31, 1989). Further investigation is needed to determine whether these deed restrictions have been obtained.

As indicated in Section 3.0, institutional controls concerning site security have been put in place on-site. It should be noted that a flexible plastic fence is used to enclose the portion of the Waste Management Area's southern boundary near the site trailers instead of the chain link security fence that encloses the remainder of the Waste Management Area. The SOW appended to the Consent Decree calls for fence to enclose the Waste Management Area, but it does not define the type of fence to be used.

The Consent Decree calls for the Settling Defendants to submit to EPA written monthly progress reports by the tenth day of every month. The reports are to include all results of sampling, among other items. The monthly progress reports, in general, have been submitted after the tenth day of the month, and, in some instances, several months later. The reports do not describe all sampling results (e.g., water treatment plant results are often not included, and results of internal RP contractor sampling was not

included). Recent reports have included only source control activities. As the Consent Decree does not limit the monthly progress reports to on-site activities, the MOM activities should be included as well.

In order to address several issues that EPA raised regarding the MOM Pre-Design Report, the Responsible Parties (RPs) initiated the collection of additional groundwater samples in the spring of 1992. No additional groundwater sampling is anticipated before the MOM remediation begins, which is expected to occur in October 1994. It is suggested that periodic groundwater sampling (perhaps annually) be conducted until the initiation of the MOM remedial action to monitor the groundwater characteristics during the somewhat lengthy design period. Source control remediation will occur during the MOM design period. In this way, any changed groundwater conditions can be addressed during the MOM design period.

A separate site visit was not required for this five-year review since BEI personnel are actively involved in present site activities.

A brief evaluation was conducted to determine whether a higher level of review (e.g., Level II) is necessary in accordance with OSWER Directive 9355.7-02. A determination was made that a higher level of review of the Re-Solve Site is not necessary.

APPENDIX A

APPENDIX A

1987 ROD EXCERPTS ON ARARS

standards (MCLs) in establishing the appropriate cleanup level for the site. EPA believes that MCLs are protective of human health.¹⁶ As the legally enforceable standards under the Safe Drinking Water Act, MCLs determine the level of water quality that is acceptable for consumption by people who obtain their drinking water from public water supplies. MCLs or an equivalent level of protection (as discussed earlier, this level of protection corresponds to a 10^{-5} cancer risk) were used to calculate the level of residual risk posed by consumption of groundwater following completion of the remedial action. EPA considers a 1×10^{-5} risk level to be adequately protective of human health.

For several reasons, EPA rejects a level of 10^{-4} . First, this is a Class II aquifer which is presently being used as a drinking water source. EPA anticipates that the area surrounding the site will continue to be developed for residential use, thus increasing the future need of this aquifer. Given the hydrogeological uncertainties at the site, and the lack of an alternative water supply system in the area, EPA does not believe a 10^{-4} level would leave an adequate margin for error as groundwater use expands.

Secondly, section 121 of CERCLA requires that Superfund response actions must attain applicable or relevant and appropriate requirements. MCLs under the Safe Drinking Water Act are ARAR's for site remediation. If groundwater is remediated to a 10^{-4} risk level, the residual concentrations of individual contaminants at the point of compliance would be in excess of their MCLs.

EPA also rejects 10^{-6} and 10^{-7} risk levels. First, the population in the area has not historically been exposed to potentially hazardous levels of contaminants for an extended period of time. Results from residential well sampling conducted as part of the Supplemental RI concluded that the drinking water from existing wells in the vicinity of the site was of acceptable quality. Secondly, due to the complex nature of the fractured bedrock aquifer system and the high concentrations of a wide variety of contaminants in groundwater, the technical feasibility of remediating groundwater to a level in excess of 10^{-5} may be limited. It should also be noted that remediation of the groundwater to the 10^{-5} level represents a 99 percent reduction from existing levels.

The aquifer characteristics and level of contaminants in groundwater limit the rate of restoration. At a maximum pumping rate of 40 pgm, the groundwater can be restored to a 1×10^{-5} risk level within 10 years. A higher pumping rate will only induce water from adjacent surface water bodies and will not restore the groundwater more rapidly.

→ 2. Consistency with Other Environmental Laws

Environmental laws which are applicable or relevant and appropriate to the recommended source control and management of migration

threat and minimizing the migration of contaminants. To ensure protection of public health and the environment, EPA believes that minimal post-closure care (including, but not limited to, gravel cover, loam, seeding, monitoring and institutional controls) is required and that the relevant and appropriate RCRA post-closure requirements are attained.

Regarding management of migration measures, the specific relevant Federal regulations are the RCRA Groundwater Protection requirements (40 C.F.R. 264 Subpart F), the Clean Water Act and the Safe Drinking Water Act. The groundwater protection regulations require the setting of groundwater protection standards which must be protective of public health and the environment. The target levels of PCE, TCE and methylene chloride are site-specific levels that the Agency has determined will adequately protect public health and the environment. The remediation will attempt to achieve these levels downgradient at the point of compliance. The point of compliance is based on the extent of PCB contamination at depth.

