



Documentation of Environmental Indicator Determination

Interim Final 2/5/99

**RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)**

Current Human Exposures Under Control

Facility Name: Leavens Awards Company (former)
Facility Address: 41 Summer Street, Attleboro, Massachusetts 02703
Facility EPA ID #: MAD063913909

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

Y If yes - check here and continue with #2 below.

_____ If no - re-evaluate existing data, or

_____ if data are not available skip to #6 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EIs) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EIs developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

RCRA RECORDS CENTER
FACILITY LEAVENS AWARDS
ID. NO. MAD063913909
FILE NO. 15-15
OTHER # 106720

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EIs are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, (GPRA). The “Current Human Exposures Under Control” EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program’s overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in the RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

FACILITY INFORMATION

Site History/Background

The Leavens Awards Company (Former) (Leavens Awards) site is located at 41 Summer Street, in Attleboro, Bristol County, Massachusetts. The Leavens Awards facility was used for electrochemical plating operations until its closure in 1999. The Leavens Awards property consists of a single-story industrial building with a footprint area of approximately 30,000 square feet on a 2.72 acre lot. Leavens Manufacturing Co., Inc. began operations at the facility in 1953.

The Leavens Awards site has historically been operated by two companies with similar names, the Leavens Manufacturing Co., Inc., and the Leavens Awards Co., Inc. Leavens Manufacturing Co., Inc. operated at the facility from approximately 1953 until 1984. Leavens Awards Co., Inc. operated at the facility from 1984 until 1999.

The area immediately south and east of the building is asphalt paved. A dry-well, reportedly used to discharge steam condensate from manufacturing units and water from a sink in the parts casting room, is located on the southwest side of the building. A former drum storage area is located just west of the dry-well. Three capped surface impoundments (two sludge impoundments and one “continuous flow lagoon”) are located along the eastern edge of the property. The continuous flow lagoon was the most northerly of the three impoundments, and formerly discharged via a pipe to the Ten Mile River. The area west of the building, north of Summer Street, and the capped surface impoundments are covered with vegetation.

The Leavens Awards site is located within a mixed residential/industrial area and is bounded to the northwest by residential properties and John Williams Street, to the northeast by the Ten Mile River,

to the southeast by railroad tracks, and to the southwest by an industrial facility. Industrial properties are located east of the Ten Mile River and south of the railroad tracks. Overall site topography slopes gradually downward to the southeast, toward the Ten Mile River. To the east of Summer Street, topography steeply grades downward to a wetland that borders the river. The Leavens Awards property is connected to municipal water and sewer. The property is zoned Industrial.

Both Leavens Manufacturing Co., Inc. and Leavens Awards Co., Inc. manufactured pins, nameplates, emblems, class rings, and other metal items. These materials were electroplated with gold, nickel, copper, silver, and rhodium. Manufacturing processes included parts degreasing, soldering, assembly, electroplating, and polishing.

Chemicals utilized on site included cyanide, acid and alkaline plating baths, acetone, trichloroethylene (TCE), 1,1,1-trichloroethane (1,1,1-TCA), methylene chloride, ethyl acetate, mineral spirits, and "153 Stripper" (dichloromethane and hydroxybenzene). Wastes generated by the facility included wastewater, metal hydroxide sludge, acetone, TCE, naphtha, methylene chloride, and 1,1,1-TCA.

Prior to 1968, wastewater was reportedly discharged directly to the wetland and/or adjacent Ten Mile River from a discharge pipe that reportedly ran parallel to the southern side of the building and crossed under Summer Street. From 1968 to 1983, wastewater was pretreated by cyanide destruction, pH adjustment, and precipitation of metal hydroxide sludge. The metal hydroxide sludge was discharged to two on-site surface impoundments. The effluent was discharged to an on-site "continuous flow lagoon" where additional suspended solids settled out before the supernatant was discharged to the Ten Mile River. National Pollution Discharge Elimination System (NPDES) permit number MA0005363 was issued to Leavens Manufacturing Co., Inc. in January 1980 for this discharge. After 1983, treated wastewater effluent was discharged to the City of Attleboro sewer system.

Leavens Manufacturing Co., Inc. submitted a Notification of Hazardous Waste Activity form to EPA on August 13, 1980, and a Hazardous Waste Permit Application on November 12, 1980. The forms indicated that Leavens Manufacturing Co., Inc. had a process design capacity of 33,000 gallons of container storage, 36,000 gallons of surface impoundment disposal, 36,000 gallons of surface impoundment treatment, and 7,200 gallons of tank treatment. The form also indicated that Leavens Manufacturing Co., Inc. generated an annual quantity of 15,900 pounds of spent halogenated solvents, 9,900 pounds of spent non-halogenated solvents, 6,700 pounds of wastewater treatment sludge from electroplating operations, 119,520 pounds of spent cyanide plating bath solutions, and 318,720 pounds of plating bath residue. With submission of this application, Leavens Manufacturing Co., Inc. received Interim Status as a TSD facility.

The Leavens Awards facility was listed in the Comprehensive Environmental Response Compensation, Liability Information System (CERCLIS) in November 1980. A Potential Hazardous Waste Site Identification and Preliminary Assessment form was completed by EPA in December 1980.

In February 1982, a Notice of Violation (NOV) was issued by MADEP to Leavens Manufacturing Co., Inc. for violations of the Hazardous Waste Regulations. In July 1983, MADEP issued a Second NOV to Leavens Manufacturing Co., Inc. for not addressing the February 1982 violations. Additionally, MADEP requested that a Groundwater Monitoring Plan for the surface impoundments be submitted. In August 1983, MADEP issued an Order to Leavens Manufacturing Co., Inc. because the Groundwater Monitoring Plan had not been submitted and violations outlined in the February 1982 NOV had not been addressed. The Order required that a surface impoundment Closure Plan and Groundwater Monitoring Plan be submitted.

On September 14, 1983, EPA requested that a Part B RCRA permit application be submitted within six months. In November 1983, Leavens Manufacturing Co., Inc. submitted a surface impoundment Closure Plan to MADEP instead of a Part B application.

Refer to the Site Investigation and Interim Measures section for further details pertaining to the surface impoundment and lagoon closures and Tetra Tech NUS, Inc. (TtNUS) field sampling events in support of this RCRA EI determination.

