

**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:** C&D Technologies, Inc.  
**Facility Address:** 401 Washington Street, Conshohocken, PA 19428  
**Facility EPA ID #:** PAD053285557

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).

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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?

- 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 - skip to #8 and enter “IN” status code.

**Rationale and Reference(s):**

This site, adjacent to the Schuylkill River, was a lead-acid battery manufacturing operation from 1925 until 1985. The former industrial operations resulted in soil and groundwater impacts at the property. A sludge impoundment containing heavy-metal contamination was created in the Schuylkill Canal with waste from onsite-wastewater treatment placed there until approximately 1976. The site has been undergoing remedial activity under the Pennsylvania Act 2 program since 2002.

A Hydrogeologic Investigation in 1982 reported the presence of lead, arsenic, and antimony sludge in the Old Schuylkill Canal impoundment adjacent to the facility, and the presence of elevated concentrations of leachable metals which were not likely to migrate from the perched aquifer zones. A Phase II Environmental Site Assessment Report in 2001 further delineated the presence of lead contamination, which provided the basis for the development of a Remedial Action Work Plan in 2002. A site-specific standard for lead (5000 mg/kg) was the cleanup goal in the Remedial Action Work Plan. According to a Project Update Letter provided by Roux Associates, Inc. in 2009, areas of surface soil contamination containing high concentrations of lead were excavated in 2003. Post-excavation sampling was completed in 2012 and 2013 and reported in the October 2014 Act 2 Combined Remedial Investigation Report and Cleanup Plan for Soil - Revised. Some hot spots remain above the site-specific standard, however the areal extent and concentration of lead contamination in soil is significantly reduced from the previous site conditions.

According to the PADEP-approved work plan, the Buyer was seeking liability protection under Act 2 for groundwater for all polynuclear aromatic hydrocarbons (PAHs), RCRA metals, and nickel. Four quarters (October 2002, January 2003, April 2003, and July 2003) of groundwater monitoring data were collected from four monitoring wells and tables provided in the Project Update Letter, which summarized the results of the analysis for PAHs and dissolved RCRA metals compared to their PADEP Non-Residential Used Aquifer Medium Specific Concentrations (MSCs). No PAHs were detected in any of the monitoring wells. Dissolved barium was detected in all rounds at all of the monitoring well locations at concentrations less than its MSC. Dissolved mercury was detected in groundwater samples from MW-4 in October 2002 and January 2003 at a concentration of 1.57 µg/L; which is less than its MSC of 2 µg/L. Dissolved lead was detected only at one location (MW-4) during the final sampling round in July 2003 at a concentration of 27 µg/L, which exceeded its MSC of 5 µg/L. None of the metals other than barium were detected in the point of compliance monitoring wells (MW-1, MW-2 and MW-3) located at the downgradient edge of the site along the river.

**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).

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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)?

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):**

Dissolved lead was not detected at MW-4 in three rounds (October 2002, January 2003, and April 2003,) above the detection limit of 5 µg/L; however, it was detected at MW-4 located near the central portion of the site) during the last sampling round (July 2003) at a concentration of 27 µg/L, which exceeded its MSC of 5 µg/L. Since this sampling event, a significant volume of lead-contaminated soil has been excavated across the site, removing source areas of lead and lead-impacts to groundwater, as described in the Act 2 Combined Remedial Investigation Report and Cleanup Plan for Soil-Revised, dated October 24, 2014.

Lead was not detected during the four quarters of monitoring at the point of compliance monitoring wells MW-1, MW-2 and MW-3, indicating that the presence of lead at the interior of the site is stable. The migration of shallow groundwater has not been shown to adversely affect surface water quality in the river.

<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.
- X 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):

No PAHs or metals, other than barium (below MSC) were detected during the four quarters of monitoring at the point of compliance monitoring wells MW-1, MW-2 and MW-3, indicating that the migration of shallow groundwater is not adversely affecting surface water quality in the adjacent Delaware River.

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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 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.

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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 cannot 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.

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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?"

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):

Continued groundwater sampling/monitoring will be necessary to complete Corrective Action obligations as well as to apply for liability release under the Act 2 program, as the facility intends. Specifics for the monitoring program will be decided at future meetings with EPA and PADEP.

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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 C&D Technologies, Inc. facility, EPA ID # PAD053285557, located at 401 Washington St., Conshohocken, PA 19428. 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) Linda Matyskiela  
(print) Linda Matyskiela  
(title) Project Manager

Date 12/18/2020

Supervisor (signature) Paul Gotthold  
(print) Paul Gotthold, Chief  
(title) RCRA Corrective Action Branch 2  
(EPA Region or State) EPA Region III

Date 12/18/2020

Locations where References may be found:

US EPA Region III  
Land, Chemicals, and Redevelopment Division  
1650 Arch Street  
Philadelphia, PA 19103

PADEP  
Southeast Regional Office  
2 E Main Street  
Norristown, PA 19401

Contact telephone and e-mail numbers

(name) Linda Matyskiela  
(phone #) 215-814-3420  
(e-mail) matyskiela.linda@epa.gov