



LEAVENS AWARDS  
MAD063913909  
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**DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION**

Interim Final 2/5/99

**RCRA Corrective Action  
Environmental Indicator (EI) RCRIS code (CA750)**

**Migration of Contaminated Groundwater Under Control**

**Facility Name:** Leavens Awards Company  
**Facility Address:** 41 Summer Street, Attleboro, MA  
**Facility EPA ID #:** MAD063913909

1. Has all available relevant/significant information on known and reasonably suspected releases to the groundwater media, 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 #8 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 describe the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater.

**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 former Leavens Awards Company (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. Records indicate that the building was probably constructed in 1960 and that 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 drywell, 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 drywell. 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.

The Leavens Awards property is zoned Industrial.

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.

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 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.

#### 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.

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 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, drywell, 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 wastestreams.

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 had approximately 1 to 2 feet of standing water 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 MassDEP

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 drywell 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 drywell 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 MassDEP to Leavens Manufacturing Co., Inc. for violations of the Hazardous Waste Regulations. In July 1983, MassDEP issued a second NOV because Leavens Manufacturing Co., Inc. had not addressed the violations. Additionally, MassDEP requested that a Groundwater Monitoring Plan for the surface impoundments be submitted. In August 1983, MassDEP 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. 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 MassDEP. MassDEP 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 monitoring wells installed in overburden material 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.

Files reviewed by TtNUS 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 MassDEP 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 standard; 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, MassDEP 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, MassDEP 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 MassDEP summarizing potential off-site upgradient contributors to the Leavens Awards property groundwater VOC contamination. Potential upgradient contributors cited in the 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, MassDEP issued an Administrative Order and NON citing the improper location/installation of 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 considered 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 MassDEP on behalf of Oneida (Leavens Manufacturing Co., Inc. was a subsidiary of Oneida) in response to the January 8, 1990 Administrative Order and NON. Fourteen additional monitoring wells were installed and sampled at the time. 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 that 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 guidance of the MCP, and were not required under MassDEP 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 above.

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, MassDEP 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 MassDEP.

On December 14, 1995, an 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, MassDEP 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. MassDEP 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 drywell in late 1995. The samples were collected at depths of 12 inches and 24 inches from the bottom surface of the drywell. 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, MassDEP 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 MassDEP 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, MassDEP 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 MassDEP sampling round.

On September 4, 1998, MassDEP 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 MassDEP and analyzed for the presence of VOCs and metals. These locations were the same locations sampled in July 1998. The groundwater samples contained 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, MassDEP 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 results of Oneida Silversmiths, Ltd. (owners of Leavens Manufacturing Co., Inc.) operations on the site.

From November 1 through 4, 2004, TtNUS conducted a sampling effort as part of the Leavens Awards Site Inspection. TtNUS team personnel collected 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 drywell 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 drywell. The samples were submitted for analysis of various combinations of parameters, including VOCs, SVOCs, pesticides, PCBs, metals, and cyanide.

In April 2005, the EPA removal program performed Site Inspection activities after receiving information from the TtNUS SI site reconnaissance 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.

Refer to Figure 1 for a site locus and Figures 2 and 3 for TtNUS sample locations.

#### 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 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 reportedly secured the building since that time. A site visit is planned by EPA to confirm that this has been done.

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

There are no records indicating investigations or sampling efforts on the Leavens Awards property between 2000 and 2004.

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.

located within 500 feet of the site and the area is connected to a municipal water supply. Therefore, MassDEP Method 1 GW-2 standards (which are protective of volatilization of contaminants from groundwater into indoor air) and GW-3 standards (protective of groundwater discharge to surface water) are applicable for use as appropriately protective levels for this EI. GW-2 standards apply to groundwater located within 30 feet of an existing occupied building, where the average annual depth to groundwater in that area is 15 feet or less.

Historical groundwater samples have contained some metals and VOCs at concentrations above regulatory standards. For the TtNUS SI, groundwater samples were collected from six of the on-site monitoring wells, including two wells located within the footprint of the former surface impoundments (B102S-OW and B102R-OW). Concentrations of metals and VOCs detected in groundwater samples were below MCP Method 1 GW-2 and GW-3 Standards. Therefore, migration of contaminated groundwater is considered under control.

**3. Has the migration of contaminated groundwater stabilized (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"<sup>2</sup> as defined by the monitoring locations designated at the time of this determination)?**

\_\_\_\_\_ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"<sup>2</sup>.