Site Geology and Hydrogeology

The Leavens Awards site overlies the Rhode Island Formation, described as sandstone, greywacke, shale, and conglomerate with minor beds of meta-anthracite. The Rhode Island Formation is of Upper to Middle Pennsylvanian age.

According to the Soil Survey for Bristol County, Massachusetts, Northern Part, the site is mapped as Urban Land. The Urban Land classification is given to urban areas where the soil surface is so altered or obscured by structures, etc. that identification of soils is not possible. Previous investigations at the site have described a complex series of overburden deposits. The deposits are described as fill overlying an organic silt/peat layer, overlying glacial lacustrine and fluvial sediments. These sediments overlie glacial till on top of the bedrock surface.

The Ten Mile River and two small unnamed bodies of water that appear to be man-made are the only bodies of water located within one mile of the site. One of the man-made bodies of water is located 0.5 miles northwest of the site and the second is located approximately 0.9 miles east of the site.

Depth to groundwater at the site was measured during the November 2004 TtNUS sampling event in accessible overburden and bedrock groundwater monitoring wells (all except B104S-OW and B104D-OW). Groundwater levels ranged from 3.32 feet to 17.10 feet bgs at that time. According to an environmental consultant working on behalf of Leavens Awards Co., Inc., groundwater flows northeast across the Leavens site, toward the Ten Mile River.

Areas of Concern (AOC)

In 1993, an EPA contractor completed a RCRA Facility Assessment for the Leavens site. Four AOCs were identified in the assessment, including the former surface impoundments (surface impoundments and continuous flow lagoon), the wastewater treatment system that was active at that time, the hazardous waste drum storage area, and the dry well. The TtNUS Draft Site Inspection Report identified eight sources, including the capped surface impoundments, NPDES discharge, dry-well, four tanks/containers associated with the wastewater treatment system, and four separate sources consisting of drums (55- and 30-gallon in size) containing various chemicals and wastes.

Capped Surface Impoundments: From 1968 to 1983, wastewater was pretreated by cyanide destruction, pH adjustment, and precipitation of metal hydroxide sludge. The metal hydroxide sludge was discharged to two asphalt-lined on-site surface impoundments. The effluent was discharged to an unlined on-site “continuous flow lagoon” where additional suspended solids settled out before the supernatant was discharged to the Ten Mile River. In 1984, the surface impoundments were closed by excavation of hazardous wastes and “contaminated” subsoils followed by subsequent capping.

The concentrations used for determining the limits of excavation of the sludge and contaminated soil from the surface impoundments were twenty-percent (20%) of the EP Toxicity limits. For copper, there was no EP Toxicity standards; therefore, twenty-percent (20%) of the proposed Secondary Drinking Water standard was utilized. Analytical results of the EP Toxicity closure certification samples collected by the environmental consultant for Leavens Awards indicated that arsenic, cadmium, copper, iron, lead, manganese, nickel, silver, and zinc were detected at concentrations of 0.02 mg/L, 0.016 mg/L, 3.72 mg/L, 4.74 mg/L, 0.06 mg/L, 0.07 mg/L, 0.27 mg/L, 0.12 mg/L, and 0.21 mg/L, respectively. The soil closure samples contained total arsenic, cadmium, chromium, copper, iron, lead, manganese, nickel, silver, and sodium at concentrations of 0.44 mg/kg, 2.3 mg/kg, 39.5 mg/kg, 13,160 mg/kg, 17,600 mg/kg, 34.8 mg/kg, 4,400mg/kg, 184 mg/kg, 442 mg/kg, and 23.5 mg/kg, respectively. The only metal concentration detected in the confirmatory soil samples at concentrations greater than Massachusetts Contingency Plan (MCP) Method 1 S-1/GW-2 and S-1/GW-3 Standards was silver. The Method 1 S-1/GW-2 and S-1/GW-3 standards for silver are 100 mg/kg.

In May 2004, TtNUS team personnel observed the former wastewater treatment area located within the building basement. The four tanks/containers in this area are of unknown size. Approximately 1 to 2 feet of standing water was present within the basement. The water is believed to be the result of rainwater entering areas of the building where the roof has failed. The liquid levels within the tanks were checked by the MADEP representative present on-site during the reconnaissance, and appeared to be different from the level of water within the basement. It is possible that the contents of the tanks may not have been drained when Leavens Awards Co., Inc. ceased operation at the site in 1999. A small tank, located over one of the larger tanks, appeared to contain a powdery, white residue.

NPDES discharge: From prior to 1968 until 1983, effluent from the wastewater treatment plant was discharged to the “continuous flow lagoon”, which then discharged to the Ten Mile River. The wastewater treatment plant effluent contained concentrations of arsenic, boron, chromium, hexavalent chromium, copper, cyanide, iron, lead, manganese, mercury, nickel, phenol, silver, tin, zinc, gold, and rhodium.

A dry-well that reportedly received steam condensate from manufacturing units and water from a sink in the parts casting room, is located on the southwest side of the building. In November 2004, TtNUS personnel collected two soil samples from the bottom surface of the dry-well and analyzed them for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), and metals. Concentrations of cadmium (164 mg/kg), lead (317 mg/kg), mercury (61.3 mg/kg), nickel (108 mg/kg), and silver (250 mg/kg) were detected in the samples above the Method 1 S-1/GW-2 and S-1/GW-3 standards of 30 mg/kg, 300 mg/kg, 20 mg/kg, 100 mg/kg, and 100 mg/kg, respectively. There were no VOCs, SVOCs, pesticides, or PCBs detected at concentrations above the MCP standards.

Four drums were observed in two areas of the site during the TtNUS site reconnaissance. A drum labeled “sodium hydroxide” was observed adjacent to the south side of the building near the drum storage area. The drum contents had spilled onto the asphalt-pavement. Two drums were observed within the boiler room: one labeled “hydrogen peroxide” and one labeled “potassium hydroxide”. Both of these drums appeared to have a capacity of approximately 30-gallons and were partially full. A small metal container labeled “waste oil” (approximately 5 gallons) and an unlabelled plastic 55-gallon drum were also observed within the boiler room. These drums were also partially full.

Site Investigations and Interim Measures

Numerous investigations have been conducted at the Leavens site. Some of the major regulatory actions, site investigation activities, and reports are summarized below.

