DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
Interim Final Guidance: 2/5/99
RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)
Migration of Contaminated Groundwater Under Control

Today's Date: 2/29/00

Facility Name: ____Acme Rivet & Machine_____
Facility Address: _____400 Middle Street, Bristol, CT _____
Facility EPA ID #: _____CTD001701168_____

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?

__x__ 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 (EI) 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 EI 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 "Migration of Contaminated Groundwater Under Control" EI
A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies
While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations
EI Determinations status codes should remain in 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).

2. Is **groundwater** known or reasonably suspected to be **"contaminated"**[1] 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.

__X__ 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):

ADMINISTRATIVE INTRODUCTION. Acme Rivet & Machine was a subsidiary of Elco Industries which sold the Acme Rivet & Machine facility to D'Amato Construction Corp. Apparently, Textron subsequently purchased Acme Rivet/Elco and must have assumed the liability of closure and remediation work in the sale agreement because as the information below elucidates, Textron completed very comprehensive closure actions at the facility's RCRA units. These closure actions resulted in clean closure approval from the State following a relatively brief period of post closure groundwater monitoring. In addition, apparently, D'Amato conducted certain UST excavations which appear to have been comprehensively executed. These actions, including facility decommissioning activities conducted by Elco/Textron, appear to have addressed the majority of outstanding RCRA Corrective Action issues associated with the site.

However, two issues required resolution: (a) the Environmental Indicator Evaluation completed and submitted by Textron (dated Oct. 27, 1999) and historical information suggested that a 10,000 gallon Process Oil UST (AOC 6) may still exist at the site; and (b) the available information in a September 28, 1993 RCRA Facility Assessment (RFA) indicated the presence of an AOC 10 which essentially described D'Amato's construction equipment area. Because the UST tank implicated the UST program, to appropriately address this issue, EPA's RCRA Facility Manager deferred this issue to EPA's UST program which subsequently coordinated with the State resulting in a site inspection at the facility in January of 2000. Based on conversation with Jonathan Walker of EPA's UST program, this site inspection indicated the facility was in good condition although certain questions remain associated with notification of the existence of this AOC 6 tank. With respect to AOC 10, EPA's RCRA Facility Manager conducted a site visit on February 24, 2000. The results of this site visit indicated that there were no 55-gallon drums stored at the construction yard and the yard was in apparently good and clean shape.

The AOC 10 issue suggests the potential difficulties associated with the transfer of property - in this case, the transfer of a former RCRA Subchapter III hazardous waste TSD to a commercial interest for conversion to commercial leasehold space - and the prudence in developing a final remedy for a site where the responsible party has long ago vacated the premises leaving the site, including monitoring wells, in an unresolved administrative state. In this case, and as will be substantiated below, the former Acme Rivet facility should be considered Stabilized and a RCRA Corrective Action final remedy decision process should be initiated with deferral of pending UST matters to appropriate state and federal programs.

Much of the information in this evaluation was retained from Textron's October 27, 1999 EI Evaluation. Textron's approach for completing the EI was based, in part, on EPA's August 17, 1999 letter to Textron which attempted to summarize resolved and pending matters associated with the site.

BACKGROUND. Ten (10) areas of concern (AOCs) were identified at the site by the U.S. Environmental Protection Agency contractor, TRC Environmental Corporation. TRC reported their findings in their report entitled, Final RCRA Facility Assessment, Former Acme Rivet & Machine Corporation, dated 28 September 1993. In a letter dated 17 August 1999, EPA reported that the work performed to date at AOCs 3, 4, 5, and 8 was comprehensive and met their clean closure requirements. Further qualification of AOCs 1, 2, 6, 7, 9 and 10 was requested. Therefore, only AOCs 1, 2, 6, 7, 9 and 10 are addressed below.

The groundwater beneath the site and the surrounding industrial area is classified as GB by the Connecticut Department of Environmental Protection (CTDEP). The GB designation indicates that the site's groundwater is within a highly urbanized area of intense industrial activity where a public water supply is available. The GB designation indicates that the CTDEP recognizes that the groundwater in the area of the site may not be suitable for direct human consumption due to waste discharges, spills or leaks of chemicals from industries in the surrounding area.

Groundwater monitoring has been extensive at the site. Six rounds of groundwater samples collected from eight wells at the site, from November 1989 until March 1993, do not show final testing results in excess of EPA's Maximum Contaminant Levels (MCLs). Below is a summary of the rationale using in determining that the site soil and groundwater have not been contaminated above appropriately protective risk based levels.

AOC BY AOC ANALYSIS.

AOC No. 1 - Former Plating and Degreasing Area

The former plating and degreasing area is where zinc plating, tumbling, cleaning, and stripping were historically performed. The floors of the area are concrete and equipped with floor drains. When the facility was operated by Acme Rivet & Machine the floor drains were designed to direct any liquids that may have spilled to the floor, to a wastewater treatment system. Since that time, the waste water treatment plant has been properly closed. An abandoned sump covered with gravel is located in the former degreasing area. Reportedly the sump was also connected to the former wastewater treatment system.

Chemical testing results from a soil sample collected by HRP from the soils under the abandoned sump located in the former degreasing area, analyzed for chlorinated solvents, did not show the presence of any contaminated above the Connecticut Remediation Standard Regulation (RSR) criteria. TRC also reported in 1993 that there were no records or readily observable evidence that a release had occurred at AOC No.1 Furthermore, TRC reported that screening results from using a Thermo Electron Instruments, Inc. organic volatile monitor (OVM) did not show sustained readings above background at AOC No. 1.

Additionally, chemical testing results from a groundwater monitoring well located approximately 40 ft. downgradient from AOC No. 1 did not show the presence of volatile organic compounds (VOCs) using EPA Method 8010 and 8020, at levels above the applicable industrial RSR criteria.