A groundwater monitoring system will be implemented consistent with 40 C.F.R. § 264.100(d) to determine the effectiveness of the groundwater remediation system.

The remediation of groundwater is consistent with the U.S. EPA Groundwater Protection Strategy (GWPS), which classifies the aquifer at Re-Solve as Class IIA (current usage) and requires the restoration of these aquifers. This remediation program would also be consistent with the Commonwealth of Massachusetts Groundwater Protection rules and regulations.

As discussed earlier, EPA believes that it is technically infeasible to reduce PCB levels in groundwater within the waste management area to an acceptable risk level for use as a drinking water supply. Because of this, drinking water standards established under the Safe Drinking Water Act (SDWA) are not relevant and appropriate requirements within the waste management area. PCBs are not present, however, in groundwater beyond the waste management area. Hence, that groundwater can be restored to permit its use as a drinking water supply and MCLs, established under the SDWA, are relevant and appropriate and will be attained.

Excavation, filling and restoration of the wetlands will comply with the technical intent of Executive Order 11990 - Protection of Wetlands, the Clean Water Act § 404(b)(1) guidelines and the State Wetland Protection Act (310 CMR 10.00). The excavation will be performed to minimize the destruction of the wetlands. The remedial action contains components to restore the wetlands which may result in the improvement of the beneficial values of the wetlands. The restoration of the wetlands after excavation will be performed consistent with the 404(b)(1) guidelines, and with EPA and State review of the design of the mitigation measures. The Agency feels it is necessary to perform the excavation to adequately protect public health and the environment.

TABLE IV

More Stringent State Requirements
for the ReSolve Site

This list is not an exclusive list

State Requirement

Standard, Requirement, Guideline
Criteria, and Limitation

1. Air Quality Control

(a) 310 CMR 7.00 Air Pollution Control
310 CMR 7.01

Establishes guidelines for levels
of air pollution.

2. Wetland

(a) 310 CMR 10.00 Wetland
310 CMR 10.54(4)

Requires any work on the bank of a
water body, not impair: the physical
stability of the bank; the water
carrying capacity of the bank; the
ground water and surface water quali-
ty; and the capacity of the bank to
provide breeding habitat, escape
cover and food for fisheries.

(b) 310 CMR 10.55(4)

Prohibits over 5000 square feet of
loss (dredge, fill, etc.) of bor-
dering vegetated wetland, and
requires at least 1:1 replication of
any lost area within two growing
seasons.

(c) 310 CMR 10.56

Requires any work within land under
water bodies or waterways (ponds and
streams), to not impair: the water
carrying capacity of any defined
channel; the ground and surface water
quality; and the capacity of the land
to provide breeding habitat, escape
cover and food for fisheries.

(d) 310 CMR 10.57(4)

Requires "compensatory storage" to be
provided for any work that will cause
an increase in the horizontal extent
and level of flood waters at peak
flows.

(e) 310 CMR 10.57

Establishes the standards for a
Variance from any of the standards
contained in 310 CMR 10.54 - 10.57.
For the project to qualify for a
Variance: there must be no reaso-
nable conditions or alternatives that
would allow the project to proceed in
compliance with the regulations;

5. Water Pollution Control

(a) 314 CMR 3.00 Surface Water
Discharge Permit Program

314 CMR 3.16 (2) and (3)

Incorporates Standards from 4.02

(b) 314 CMR 4.00 Surface Water
Quality Standards

314 CMR 4.02

314 CMR 4.03 (4) A.1. (4) A.2

314 CMR 4.04

Requires additional Standards
Minimum Water Quality Criteria
Antidegradation Provisions

(c) 314 CMR 5.00 Groundwater
Discharge Permit Program

314 CMR 5.10

No similar Federal Program. Ground-
water classification.

MCL, Health Advisories used as
Standards. For chemicals with no such
standard, acceptable levels will be
risk based.

(d) 314 CMR 6.00 Groundwater
Quality Standards

314 CMR 6.06

Minimum Groundwater Quality Criteria.

(e) 314 CMR 7.00 Sewer System
Extension and Connection
Permit Program

State Program

APPENDIX B

APPENDIX B

COPIES OF LETTERS REGARDING ARARS



Chemical Waste Management, Inc.

ENRAC Division - East
10000 Massachusetts Boulevard
Boston, MA 02115
617-251-1111

September 25, 1992

Mr. Michael Worthy
ENSR Consulting & Engineering
35 Nagog Park
Acton, MA 01720

Project : ReSolve Site, N. Dartmouth, MA, CWM-RSE No. 67135
Re : Temporary storage of drums on site
Letter No.: GWD-ENSR-056

Dear Mike,

As part of Chemical Waste Management, Inc.'s internal environmental compliance programs an audit was conducted of the ReSolve site.

During the audit it was noted that drums of various materials are presently stored at two locations on the site. The storage of these drums is not specifically addressed in the existing approved project plans at a level of detail satisfactory to the auditors.