In February 1982, a NOV was issued by MADEP to Leavens Manufacturing Co., Inc. for violations of the Hazardous Waste Regulations. In July 1983, MADEP issued a Second NOV to Leavens Manufacturing Co., Inc. for not addressing the February 1982 violations. Additionally, MADEP requested that a Groundwater Monitoring Plan for the surface impoundments be submitted. In August 1983, MADEP issued an Order to Leavens Manufacturing Co., Inc. because the Groundwater Monitoring Plan had not been submitted and violations outlined in the February 1982 NOV had not been addressed. The Order required that a surface impoundment Closure Plan and Groundwater Monitoring Plan be submitted.

In March 1982, “Solid Waste Samples” from the continuous flow lagoon and surface impoundments were analyzed for metals using the Extraction Procedure (EP) Toxicity in March 1982. Analytical results indicated the presence of cadmium, chromium, lead, and silver at concentrations of 0.38 mg/L, 0.04 mg/L, 0.64 mg/L, and 0.22 mg/L, respectively.

On September 14, 1983, EPA requested that a Part B RCRA permit application be submitted within six months. On December 15, 1983, Leavens Manufacturing Co., Inc. submitted a letter to EPA indicating that they would be submitting a closure plan for the surface impoundments instead of a Part B application.

In November 1983, Leavens Manufacturing Co., Inc. submitted a surface impoundment Closure Plan to MADEP. MADEP approved the final revision of the Closure Plan on November 26, 1984. The final revision of the closure plan indicated that the surface impoundments would be closed by "excavating and removing all hazardous waste and contaminated subsoil...with subsequent capping". Dried solids from the surface impoundments were periodically removed and shipped off-site for disposal. According to the Closure Plan, after discharge to the impoundments ceased, metal finishing wastewater would be pre-treated and discharged to the municipal sewer system and sludge would be containerized and disposed off-site by a licensed hazardous waste transporter.

The 1984 surface impoundment closure and capping process included: (1) removal of the discharge pipe to the Ten Mile River; (2) placement of a layer of lime over the excavation; (3) placement and compaction of 578 cubic yards of gravel fill; (4) capping with a 6-inch clay layer (272 cubic yards); and (5) placement of a 6-inch layer of topsoil (270 cubic yards) followed by grading and seeding. Seven overburden monitoring wells were installed as part of the surface impoundment closure. It was noted in the Closure Implementation Summary Report that there were no contaminants in the groundwater samples collected from these wells.

File information included an undated draft Hydrogeologic Assessment for the site by a private consultant hired by Leavens Manufacturing Co., Inc.. The report indicates that the surface impoundments were removed from service in October 1983 and the continuous flow lagoon was removed from service on September 22, 1984. (Records indicate that between February and July 1984, groundwater monitoring was taken over by a consultant for Leavens Awards Co., Inc.) Groundwater samples collected quarterly from October 1983 until December 1984 from the seven monitoring wells indicated that the concentrations of chromium, lead, mercury, and copper exceeded EPA drinking water standards. TCE was also detected in the samples at a concentration of up to 670 micrograms per liter (ug/L). Based on the soil descriptions in the boring logs for the seven monitoring wells, the report stated that the surface impoundments were constructed in a filled wetland.

On July 8, 1995, a Clean Closure Certification, including a Closure Implementation Summary Report, was submitted to MADEP by a private consultant for Leavens Manufacturing Co., Inc. The concentration used for determining the limits of excavation of the sludge and contaminated soil from the surface impoundments was twenty-percent (20%) of the EP Toxicity limits. For copper, there was no EP Toxicity standards; therefore, twenty-percent (20%) of the proposed Secondary Drinking Water standard was utilized. Analytical results of the closure certification samples indicated that some of the copper concentrations remaining in soils exceeded the twenty-percent benchmark that was outlined in the Closure Plan. The consultant for Leavens Manufacturing Co., Inc. noted that

copper had not been found at significant concentrations in groundwater and the remaining copper concentrations in soil were, therefore, not an issue.

In March 1987, MADEP issued a Notice of Noncompliance (NON) to Leavens Awards Co., Inc. stating that the groundwater sampling event for the fourth quarter of 1986 was missed. This monitoring round was not conducted; however, monitoring continued with the first quarter sampling in 1987.

On September 29, 1987, MADEP issued a NON to Leavens Awards Co., Inc. stating that existing wells were not adequate to determine the impact of the surface impoundments on groundwater quality. In response, a private consulting firm submitted a report to MADEP summarizing potential off-site upgradient contributors to the Leavens Awards property groundwater VOC contamination. Potential upgradient contributors cited in this report included four industrial businesses engaged in dry cleaning, electroplating, and jewelry manufacturing. Files reviewed by the private consulting firm indicated that two of these facilities had used or were using TCE at that time, and one company was using tetrachloroethylene (PCE). The report indicated that soil samples collected during the surface impoundment closure did not contain VOCs, with the exception of one sample which contained 20 micrograms per kilogram (ug/kg) of TCE. The report also summarized that PCE, TCE, vinyl chloride, 1,1-dichloroethylene (1,1-DCE), 1,2-dichloroethane (1,2-DCA), 1,1-dichloroethane (1,1-DCA), 1,1,1-trichloroethane (1,1,1-TCA), and other VOCs had been detected in groundwater samples collected from the site at maximum detected concentrations of 20 ug/L, 100 ug/L, 6,180 ug/L, 392 ug/L, 15 ug/L, 37 ug/L, 52,000 ug/L, and 70 ug/L, respectively.

On January 8, 1990, MADEP issued an Administrative Order and NON citing the improper location/installation of the monitoring wells at the facility, with respect to evaluation of contamination from the surface impoundments. The order required Leavens Awards Co., Inc. to submit a scope of work to characterize soil and groundwater at the facility.

On March 16, 1990, a Final Preliminary Assessment Review (PAR) was issued by NUS Corporation for the Leavens Awards facility. The PAR reviewed the Leavens Awards site history and concluded that due to RCRA involvement, the site should be designated as "No Further Federal Remedial Action Planned" in CERCLIS.