\_\_\_\_\_ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"<sup>2</sup>) - skip to #8 and enter "NO" status code, after providing an explanation.

\_\_\_\_\_ If unknown - skip to #8 and enter "IN" status code.

**Rationale and Reference(s):**

<sup>2</sup> "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

**2.** Is **groundwater** known or reasonably suspected to be "**contaminated**"<sup>1</sup> above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

\_\_\_\_\_ If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

  **N**   If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

\_\_\_\_\_ If unknown - skip to #8 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 (MassDEP) RE: Analytical Results for September 24, 1999 Sampling at Leavens Awards, by Kenneth Hulme (MassDEP) (September 1999).

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

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

**Footnotes:**

<sup>1</sup>"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 appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

Method 1 GW-1 Standards apply to groundwater located within a current or potential drinking water source area. Method 1 GW-2 Standards apply to groundwater that is located within 30 feet of an existing occupied building or structure when the average depth to groundwater in the area is 15 feet or less. Method 1 GW-3 Standards apply to groundwater that is considered a potential source of discharge to surface water. All groundwater is classified as GW-3 under the MCP. The Leavens property is classified as GW-2 within close proximity to the building (15 feet vertically or 30 feet horizontally) and GW-3.

The site and surrounding vicinity are connected to municipal water. The site is not located within a Zone II, an Interim Wellhead Protection Area, an Aquifer Protection District or Zone, a Potentially Productive Aquifer, or a Zone A of a Class A surface water body used as a public water source. No private wells are

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

\_\_\_\_\_ If yes - continue after identifying potentially affected surface water bodies.

\_\_\_\_\_ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

\_\_\_\_\_ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s):

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be "**insignificant**" (i.e., the maximum concentration<sup>3</sup> of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

\_\_\_\_\_ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration<sup>3</sup> of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

\_\_\_\_\_ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration<sup>3</sup> of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations<sup>3</sup> greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the

determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

\_\_\_\_\_ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

<sup>3</sup> As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be "**currently acceptable**" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented<sup>4</sup>)?

\_\_\_\_\_ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR

2) providing or referencing an interim-assessment,<sup>5</sup> appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

\_\_\_\_\_ If no - (the discharge of "contaminated" groundwater can not be shown to be "**currently acceptable**") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

\_\_\_\_\_ If unknown - skip to 8 and enter "IN" status code.

Rationale and Reference(s):

<sup>4</sup> Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

<sup>5</sup> The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

\_\_\_\_\_ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

\_\_\_\_\_ If no - enter "NO" status code in #8.

\_\_\_\_\_ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

YE YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the Leavens Awards Company facility, EPA ID # **MAD063913909**, located at 41 Summer Street in Attleboro, MA. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-

evaluated when the Agency becomes aware of significant changes at the facility.

\_\_\_\_\_ NO - Unacceptable migration of contaminated groundwater is observed or expected.

\_\_\_\_\_ IN - More information is needed to make a determination.

Completed by (signature) Atway Date 9-29-09  
(print) ABDUL TURAY  
(title) Environmental Analyst

