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FACILITY Rogers Corp
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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: Rogers Corporation
Facility Address: 730 Windham Road, South Windham, CT 06266
Facility EPA ID #: CTD018884833

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?

- 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).

**Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)**

Page 2

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.

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): July 25, 2003 Groundwater Sampling Event

The Rogers Corporation South Windham facility is located between South Windham Road and the Shetucket River (Figure 1). Groundwater samples were collected from eleven site monitoring wells and two on-site facility supply wells on July 25, 2003 (Figure 2). As identified in Table 1, the well network at the site consists of eight monitoring wells screened in the shallow-unconsolidated deposits aquifer, three monitoring wells screened in the deep-unconsolidated deposits aquifer, and one bedrock monitoring well. The facility supply wells consist of a well screened in the deep-unconsolidated deposits and a bedrock well. All of the samples were analyzed for VOCs (Method 8260). The samples from the monitoring wells were also analyzed for PP13 metals. The three monitoring wells in the vicinity of the former landfill (PAOC-02) were analyzed for SVOCs (Method 8270) and PCBs (Method 8082). A summary of detected parameters is provided in Table 2.

For the shallow unconsolidated-deposit aquifer, VOCs were detected at MW-05, MW-07, MW-08, MW-10, and MW-11 (Table 2). MW-05 is located downgradient of the chemical storage area (PAOC-06). MW-07 is located downgradient of the former landfill (PAOC-02). MW-08 is located downgradient of the former drum storage area (PAOC-01). MW-10 and MW-11 are located downgradient of petroleum underground storage tanks (PAOC-05), drywells (PAOC-15), a septic system (PAOC-14), the sludge evaporation shed (PAOC-09), and a former degreasing still (PAOC-16).

PCE was detected in the deep unconsolidated-deposit aquifer in the sample collected from the cooling water supply well (PW-2). This constituent and other chlorinated VOCs were detected at similar concentrations in the deep unconsolidated aquifer and bedrock aquifer during a 1980 sampling event.

In July 2003, the highest concentrations of VOCs detected at the site were in the shallow unconsolidated-deposits aquifer at MW-10. PCE was the most frequently detected VOC in the unconsolidated-deposits aquifer with detects reported for four of the twelve samples collected.

MEK was also detected in July 2003 in the sample collected from the bedrock aquifer cooling water supply (PW-1). This constituent was not detected in any of the other samples collected at the site.

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).

**Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)**

Page 3

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): July 25, 2003 Groundwater Sampling Event
Fuss & O'Neill, December 3, 1999, *Groundwater Reclassification Request*, Rogers Corporation, South Windham**

Migration of contaminated groundwater at the South Windham site has stabilized. Future groundwater monitoring events will be performed to confirm that groundwater contamination remains within the existing "area of groundwater contamination". The next groundwater monitoring event will occur October 2003. The following discussion of NAPL and the plume limits (lateral and vertical) are presented below.

Free-Product Contamination

There was no evidence of separate phase or non-aqueous phase liquids (NAPL) at the South Windham site. There was no evidence to suggest that NAPL can reasonably be expected to be reported in the future. Future groundwater monitoring will be performed for confirmation purposes.

Dissolved-Phase Contamination

The lateral limits of groundwater contamination in the unconsolidated aquifer and bedrock aquifer are well defined. Historical groundwater monitoring data indicates that the unconsolidated aquifer and bedrock aquifer along South Windham Road in the vicinity of the site are contaminated. In the early 1980's groundwater samples were collected by others from residential supply wells located west and upgradient of the site on South Windham Road, Machine Shop Road, and Sanitarium Road (Figure 3). The results from the sampling event are provided in Table 3. This sampling event was performed in response to the discovery of releases at the Obwebetuck Hill Landfill and H.L. Diehl Company located 2,500 feet west and 3,000 feet southwest of the Rogers facility (Figure 4). Water quality downgradient of these facilities including the Rogers Corporation supply well (PW-1) was determined to be affected by VOCs including PCE, TCE, and 1,1,1-TCA. The extent of the area of impacted groundwater in the vicinity of the Obwebetuck Hill Landfill and H.L. Diehl Company is shown on Figure 4. As a result of the investigation, CTDEP classified the area for the site and surrounding vicinity as potentially not meeting the GA standard (suitable for human consumption without treatment).

In 2000, due to historical contamination of the unconsolidated aquifer and bedrock aquifer by off-site upgradient sources, the State at the request of the Rogers Corporation changed the groundwater classification at the site from a GA standard to a GB standard (not suitable for human consumption without treatment due to waste discharges, spills, leaks of chemicals, or land use impacts).

**Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)**

Page 4

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.

**Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)**

Page 5

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): July 25, 2003 Groundwater Sampling

1. Shetucket River

**Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)**

Page 6

5. Is the discharge of "contaminated" groundwater into surface water likely to be "insignificant" (i.e., the maximum concentration³ 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 concentration³ 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 concentration³ 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 concentrations³ 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):

The maximum concentration of each contaminant discharged to the surface waters of the Shetucket River is less than ten times their "appropriate groundwater level". The only exceedances of the CTDEP Surface Water Protection Criteria was the PCE concentration reported in the sample collected from MW-10 (Table 2). As shown below, the detected concentration is less than ten times the appropriate groundwater level. Therefore, it is likely that the discharge of groundwater contaminants has not had unacceptable impacts to the receiving surface water body. Future groundwater monitoring results will continue to be evaluated to determine if concentrations of key contaminants are increasing.

KEY CONTAMINANTS		WELL
Appropriate Groundwater Level (ug/L) (10 times Surface Water Protection Criteria)		Reported Concentration Exceeding the SWPC - July 2003
		MW-10
PCE	880	530

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

Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)
Page 7

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 implemented⁴)?

_____ 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)

Not Applicable

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.

**Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)**

Page 8

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):

Site-wide groundwater monitoring will be conducted in accordance with achieving compliance with the Connecticut Remediation Standard Regulations (RSRs). The next site-wide groundwater monitoring event will occur October 2003. Following the October event, the groundwater monitoring program will be evaluated in light of future plans for achieving compliance with the RSRs.

Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)
Page 9

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 - 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 Rogers Corporation facility, EPA ID # CTD018884833, located at 730 Windham Road, South Windham, 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) Edgar A. Davis Date 10-6-2003
(print) Edgar A. Davis
(title) RCRA Facility Manager

Supervisor (signature) Matt Hoagland Date 4/21/04
(print) Matt Hoagland
(title) Chief, RCRA Corrective Action Section
(EPA Region or State) Region 01

Locations where hardcopy References may be found:

Rogers Corporation (One Technology Drive, Killingly, CT)
Connecticut Dept. of Environmental Protection-File Room-79 Elm St., Hartford, CT
USEPA Region 1 Offices, 90 Canal Street, Boston, MA

Contact telephone and e-mail numbers

(name) Edgar A. Davis
(phone #) 617.918.1379
(e-mail) davis.edgar@epa.gov