In September 1990, an Interim Report was submitted to MADEP on behalf of Oneida (Leavens Manufacturing Co., Inc. was a subsidiary of Oneida). Fourteen additional monitoring wells were installed at the site in response to the January 1990 MADEP Administrative Order and NON. Analytical results indicated that PCE, TCE, cadmium, manganese, and nickel concentrations detected in groundwater and soil samples were related to releases from the surface impoundments. Reportedly, releases from upgradient industrial properties also appeared to be migrating onto the site. The groundwater monitoring plan specified continued sampling of six monitoring wells.

A "Groundwater Detection Monitoring Program" report detailing the results of the groundwater monitoring program was issued in July 1992. The report stated that the concentrations of cadmium,

nickel, and cyanide were “attributed to the operation of the former surface impoundments”. It was noted Leavens Manufacturing Co., Inc. had found no evidence that PCE was used at the facility, and the source of VOC contamination had not been identified. The private consultant also noted that TCE, DCE, and vinyl chloride, which had been detected in groundwater samples collected from monitoring wells on the property, were breakdown products of PCE. Therefore, “it was unknown whether or not the detection...is attributed to the use of TCE by Leavens Manufacturing Co., Inc. or the degradation of PCE”. The private consultant stated that based on the groundwater monitoring, closure of the surface impoundments was considered complete and that the VOC plume should be cleaned up under the auspices of the MCP, and were not required under MADEP hazardous waste regulations.

In August 1993, a Final RCRA Facility Assessment was completed for the Leavens Awards site by an EPA contractor. The Assessment summarized four areas of concern on the site, as discussed in the AOC section of this document.

A Clean Closure Evaluation report completed in February 1994 on behalf of Oneida concluded that although statistically significant differences in concentrations of cadmium, nickel, and cyanide were found in samples collected from upgradient and downgradient monitoring wells, the concentrations were below EPA drinking water standards. Based on a review of the Groundwater Detection Report, MADEP certified closure of the impoundments on January 5, 1993. In May 1995, an addendum to the surface impoundment closure report, which included a limited human health risk assessment for soils below the capped surface impoundments, was submitted to MADEP.

On December 14, 1995, a NON was issued to Leavens Awards Co., Inc. for failure to perform groundwater monitoring in accordance with the post-closure groundwater monitoring plan outline in the July 1992 report. The NON required Leavens Awards Co., Inc. to either resume sampling of site monitoring wells or sample surface water from the Ten Mile River. The collection of surface water samples from the Ten Mile River was to assess whether a condition of Substantial Release Migration (SRM) existed at the site.

In July 1996, MADEP performed a round of groundwater sampling at the Leavens property, including monitoring wells B101S-MW, MW-2 (B2-OW), MW-6 (B6-OW), B102R, MW-05 (B5-OW), B104S-OW, and B110S-MW. MADEP compared the analytical results to the Massachusetts Maximum Contaminant Limits (MMCLs). Copper was detected in groundwater samples at concentrations above the MMCL of 1.3 mg/L in well MW-110S-OW, which is within the foot print of the surface impoundments. VOCs, including TCE, PCE, DCE, and methyl-tert-butyl-ether (MTBE) were also detected in the groundwater samples.

In August 1996, a private consultant completed a regulatory review of the Leavens Awards property for a lending institution. The report also summarized analytical results for soil samples collected from the dry-well in late 1995. The samples were collected at depths of 12 inches and 24 inches from the bottom surface of the dry-well. The samples were submitted for analysis of total metals and

VOCs. Lead, cadmium, and silver were detected at concentrations above MCP Method 1 S-1/GW-2 and S-1/GW-3 Standards.

In May 1998, MADEP met with Leavens Awards Co., Inc. to discuss the site's status and a Chapter 11 bankruptcy decision for Leavens Awards Co., Inc. In the Chapter 11 reorganization plan for Leavens Awards Co., Inc., federal Bankruptcy Court discharged/limited Leavens Awards Co., Inc. obligations under the 1990 MADEP Administrative Order. However, the potential impact of Leavens Awards Co., Inc. discharges to the Ten Mile River were not "relieved"; therefore, assessment of possible contamination in the Ten Mile River was still required.

In July 1998, MADEP performed a Comprehensive Monitoring Evaluation (CME) at the Leavens Awards facility. Samples were collected from two monitoring wells and four surface water locations and submitted for analysis of VOCs and total metals. Surface water samples contained TCE, PCE, MTBE, chromium, and copper. The presence of these contaminants was consistent with the results from a 1996 MADEP sampling round.

On September 4, 1998, MADEP issued a letter to Leavens Awards Co., Inc. to indicate that data from the July 1998 CME sampling was being reviewed to decide if the facility had documented a "Clean Closure Demonstration". The letter required Leavens Awards Co., Inc. to continue sampling in accordance with the post-closure plan.

In August 1999, groundwater samples from monitoring wells MW-102 and MW-102R, and four surface water sample locations along the Ten-Mile River were collected by MADEP and analyzed for the presence of VOCs and metals. These locations were the same locations sampled in July 1998. The groundwater samples contained concentrations of DCE, 1,1-DCA, cis-1,2-DCE, 1,1,1-TCA, TCE, and PCE at concentrations of up to 5.2 ug/L, 1.7 ug/L, 9.1 ug/L, 120 ug/L, and 18 ug/L, respectively. Surface water samples contained cis-1,2-DCE, TCE, PCE at concentrations of up to 4.9 ug/L, 3.7 ug/L, and 12 ug/L, respectively. Other VOCs were detected in the surface water samples, including petroleum-related compounds such as MTBE, benzene, toluene, and xylenes.

On March 8, 2000, MADEP issued an NON to Leavens Awards Co., Inc. because they had not maintained financial assurance for post-closure care of the facility and because surface water samples were not being collected for assessment of SRM, as required by the December 14, 1995 NON. The NON requested that Leavens Awards Co., Inc. submit a revised Post-Closure Plan for the facility, an Immediate Response Action (IRA) Plan to assess migration of contaminants from site groundwater to the Ten Mile River, and a Tier Classification within 60 days. On March 28, 2000, Leavens Awards Co., Inc. responded to the NON by indicating that Leavens Awards Co., Inc. was unable to provide the required submittals due to closure of operations on August 31, 1999 as a result of a creditor seizing the company's assets. The response also indicated that contamination of the property was the result of Oneida Silversmiths, Ltd. (owners of Leavens Manufacturing Co., Inc.) operations on the site.

