

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: General Electric Transportation Systems  
Facility Address: 2901 East Lake Road, Lawrence Park Township, Erie, PA 16531  
Facility EPA ID #: PAD 005 033 055

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 "Current Human Exposures Under Controls" EI**

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

**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 groundwater 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).

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

X                    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 (for any media) – skip to #8 and enter "IN" status code.

Rationale:

Since 2009, the Facility has been monitoring sitewide groundwater in accordance with a combination of an EPA-approved RCRA 2020 Corrective Action Work Plan and bi-annual post closure monitoring. Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) being investigated are:

- Waste Disposal Area #1 (SWMU 1) - This area is located in the northwest corner of the facility (including the area now covered by parking lots and operations buildings) and was operated from approximately 1920 through 1980. This unit was used for disposal of demolition wastes, foundry sands, and general plant trash in addition to small quantities of asbestos board, paint residue, carbide slag, and wastewater treatment sludge. GE reports that the wastewater treatment sludge was removed from this SWMU in 1978 and deposited in the currently operating sludge landfill.
- Waste Disposal Area #2 (SWMU 2) – This SWMU was located in the northeast portion of the facility and was operated from 1920 until 1979. The unit was used for disposal of Class III materials, including demolition wastes, foundry sands, and general plant trash in addition to small quantities of asbestos board, paint residue, carbide slag, and wastewater treatment sludge. This area was also used for temporary storage of creosote treated wood blocks used for building flooring. In addition, sludges (containing dirt and oil) from sump cleaning throughout the facility were disposed in two pits on top of the fill area.
- Open Pit Burning Area (SWMU 5) - This unit was located in the southwest portion of the facility in an area now containing a paved roadway and parking area adjacent to Building 44J. This unit was in use until the waste solvent incinerator unit was put in operation. This SWMU was believed to first be put into operation in approximately 1910 and last operated in 1955. The unit incinerated general plant trash and some waste solvents and oils.
- Wastewater Treatment Sludge Landfill/In-Plant Closed Landfill (SWMU 6) - Operation of this RCRA-permitted SWMU began in 1978 and ceased in September 1987 (closed in approximately 1987). The landfill is approximately one-half acre in size and has a holding capacity of 2,400 cubic yards. Groundwater monitoring of SWMU 6 has been on-going since landfill closure as part of the bi-annual post closure monitoring. The

<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).

following table presents recent groundwater sampling data, collected as part of GE's bi-annual post closure monitoring of the Wastewater Treatment Sludge Landfill.

- Sitewide Groundwater (AOC) - Due to the history of industrial use and minor spills indicated in the 2002 Environmental Indicator Inspection Report, the EPA determined the sitewide groundwater as an Area of Concern. Prior to the RCRA 2020 Corrective Action Work Plan, there was no monitoring program to determine if impacts to the groundwater across the Facility has occurred as a result of historical operation or spills. Monitoring wells results from the most recent January 2015 Corrective Action Investigation Report indicate concentrations of 1,2-dichloroethane (1.4 ppm); cis-1,2-dichloroethene (5 ppm); methylene chloride (1.3 ppm); tetrachloroethene (0.51 ppm); trichloroethene (1.8 ppm); and vinyl chloride (1.9 ppm) in exceedance of their respective EPA Industrial Regional Screening Levels (RSLs) and the PADEP non-residential non-use aquifer medium-specific concentration (MSCs) in SWMU 5.

#### Reference(s)

Final Environmental Indicator Inspection Report for General Electric Transportation System, Foster Wheeler Environmental Corporation, December 2002

RCRA Corrective Action Investigation Work Plan, Michael Baker Jr., Inc., July 2, 2009

Preliminary Corrective Action Investigation Report, Arcadis, November 2009

RCRA Supplemental Corrective Action Investigation Report, Michael Baker Jr., Inc., September 2010

Second Supplemental Corrective Action Investigation Report, Arcadis, December 2011

Third Supplemental Corrective Action Investigation Report, Arcadis, June 2012

Fourth Supplemental Corrective Action Investigation Report, Arcadis, January 2015

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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)?

X  
\_\_\_\_\_

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):

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Exceedances noted in the previous question were only related to one monitoring well (MW 5-2) in SWMU 5. Other monitoring wells within the SWMU located in proximity of MW 5-2 do not have exceedances of either the RSLs or MSCs. One downgradient well from MW 5-2 has been proposed to be added to further determine the extent of impacts at SWMU 5. However, the analytical results from the Corrective Action Investigation Reports from 2009 thru 2015 exhibit stable or decreasing conditions and, therefore, groundwater is expected to remain within the existing area of contamination.

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<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.

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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):

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No surface water bodies exist at the Facility for the contaminated groundwater in SWMU 5 to discharge into. Furthermore, there have been no exceedances of the RSLs or MSCs at the monitoring wells near the Facility property boundary that would indicate a possibility that contaminated groundwater could discharge into offsite surface water bodies.

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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 judgment/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 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 "level(s)," and if 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.

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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 a "NO" status, 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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<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.

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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?"

  X   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):

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The Facility is currently performing groundwater sampling activities in accordance with the continuing Corrective Action Investigation initiated in 2009. Groundwater sampling will continue as preparations are made to move to a remedy decision.



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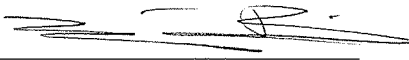
8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

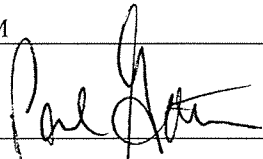
\_\_\_\_\_ YE - Yes, "Migration of contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the General Electric Transportation Systems facility, EPA ID PAD 005 033 055, located at 2901 East Lake Road, Lawrence Park Township, Erie, PA 16531. 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.

X \_\_\_\_\_

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

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

Completed by: (signature)  Date 9/24/15  
(print) Kevin Bilash  
(title) RPM

Supervisor: (signature)  Date 9-24-15  
(print) Paul J. Gotthold  
(title) Associate Director,  
Office of PA Remediation  
(EPA Region or State) EPA Region III

Locations where References may be found:

U.S. EPA Region III  
3LC30 LCD file room  
1650 Arch Street  
Philadelphia, PA 19103

Contact telephone and e-mail numbers:

(name) Kevin Bilash  
(phone #) 215-814-2796  
(e-mail) bilash.kevin@epa.gov