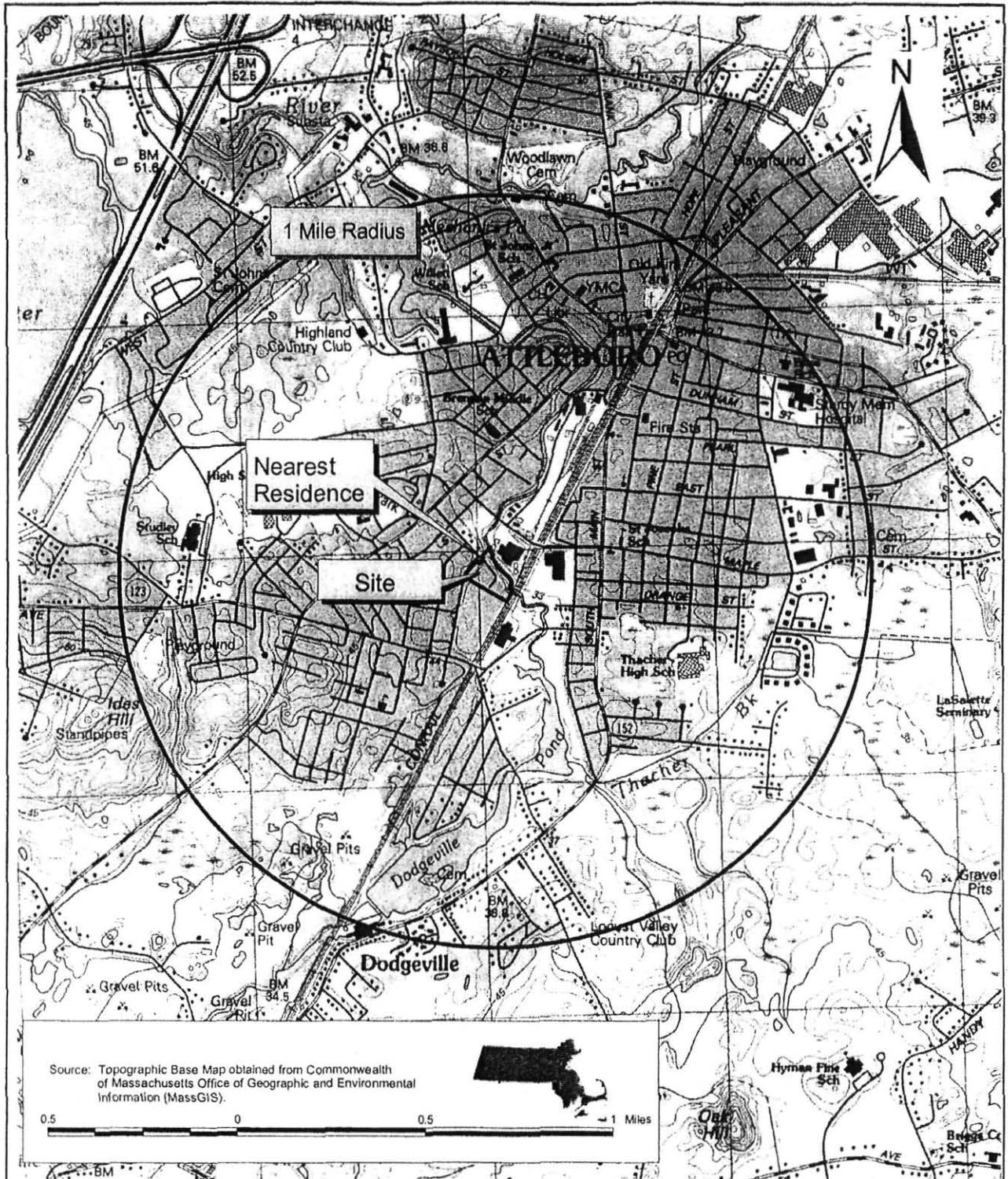
Supervisor (signature) Jeffrey H. Chormann Date 9/29/09  
(print) Jeffrey H. Chormann  
(title) Section Chief

References may be found in the site file located at 1 Winter Street, Boston MA.

Contact telephone and e-mail

(name) Jeffrey H. Chormann  
(phone #) 617-292-5888  
(e-mail) Jeffrey.Chormann@state.ma.us