From November 1 through 4, 2004, TtNUS sampled soil, ground water, surface water and sediment as part of the Leavens Awards Site Inspection (SI). The samples collected consisted of six sediment samples, six groundwater samples, four surface water samples, one aqueous sample from the ponded water within the concrete structure at the base of the continuous flow lagoon headwall (inferred to be from accumulation of precipitation), two soil samples from the dry-well at varying depths, and two background soil samples (not including Quality Assurance/Quality Control samples). Sediment and surface water samples were collected from the Ten Mile River, upstream, at, and downstream of potential and known facility effluent discharge locations. Groundwater samples were collected from several of the existing monitoring wells upgradient of, downgradient of, and within the capped surface impoundments and dry-well. The samples were submitted for analysis of various combinations of parameters, including VOCs, SVOCs, pesticides, PCBs, metals, and cyanide.

Refer to Table 1 for a summary of the background soil sample data and Table 2 for a summary table of the dry-well soil sample data. Refer to Figure 1 for a site locus and Figures 2 and 3 for TtNUS sample locations.

In April 2005, the EPA removal program performed a Preliminary Assessment/Site Investigation (PA/SI) after receiving information from the November 2004 SI regarding the potential direct contact threat at the site from the presence of drums and wastewater treatment system liquids. Several samples were collected, including one from a wastewater treatment tank/vat, one from the exterior drum that was noted, an aqueous sample from the water in the basement, and three soil samples from the vicinity of the capped surface impoundments.

Current Site Conditions

The Leavens facility has not been active since 1999. The Leavens building was observed to be in poor condition at the time of the May and November 2004 TtNUS inspection site visits. The subject property is easily accessible by both vehicles and pedestrians, and has been vandalized. Obvious signs of entry into the building were also observed. The property owner has secured the building to EPA's satisfaction since that time. This was confirmed in a site visit by Rich Haworth on August 5, 2005 and in his e-mail on August 12, 2005 which contained before and after pictures of the building security.

The site is listed as Release Tracking Number (RTN) 4-0015 by the MADEP Bureau of Waste Site Cleanup (BWSC). The site is listed as being "adequately regulated".

This Environmental Indicator Determination is primarily based on sampling data collected during the TtNUS Site Inspection in 2004, but also utilizes historical sampling data to supplement the more recent data.

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be “**contaminated**”¹ above appropriately protective risk-based “levels” (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	<u>Yes</u>	<u>No</u>	<u>?</u>	<u>Rationale / Key Contaminants</u>
Groundwater	<u> </u>	<u> X </u>	<u> </u>	No MADEP S-1/GW-2 and S-1/GW-3 Standards exceeded in monitoring wells sampled.
Air (indoors) ²	<u> </u>	<u> X </u>	<u> </u>	No MADEP S-1/GW-2 Standards exceeded in monitoring wells sampled.
Surface Soil (e.g.<2 ft)	<u> X </u>	<u> </u>	<u> </u>	Metal concentration in designated “background” sample was greater than Method 1 S-1, S-2, and S-3 Standards.
Surface Water	<u> </u>	<u> X </u>	<u> </u>	There were no metals above the National Recommended Water Quality Criteria Criterion Maximum Concentrations (acute exposure).
Sediment	<u> </u>	<u> X </u>	<u> </u>	The compounds detected in sediment samples exceeding the MADEP TECs are not attributable to Leavens Awards Company.
Subsurf.Soil (e.g.>2 ft)	<u> X </u>	<u> </u>	<u> </u>	Metal concentrations exceed Method S-1/GW-2 and S-1/GW-3 Standards.
Air (outdoors)	<u> </u>	<u> X </u>	<u> </u>	Not suspected.
Other	<u> X </u>	<u> </u>	<u> </u>	Material in wastewater treatment room tank/vat contained TCLP concentration for silver above TCLP regulatory limit.

 If no (for all media) - skip to #6, and enter “YE,” status code after providing or citing appropriate “levels,” and referencing sufficient supporting documentation demonstrating that these “levels” are not exceeded.

 Y If yes (for any media) - continue after identifying key contaminants in each “contaminated” medium, citing appropriate “levels” (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

 If unknown (for any media) - skip to #6 and enter “IN” status code.

Rationale and Reference(s):

Leavens Manufacturing Company Closure Implementation Summary Report, by Thibault Associates (February 1985).
 Final RCRA Facility Assessment, by TRC Environmental Corporation (August 1993).
 Report on Clean Closure Evaluation, by Haley & Aldrich, Inc. (February 1994).

Memorandum to John Carrigan (MADEP) RE: Analytical Results for September 24, 1999 Sampling at Leavens Awards, by Kenneth Hulme (MADEP) (September 1999).

Memorandum to Bill Beck (MADEP), Leavens Awards Company, RE: July 1996 Sampling Results (August 1996).

Removal Program Preliminary Assessment Site Investigation Report for Leavens, by Weston Solutions (April 2005).

Draft Site Inspection Report, Leavens Awards Company (Former), by TtNUS (July 2005).

The appropriately protective risk-based “levels” (applicable promulgated standards) used in this EI are the MCP 310 CMR 40.0000 Method 1 risk characterization standards for soil and groundwater, the MADEP Threshold Effects Levels (TECs) for sediment screening, and the EPA’s National Recommended Water Quality Criteria (RWQC) for surface water. If concentrations detected in soil, groundwater, surface water, and sediment at the site are less than the applicable Method 1 standards, TECs, or RWQC, then media are not considered to be contaminated. For this EI determination, the applicable soil and groundwater categories were assumed to be S-1/GW-2 for soil within 30 feet of a building (which is conservative because it represents concentrations which are protective of residential exposures to soil and indoor air over contaminated groundwater), and S-1/GW-3 for areas further than 30 feet from a building which are protective of residential exposures to soil and groundwater discharge to surface water. Data used for comparison to the standards are the 2004 soil, groundwater, surface water, and sediment data, which were collected by TtNUS during the Site Inspection. Historical data for soil samples collected from the surface impoundments excavation for closure in 1984 by Leavens Awards’ consultant and groundwater and surface water data collected by MADEP in 1996 and 1999 was also utilized. Data summary tables are attached as Table 1 and Table 2 for analyses performed in 2004 for samples collected by TtNUS that exceed regulatory standards/criteria or guidelines.

