

Commonwealth of Massachusetts

**Department of Environmental
Protection Western Regional Office**



COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
WESTERN REGIONAL OFFICE

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Secretary

DAVID B. STRUHS
Commissioner

May 3, 1996

Massachusetts Department of Environmental Management
100 Cambridge Street
14th Floor, Room 1404
Boston, MA 02202

Attention: Ken Neary

RE: Egremont
Former Jug End Resort
Jug End Road
Gun Club Skeet Shooting Range
RTN: 1-10603

REVIEW OF SUPPLEMENTAL INFORMATION LETTER
AND APPROVAL OF RELEASE ABATEMENT MEASURE PLAN AMENDMENT

Dear Mr. Neary:

On March 6, 1996, the Department of Environmental Protection, Bureau of Waste Site Cleanup, Emergency Response/Release Notification Section ("the Department") received a Release Abatement Measure (RAM) Plan Amendment for the Former Jug End Resort, Jug End Road in Egremont, Massachusetts. The RAM Plan Amendment was prepared and submitted on your behalf by Vanesse Hangen Brustlin, Inc. (VHB) of Watertown, Massachusetts. The original RAM was submitted in August of 1995, in which VHB proposed a Portland cement/asphalt emulsion stabilization process for the lead-contaminated soil excavated from the "Gun Club Skeet Shooting Range". The Department subsequently issued an approval letter on September 13, 1995 pursuant to the Massachusetts Contingency Plan (MCP) - 310 CMR 40.0440.

Department review of the March 6, 1996 RAM Amendment indicated that IDM/SOLUCORP Industries, Ltd. (SOLUCORP) was the successful bidder to perform the stabilization of the lead-contaminated soil. SOLUCORP proposed to use an immobilization process to stabilize the 2,200 cubic yards of lead-contaminated soil as an alternative to the previously proposed and approved Portland cement/asphalt emulsion stabilization process. The immobilization process uses a molecular bonding system (MBS) which, in theory, chemically converts lead from a leachable state to a non-leachable, stable, insoluble lead-sulfide compound by adding proprietary sulfur powder reagents and water to a closed hopper pug mill. Short-term bench-scale treatability tests and analyses data were supplied by VHB and SOLUCORP, which indicated the reduction of Toxicity Characteristics Leaching Procedure (TCLP) lead concentrations in the untreated soil to well below the federal TCLP regulatory limit of 5.0 ppm of lead.

On March 26, 1996, the Department issued a "Denial of Release Abatement Measure Plan Amendment" letter concerning the March 6, 1996 proposal to use the SOLUCORP process. The Department denied the RAM Amendment as proposed and requested additional information for further evaluation regarding previous MBS sites, long term stabilization data, permeability test data on the treated soil and other operation-related issues.

On March 29, and April 2, 1996, the Department received supplemental information from SOLUCORP including copies of permits issued by the States of Connecticut, West Virginia and New Jersey to treat contaminated soil; approval letters from landfills located in New York, Massachusetts and New Jersey for disposal of the treated soil; data on air pollution control equipment; and theoretical long term stabilization comparisons between treatment with calcium hydroxide and the MBS process.

On April 18, 1996, the Department received additional information provided by SOLUCORP concerning Multiple Extraction Procedure (MEP) test data on MBS-treated soil, which had greater concentrations than native soil from the Jug End Resort at total lead of 2,823 parts per million (ppm) and similar concentrations of TCLP lead at 34.4 ppm. SOLUCORP retained O'Brien & Gere Laboratories, Inc. (O&G) to perform the MEP test - Method 1320 which "is designed to simulate the leaching that a waste will undergo from repetitive precipitation of acid rain on an improperly designed sanitary landfill. The repetitive extractions reveal the highest concentration of each constituent that is likely to leach in a natural environment". The test indicated a TCLP lead level of 3.98 ppm and the following four MEP leaching cycles indicated 0.05, 0.07, 0.11, and 0.06 ppm lead. The MEP test typically runs through 9 cycles, but was terminated after four cycles, which is representative of 400 years of leaching.

On April 23, 1996, SOLUCORP also provided permeability test data on the MBS-treated soil from the former Jug End Resort. SOLUCORP also retained O&G to perform the "Remolded Tri-Axial Variable Head Permeability Test - ASTM-5085" on the treated soil. The soil sample indicated 1.52×10^{-6} cm/second, which exceeds the Department's requirement of 1×10^{-5} cm/second for the landfill cap.

On April 25, 1996, the Department received an informational package from Thomas Holdsworth of the United States Environmental Protection Agency (EPA) of Cincinnati, Ohio, which requested the use of SOLUCORP's MBS process at the former Jug End Resort in a Superfund Innovative Technology Evaluation (SITE) Demonstration/Evaluation Project. This is an effort by the EPA to develop and evaluate new and innovative technologies at actual hazardous waste sites. The EPA provides the developers an opportunity to demonstrate the performance of an innovative technology, which could be used at future cleanup activities at Superfund sites.

The Department approves the use of SOLUCORP's innovative MBS process for the on-site treatment of lead-contaminated soil at the former Jug End Resort and the treated soil as a component in capping the on-site former "Golf Course Landfill". The Department decision is based upon review of the original and supplemental information and discussions with the Department's Bureau of Waste Prevention, Solid Waste Section, as well as SOLUCORP representatives Noel Spindler and Robert Kuhn, the New York Department of Environmental Conservation, the Connecticut Department of Environmental Protection, and the New Jersey Department of Environmental Protection.

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The Department approves SOLUCORP's MBS process for treatment of 2,200 cubic yards of lead-contaminated soil at the former Jug End Resort and also approves SOLUCORP's MBS process for evaluation under EPA's SITE Demonstration of Innovative Technologies with the following conditions:

- 1) All conditions outlined in the Department's "Approval of Release Abatement Measure Plan letter, dated September 13, 1995, remain in effect, except for the following revisions:
 - A) Item #7 of the proposed RAM activities requires that the final layer of the landfill cap consist of 6 inches of loam to be seeded. The Department now requires that the final layer consist of 12 inches of loam to be seeded. The final layer of loam will allow the growth of additional vegetation and deeper root systems providing protection against excessive erosion and enhancing the evapo-transpiration of any precipitation;
 - B) Item C of the Department's conditions requires that the three groundwater monitoring wells at the landfill be sampled for total lead on a semi-annually basis for two years and the leachate seep be sampled for RCRA 8 metals and volatile organic compounds (VOC) prior to capping of the landfill and then sampled annually for two years. The Department now requires that the three groundwater monitoring wells be sampled for total lead quarterly for two years and the leachate seep be sampled for RCRA 8 metals and VOC quarterly for two years.
- 2) Submit to the Department within one week of receiving Department approval to perform the MBS process, a detailed schedule of work activities and time frames for each activity, including, but not limited to, the set up of process equipment, and the excavation, storage, treatment of the soil, and landfill capping activities;
- 3) Submit a report to the Department, upon conclusion of the EPA's SITE Demonstration, summarizing the findings, conclusions and EPA recommendations concerning the SITE Demonstration and including all available laboratory analyses and other related information.

If you have any questions regarding this letter, please contact Ben Fish of the Emergency Response/Release Notification Section or myself at the above address or at 413-784-1100.

Yours truly,



David A. Slowick
Section Chief
Emergency Response Section

BF/bf/kml
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Review of Supplemental
Information Letter
Former Jug End Resort
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Egremont, MA

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cc: Egremont
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