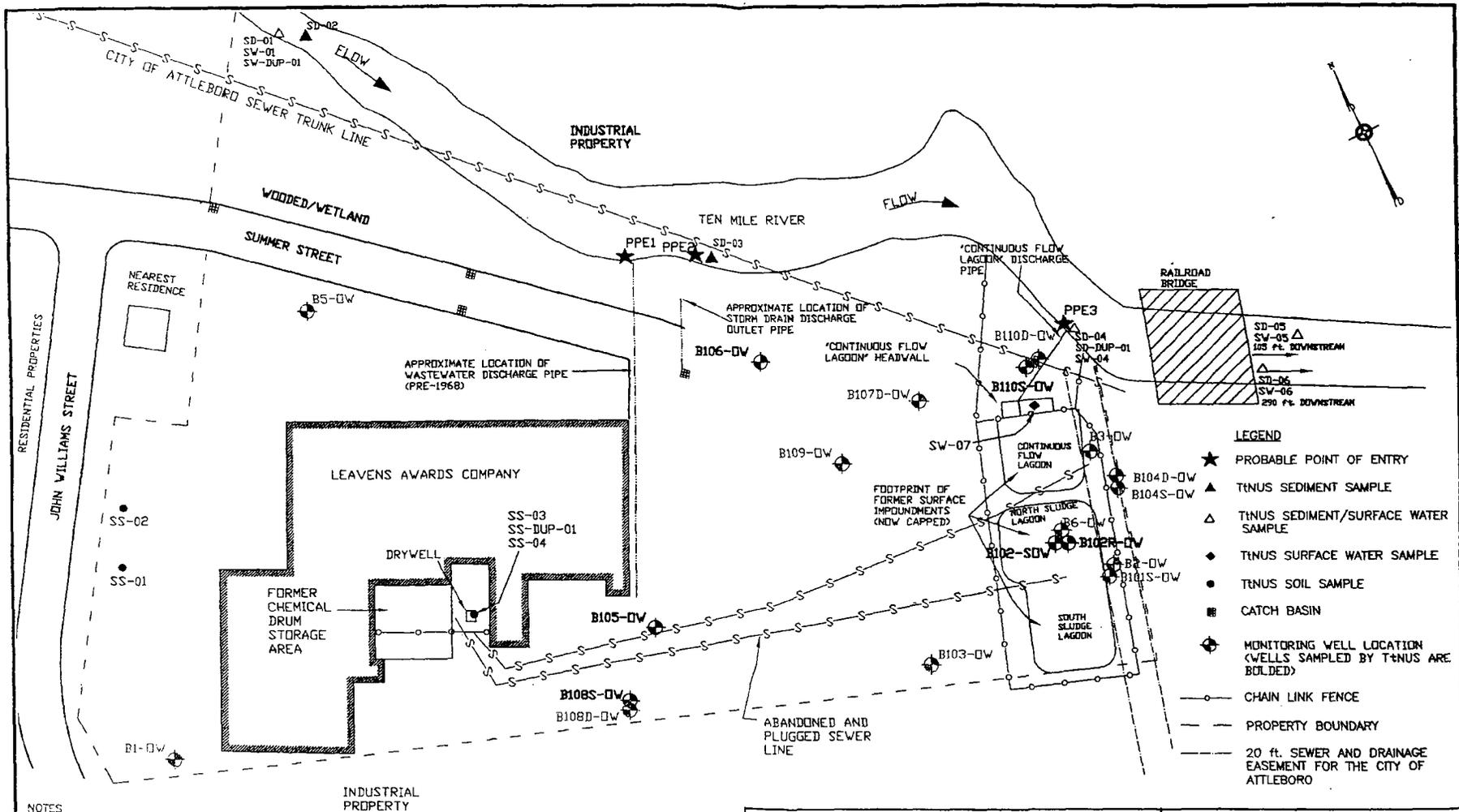
*Reviewed by*  
*[Signature]* 10/29/09  
*Chief, RCRA Corrective Action*



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

**SITE LOCATION**  
**LEAVENS AWARDS COMPANY (FORMER)**  
**ATTLEBORO, MASSACHUSETTS**

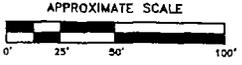
SCALE As Shown	
FILE IGIBSITEASSESSMENTLEAVENSAWARDS LEAVENS APR	
REV 0	DATE 01/14/05
FIGURE NUMBER FIGURE 1	



- LEGEND**
- ★ PROBABLE POINT OF ENTRY
  - ▲ TINUS SEDIMENT SAMPLE
  - △ TINUS SEDIMENT/SURFACE WATER SAMPLE
  - ◆ TINUS SURFACE WATER SAMPLE
  - TINUS SOIL SAMPLE
  - CATCH BASIN
  - ⊕ MONITORING WELL LOCATION (WELLS SAMPLED BY T+TUS ARE BOLDED)
  - CHAIN LINK FENCE
  - - - PROPERTY BOUNDARY
  - - - 20 ft. SEWER AND DRAINAGE EASEMENT FOR THE CITY OF ATTLEBORO

- NOTES**
- 1 ALL LOCATIONS ARE TO BE CONSIDERED APPROXIMATE.
  - 2 PLAN NOT TO BE USED FOR DESIGN.

SOURCES: "SITE PLAN", HALEY & ALDRICH, JULY 1992.  
 T+TUS SITE RECONNAISSANCE CONDUCTED ON MAY 12, 2004  
 AND SAMPLING CONDUCTED ON NOVEMBER 1-4, 2004