Surface Soils:

Two surface soil samples were collected from the Leavens Awards property by TtNUS in 2004 for use as reference (background) concentrations. The two background soil samples were collected along the northwestern border of the Leavens Awards property in an area presumed to represent background concentrations. However, the concentration of lead (1,100 ppm) and antimony (17.1 ppm) in background sample SS-02 exceed the Method 1 S-1/GW-2 and S-1/GW-3 standards (300 ppm and 10 ppm for both categories). There were no concentrations in background sample SS-01 that exceeded MCP standards. The concentration of lead (15.3 ppm) and antimony (6.4 ppm) in SS-01 are below MCP standards. Refer to Table 1 for a summary of the background soil sample data.

Subsurface Soils:

One of the subsurface soil samples collected from the capped surface impoundment excavation contained a silver concentration greater than the MADEP S-1/GW-2 and S-1/GW-3 Standard. Access to this area is restricted.

The two soil samples collected from the dry-well contained concentrations of cadmium, lead, mercury, nickel, and silver at concentrations above the Method 1 S-1/GW-2 and S-1/GW-3 standards. Refer to Table 2 for a summary of the dry-well soil sample data. Access to this area is restricted.

Other:

During the 2005 Weston Solutions PA/SI for the EPA removals program, several samples were collected from tanks within the building. The sample collected from a tank/vat in the wastewater treatment room contained a TCLP silver concentration of 14 ppm, which is above the regulatory TCLP concentration of 5 ppm. This material is therefore classified as a hazardous waste. Access to this area is restricted.

Footnotes:

¹ “Contamination” and “contaminated” describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based “levels” (for the media, that identify risks within the acceptable risk range).

² Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

- Are there **complete pathways** between “contamination” and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential **Human Receptors** (Under Current Conditions)

“Contaminated” Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food ³
Groundwater	—	—	—	—			—
Air (indoors)	—	—	—				
Soil (surface, e.g., <2 ft)	NO	NO	NO	NO	YES	NO	NO
Surface Water	—	—	—		—	—	—
Sediment	—	—			—	—	—
Soil (subsurface e.g., >2 ft)				NO			NO
Air (outdoors)	—	—	—	—	—		
Other	NO	NO	NO	NO	NO		

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not "contaminated") as identified in #2 above.
2. Enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

___ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

YES If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

___ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code

Rationale and Reference(s):

³ Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

Leavens Manufacturing Company Closure Implementation Summary Report, by Thibault Associates (February 1985).

Final RCRA Facility Assessment, by TRC Environmental Corporation (August 1993).

Report on Clean Closure Evaluation, by Haley & Aldrich, Inc. (February 1994).

Memorandum to John Carrigan (MADEP) RE: Analytical Results for September 24, 1999 Sampling at Leavens Awards, by Kenneth Hulme (MADEP) (September 1999).

Memorandum to Bill Beck (MADEP), Leavens Awards Company, RE: July 1996 Sampling Results (August 1996).

Removal Program Preliminary Assessment Site Investigation Report for Leavens, by Weston Solutions (April 2005).

Draft Site Inspection Report, Leavens Awards Company (Former), by TtNUS (July 2005).

EPA site visit by Richard Haworth (August 5, 2005) and e-mail of pictures (August 12, 2005).

The site is located adjacent to a residential area but is zoned industrial. There are no known day-care facilities within 200 feet of the Leavens property, there are no workers on the Leavens property, and the area in which the lead and antimony concentrations exceeded the MCP standards is not used for recreation, growing crops or currently under construction. Therefore, a complete exposure pathway does not exist for the residential, day care, workers, recreation, food or construction scenarios. A complete exposure pathway is expected to exist for a trespasser based on the easy access to this area.

A complete exposure pathway to the hazardous waste within the wastewater treatment room tank/vat is not considered complete since the building has been secured in August 2005.

4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be “**significant**”⁴ (i.e., potentially “unacceptable” because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable “levels” (used to identify the “contamination”); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable “levels”) could result in greater than acceptable risks)?

NO If no (exposures can not be reasonably expected to be significant (i.e., potentially “unacceptable”) for any complete exposure pathway) - skip to #6 and enter “YE” status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”

_____ If yes (exposures could be reasonably expected to be “significant” (i.e., potentially “unacceptable”) for any complete exposure pathway) - continue after providing a description (of each potentially “unacceptable” exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”

_____ If unknown (for any complete pathway) - skip to #6 and enter “IN” status code

Rationale and Reference(s):

⁴ If there is any question on whether the identified exposures are “significant” (i.e., potentially “unacceptable”) consult a human health Risk Assessment specialist with appropriate education, training and experience.

Although a complete exposure pathway is expected to exist for a trespasser based on the easy access to surficial soils with levels of lead and antimony above the MCP standards for this site, EPA believes the **exposures are NOT expected to be significant** for the following reasons:

Three additional surface soil samples were collected in April 2005 from the site as part of the Weston Solutions PA/SI and these samples contained lead concentrations of 21.4 ppm, 21.0 ppm, and 19.1 ppm, which are all below the Method 1 S-1/GW-2 and S-1/GW-3 standards. Standard risk assessment procedures allow for the averaging of lead concentrations across a site to determine risk. If the average is below 300 ppm, then the risk is at an acceptable level. The average lead concentration, based on all five surface soil samples, is 235 ppm, below the Method 1 S-1/GW-2 and S-1/GW-3 standards of 300 ppm.

The three surface soil samples collected by Weston Solutions for EPA in April 2005 were also analyzed for total antimony and were found to be non detected at 6ppm, however, the analytical data was rejected during validation. Since there are only 2 acceptable samples we need to use the highest concentration (17.1 ppm) for our exposure. The current Method 1 S-1/GW-2 and S-1/GW-3 standard is 10 ppm but based on new toxicity information for antimony, MADEP has proposed to change this standard to 20 ppm. This change has gone through all the regulatory hurdles and has been approved and is awaiting signature. This change should be effective in October 2005. As long as the antimony standard stays at 20 ppm, the possible exposures can be considered not significant.

It is noted that a limited number of surface soil samples have been collected for analysis. In the future, additional surface soil samples in close proximity to background sample SS-02, should be collected to verify that the average lead concentrations across the site do not exceed the standards.