Pending submission and approval of the full-scale remediation plans that address this subject, I have been requested to obtain written acknowledgement from EPA that the current practices are satisfactory and meet the intent of the applicable regulations. As this is a CERCLA site EPA has the authority to approve designs and practices which may not meet all of the requirements which would apply to non-CERCLA sites, based on a determination that the actual practices employed are equally protective of the environment. CWM believes that this is the case.

The first area is a 19 ft x 80 ft pad located between the Water Treatment System (WTS) pad and the contaminated soil pad. This area consists of a 60 mil HDPE liner with the sides folded up and welded to provide a minimum depth of 12 inches, resulting in an actual containment capacity of 11,369 gallons. In normal use this area will contain a maximum of 240 drums which would require a minimum containment capacity of $240 \times 55 \text{ gal} \times 25\% = 3,300$ gallons.

As of September 23, this area contains 184 drums. 177 of these are filter cake from the X*TRAX and DeChlor pilot tests and 2 are dust and soil from the cleanup of the X*TRAX pad following the pilot test. These will be processed through X*TRAX during full-scale remediation. As filter cake will be reprocessed on an



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION I

J.F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203-2211

November 23, 1992

Michael Worthy
ENSR Consulting and Engineering
35 Nagog Park
Acton, MA 01720

Ref: Re-Solve, Inc. Superfund Site: Source Control Remedy -
EPA/DEP's Comments on CWM's Proposed Procedures on Waste Code
Classification and Drum Storage

Dear Mr. Worthy:

The United States Environmental Protection Agency (EPA) is in receipt of your letter dated October 15, 1992 that transmitted Chemical Waste Management, Inc.'s (CWM's) letters dated September 24 and 25, 1992. CWM's September 24, 1992 letter discusses a proposed methodology for determination of waste code classifications for materials that will be disposed off-site. CWM's September 25, 1992 letter discusses proposed procedures for temporary storage of drums on-site. Your October 15, 1992 letter requests EPA's review and approval of both CWM's letters.

EPA and the Department of Environmental Protection (DEP) have reviewed the letters, referenced above, and provide the following comments.

With respect to CWM's September 24, 1992 letter, CWM's proposed procedures to analyze waste streams such as the oil from the X*TRAX system for the characteristics and compounds covered by the D001 to D043 waste codes shown in 40 CFR Subpart C are acceptable. Please note that these same waste codes have been promulgated under the Massachusetts regulations 310 CMR 30.120 through 30.125B. There are also separate State manifest requirements that would have to be complied with. The details of these requirements are provided in the attached October 29, 1992 letter from Mr. Jay Naparstek of the DEP.

With respect to CWM's September 25, 1992 letter, CWM's proposed procedures for the storage of drums by the Water Treatment System (WTS) pad and on the X*TRAX concrete foundation pad in the interim period prior to the commencement of the full-scale remediation are not fully acceptable. Attached is a letter dated October 29, 1992 from Mr. Naparstek of the DEP. That letter details requirements under the State's Hazardous Waste Management Regulations that would normally be required for full compliance. The only exception to





Commonwealth of Massachusetts
Executive Office of Environmental Affairs

Department of Environmental Protection

William F. Weld
Governor

Daniel S. Greenbaum
Commissioner

NOV 19 1992

October 29, 1992

Mr. Lorenzo Thantu
ReSolve Remedial Project Manager
U.S. EPA - Region I
Waste Management Division
90 Canal Street
Boston, MA 02114

RE: Accumulation of drums
on-site
Compliance with
310 CMR 30.000

Dear Mr. Thantu:

This letter is in response to CWM's request for a determination that the current hazardous waste temporary storage practices are satisfactory and meet the requirements of the applicable State regulations. The submitted information has been reviewed pursuant to 310 CMR 30.340 et seq and 310 CMR 30.680 et seq. As a result of this analysis the following regulations have been highlighted:

* 310 CMR 30.340 (1)(f): All containers and above-ground storage tanks that are used for the accumulation of hazardous waste shall be stored on a surface that is designed and at all times operated so that it is free of cracks and gaps and sufficiently impervious to contain leaks, spills and accumulated precipitation until the collected material is detected and removed.

* 310 CMR 30.340(1)(g): Hazardous waste which is accumulated in containers or above ground tanks which are outdoors shall be located at all times in a containment system that is designed and at all times operated to contain either 10% of the total possible contained volume of the containers or 110% of the volume of the largest container, whichever is greater.

* 310 CMR 30.304(1)(j): All areas where wastes are accumulated shall have posted at all times a sign with the words "HAZARDOUS WASTE" in capital letters at least one inch high.

* 310 CMR 30.340(1)(k): All areas where hazardous waste are accumulated shall be clearly marked so that they are distinguishable at all times from all areas at the site where hazardous wastes are not accumulated.

Hubie Gallagher
Steve Shea
Princeton file 67135
site file