The available data consisted of a historical records review, visual observations of the AOC, soil and groundwater sampling and chemical testing results. None of this data indicate that the groundwater, soil, surface water, sediments, or air have been contaminated above appropriately protective risk-based levels (i.e., the Connecticut RSRs).

AOC No. 2 - Former Wastewater Treatment System Area

The former wastewatertreatment system was used to pretreat wastewaters generated from the manufacturing and plating processes. Reportedly, the wastewater treatment system consisted of the following: a cyanide destruction unit, a chrome reduction unit, a neutralization unit, a flocculation unit, a former settling tank, a batch treatment tank, and chemical mix/feed tanks. The wastewater treatment system was dismantled some time prior to the 1993 TRC assessment.

TRC reported that based upon their 1993 assessment that there were no records or readily observable evidence that a release had occurred at AOC No. 2. TRC reported that screening results from using a [OVM] did not show sustained readings above background at AOC No. 2. Furthermore, chemical testing results from four wells located 90 to 120 ft. downgradient from AOC No. 2, did not show the presence of any contaminants above the [RSRs].

Chemical testing results from four well located 90 to 120 ft. downgradient from AOC No. 2, did not show the presence of any contaminants above the [RSR].

The available data consisted of a historical records review, visual observations of the AOC, and groundwater sampling and chemical testing results. None of the available data indicate that the groundwater, soil, surface water, sediments, or air have been contaminated above appropriately protective risk-based levels (i.e., the Connecticut RSRs).

AOC No. 6 - Existing 10,000 gal. Process Oil Underground Storage Tank (UST)

AOC No. 6 consists of a 10,000 gal. underground storage tank (UST), reportedly used to store process oil.

In 1986 HRP Associates, Inc. monitored the excavation of a test pit along the western side of the 10,000 gal. UST, exposing the entire side of the tank. The test pit was extended to a depth of 11 ft. HRP reported that the test pit was clean and without odor, and that the tank was in good condition. Two soil samples were collected, one from the northern and southern ends of the tank, and submitted to a chemical testing laboratory for analysis for halogenated volatile organics by EPA Method 8010 and aromatic volatile organics by EPA Method 8020. HRP reported that the VOCs tested for were not detected by the laboratory.

TRC reported that based upon their 1993 assessment that there were no records or readily observable evidence that a release had occurred at the AOC No 6. Furthermore, TRC reported that screening results using [an OVM] did not show sustained readings above background at AOC No. 6.

The available data consisted of a historical records review, visual observations of the AOC, and soil sampling and chemical testing results. None of this data indicated that the groundwater, soil, surface water, sediments, or air have been contaminated above appropriately protective risk-based levels (i.e., the Connecticut RSRs).

Status Update. As indicated above, because the UST tank implicated the UST program, to appropriately address this issue, EPA deferred this issue to EPA's UST program which subsequently coordinated with the State resulting in a site inspection at the facility in January of 2000. Based on conversation with Jonathan Walker of EPA's UST program, this site inspection indicated the facility was in good condition although certain questions may remain associated with notification of the existence of this AOC 6 tank.

AOC No. 7 - Three Existing Above Ground Storage Tanks (ASTs)

AOC No. 7 was identified as three 275 gal. ASTs used to store diesel fuel, fuel oil, and kerosene.

TRC reported that based upon their 1993 assessment that there were no records or readily observable evidence that a release had occurred at the AOC No. 7. Furthermore, TRC reported that screening results using [an OVM] did not show sustained readings above background at AOC No. 7.

The available data consisting of a historical records review and visual observations of the AOC does not indicate that the groundwater, soil, surface water, sediments, or air have been contaminated above appropriately protective risk-based levels (i.e., the Connecticut RSRs).

AOC No. 9 - Stained Surface Area

AOC No. 9 consists of a stained surface area reportedly caused by oil leaked from a dumpster and scrap storage.

In December 1986, HRP collected one soil sample from the stained area and submitted it to a chemical t4esting laboratory for analysis for analysis for halogenated volatile organics by EPA Method 8010 and aromatic volatile organics by EPA Method 8020. None of the volatile organics tested for were detected at levels above the Connecticut RSRs.

The available data consisted of a historical records review, visual observations of the AOC, soil sampling and chemical testing results. None of this data indicates that the groundwater, soil, surface water, sediments, or air have been contaminated above appropriately protective risk-based levels (i.e., the Connecticut RSRs).

AOC No. 10 - Construction Equipment Area

The activities described by TRC at AOC No. 10 did not occur until after ownership of the property had been transferred from Acme Rivet & Machine Corporation to D'Amato Construction in December of 1986. Therefore, this AOC need not be addressed by Acme Rivet & Machine Corporation. **Status Update. A visual review of this AOC performed during a February 24, 2000 site visit revealed no detectable traces of storage drums or oil staining.**

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 appropriate

"levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"[2] 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"[2]).

_____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[2]) - 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):

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[2] "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.

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[3] 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[3] 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[3] 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[3] 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):

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[3] 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[4])?

_____ 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,[5] 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):_____

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[4] 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.

[5] 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).

__x__ 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 **former Acme Rivet & Machine** facility, EPA ID **#CTD001701168**, located at **400 Middle St., Bristol, CT**. 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) _____ Date: 10/27/99
(print) Raphael Cody Revised: **2/29/00**
(title) RCRA Facility Manager

Supervisor (signature) _____ Date 3/17/00
(print) Matt Hoagland
(title) Chief, RCRA Corrective Action
(EPA Region or State) Region I

Locations where References may be found:

See facility files

STATE contact telephone and e-mail numbers

(name) Craig Park
(phone #)
(e-mail)