5. Can the “significant” **exposures** (identified in #4) be shown to be within **acceptable** limits?

_____ If yes (all “significant” exposures have been shown to be within acceptable limits) - continue and enter “YE” after summarizing and referencing documentation justifying why all “significant” exposures to “contamination” are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

_____ If no (there are current exposures that can be reasonably expected to be “unacceptable”)- continue and enter “NO” status code after providing a description of each potentially “unacceptable” exposure.

_____ If unknown (for any potentially “unacceptable” exposure) - continue and enter “IN” status code

Rationale and Reference(s):

6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

YE YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the Clean Harbors of Natick facility, EPA ID # **MAD980523203**, located at 10 Mercer Road in Natick, MA, under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

___ NO - "Current Human Exposures" are NOT "Under Control."

___ IN - More information is needed to make a determination.

Completed by (signature) Frank Battaglia Date 9/28/05
(print) Frank Battaglia
(title) RCRA Facility Manager

Supervisor (signature) Matthew Hoagland Date 9/29/05
(print) Matthew R. Hoagland
(title) Chief, RCRA Corrective Action Section
(EPA Region or State) EPA New England - Region 1

Locations where References may be found: The references can be found in the site file at the EPA Records Center at 1 Congress Street, Boston, MA.

Contact telephone and e-mail numbers

(name) Frank Battaglia
(phone #) 617-918-1362
(e-mail) battaglia.frank@epa.gov

Final Note: The Human Exposures EI is a Qualitative Screening of exposures and the determinations within this document should not be used as the sole basis for restricting the scope of more detailed (e.g., site-specific) assessments of risk.

Table 1

**Background Soil Sample Analytical Results
for Leavens Awards Company (Former)
Exceeding MADEP RCS-1 and/or Method 1 S-1/GW-2 and S-1/GW-3 Standards
Samples Collected by TtNUS Team Personnel in November 2004**

Sample Location	Metals	Sample Concentration (ppm)		RCs	Method 1 Standards	
				RCS-2 (ppm)	S-1/GW-2 (ppm)	S-1/GW-3 (ppm)
SS-02 (MA1L92)	Metals/Cyanide					
	Antimony	17.1	J	10	10	10
	Lead	1,110	J	300	300	300

Notes:

ppm = parts per million

J = The associated numerical value is an estimated quantity.

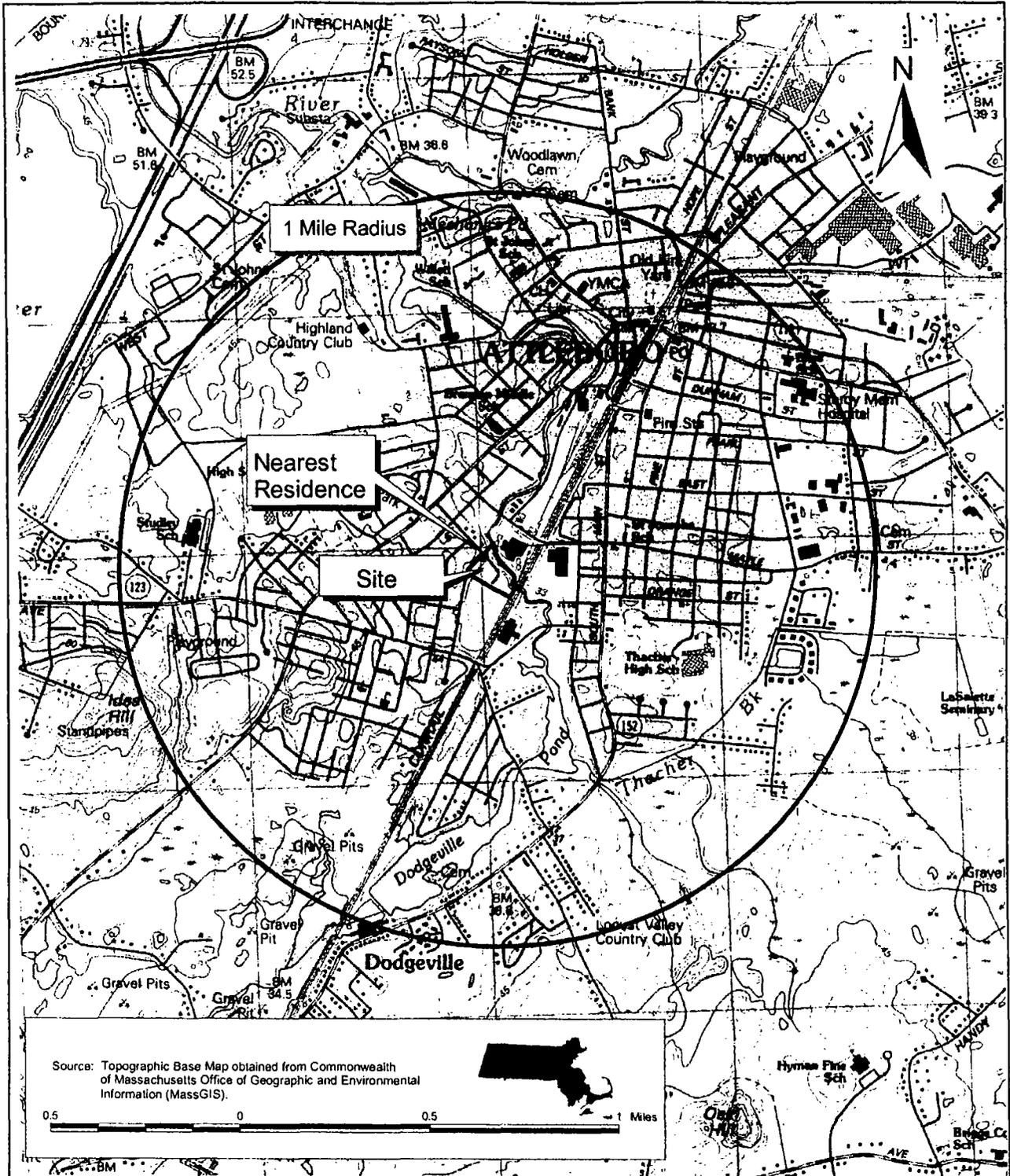
Table 2

**Drywell Sample Analytical Results
for Leavens Awards Company (Former)
Exceeding Massachusetts Contingency Plan RCs and/or Method 1 Soil Standards
Samples Collected by TtNUS Team Personnel in November 2004**