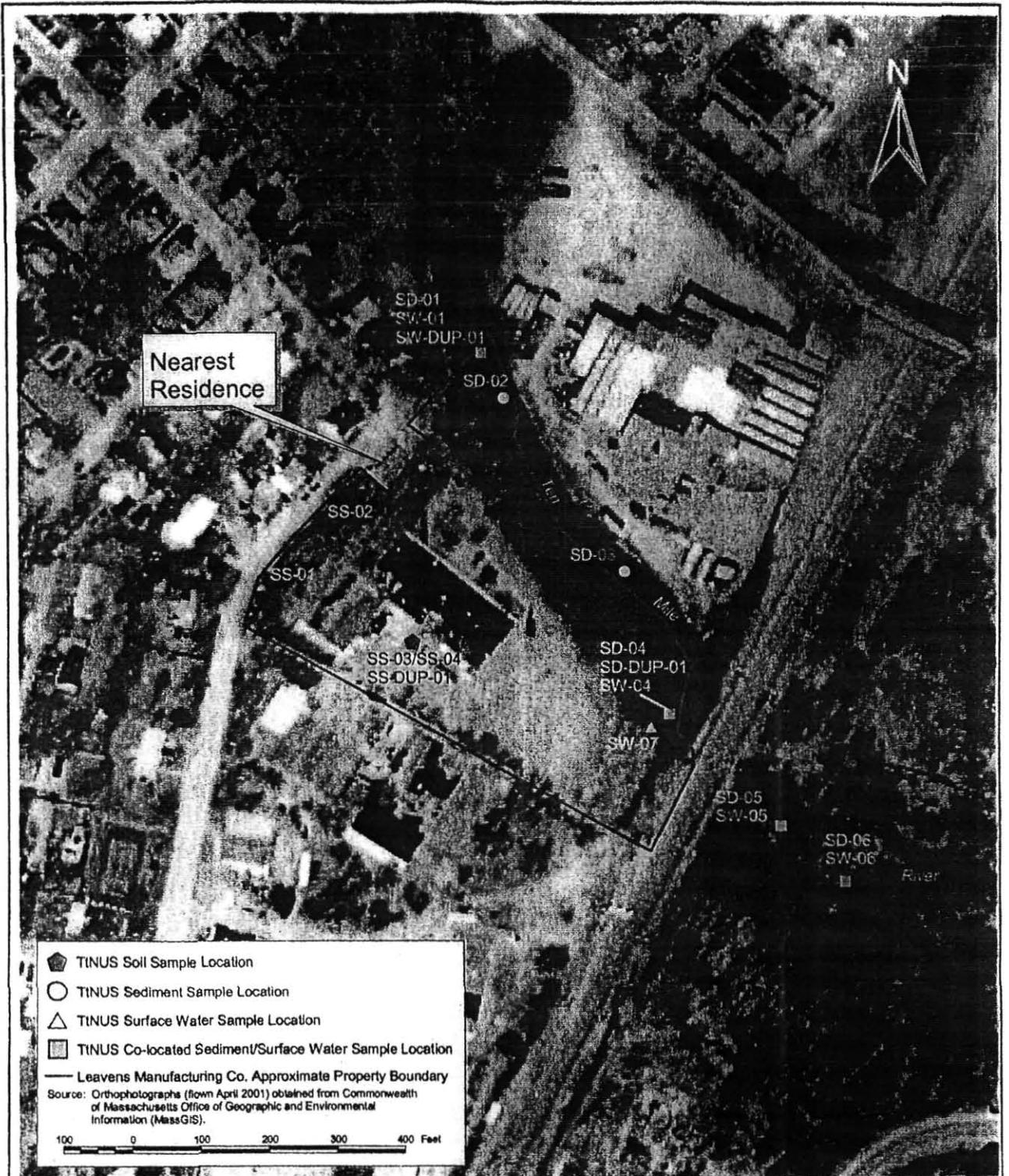


<b>SITE SKETCH</b>	
<b>LEAVENS AWARDS COMPANY</b>	
<b>ATTLEBORO, MASSACHUSETTS</b>	
DRAWN BY: A.ROY	REV: 0
CHECKED BY: J. PILLION	DATE: 05/19/2005
SCALE: AS SHOWN	FILE NO.: 05-019-0001-0001-0001-0001-0001-0001

**FIGURE 2**

**TETRA TECH NUS, INC.**

55 Jonspin Road      Wilmington, MA 01887  
 (978)658-7899



◆ TINUS Soil Sample Location  
 ○ TINUS Sediment Sample Location  
 △ TINUS Surface Water Sample Location  
 ◻ TINUS Co-located Sediment/Surface Water Sample Location  
 — Leavens Manufacturing Co. Approximate Property Boundary  
 Source: Orthophotographs (flown April 2001) obtained from Commonwealth of Massachusetts Office of Geographic and Environmental Information (MassGIS).

100 0 100 200 300 400 Feet



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

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

SCALE As Shown	
FILE GISITEASSESSMENTLEAVENSAWARDS LEAVENS APR	
REV 0	DATE 01/20/05
FIGURE NUMBER FIGURE 3	