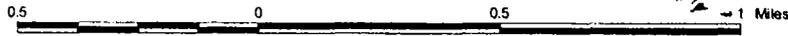
Sample Location	Elements	Sample Concentration (ppm)		RCs	Method 1 Standards	
				RCS-2 (ppm)	S-1/GW-2 (ppm)	S-1/GW-3 (ppm)
SS-03 (MA1L92)	Metals/Cyanide					
	Cadmium	164	J	30	30	30
	Lead	317	J	300	300	300
	Silver	235	J	200	100	100
SS-DUP-01 (D13783)	Metals/Cyanide					
	Cadmium	140	J	30	30	30
	Silver	238	J	200	100	100
SS-04 (D13784)	Metals/Cyanide					
	Cadmium	132	J	30	30	30
	Mercury	61.3	J	20	20	20
	Nickel	108	J	300	100	100
	Silver	250	J	200	100	100

Notes:

J = The associated numerical value is an estimated quantity.
ppm = Parts per million.



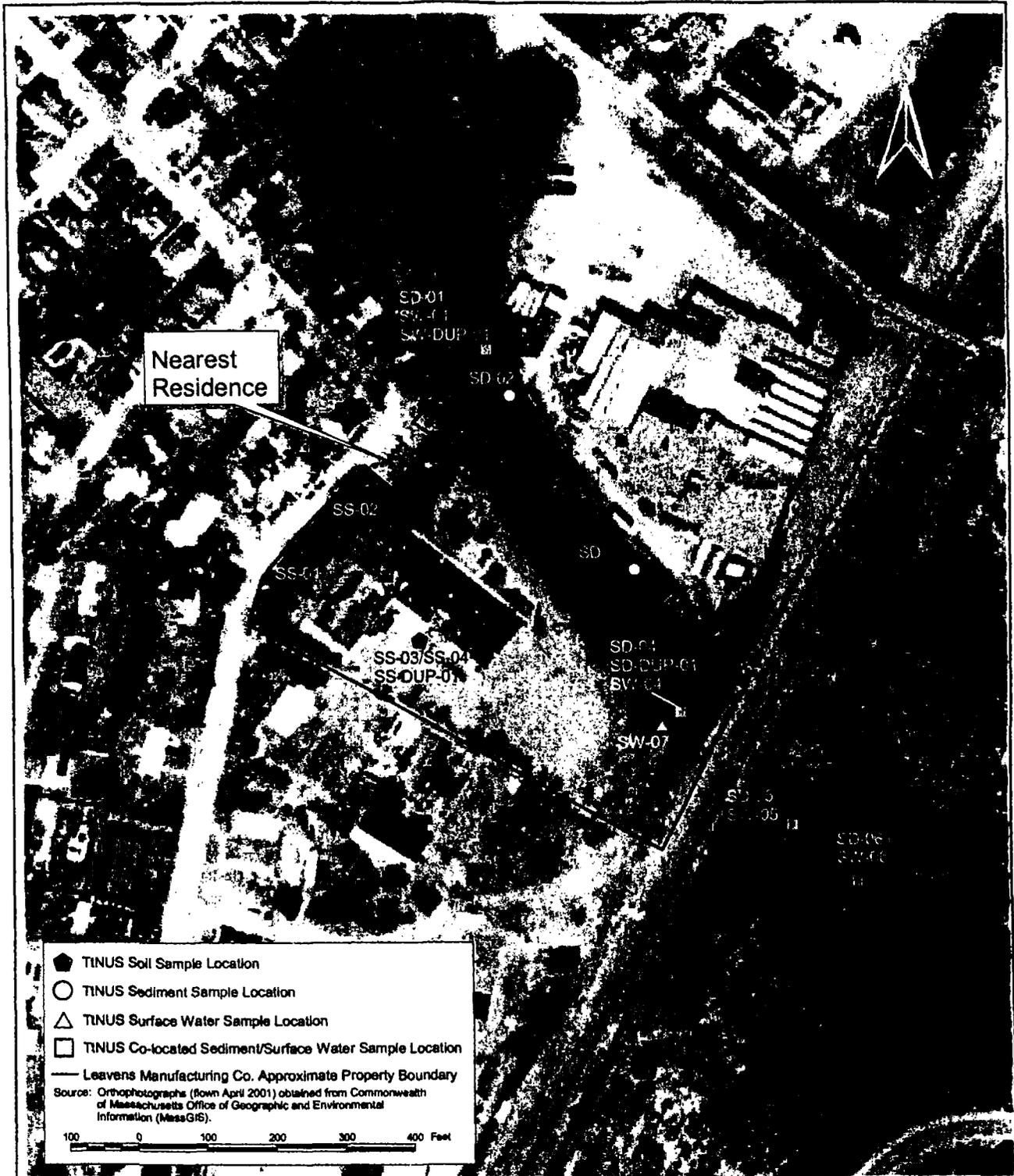
Source: Topographic Base Map obtained from Commonwealth of Massachusetts Office of Geographic and Environmental Information (MassGIS).



TETRA TECH NUS, INC.
55 JONSPIN ROAD
WILMINGTON, MA 01887
(978) 658-7899

SITE LOCATION
LEAVENS AWARDS COMPANY (FORMER)
ATTLEBORO, MASSACHUSETTS

SCALE As Shown	
FILE VOIS/SITEASSESSMENT/LEAVENS/AWARDS/ LEAVENS APR	
REV 0	DATE 01/14/05
FIGURE NUMBER FIGURE 1	



TETRA TECH NUS, INC.
55 JONSPIN ROAD
WILMINGTON, MA 01887
(978) 658-7899

TETRA TECH NUS, INC. (TINUS)
SAMPLE LOCATIONS
LEAVENS AWARDS COMPANY (FORMER)
ATTLEBORO, MASSACHUSETTS

SCALE
As Shown

FILE
VQIS/SITEASSESSMENT/LEAVENS/AWARDS/
LEAVENS.APR

REV 0 DATE 01/20/05

FIGURE NUMBER
FIGURE 3