DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

RCRA Corrective Action
Environmental Indicator (EI) RCRAInfo code (CA750)
Migration of Contaminated Groundwater Under Control

Facility Name: Revere Smelting and Refining
Facility Address: 65 Ballard Road, Middletown, NY 10941
Facility EPA ID #: NYD030485288

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 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 "contaminated" 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 RCRAInfo national database ONLY as long as they remain true (i.e., RCRAInfo status codes must be changed when the regulatory authorities become aware of contrary information).

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 is not available, skip to #8 and enter "IN" (more information needed) status code.

BACKGROUND

The Revere Smelting and Refining site (parent company now titled Ecobat) is located at 65 Ballard Road in the Town of Wallkill, Orange County, New York. The inactive hazardous waste disposal (Superfund) site consists of 60.6 acres of land in a mixed commercial and industrial area. The full Ecobat property comprises 154.9 acres.

The active facility consists of two large buildings, the Main Plant where lead is smelted and poured into molds, and the Containment Building, which stores and processes the various parts of batteries. A smaller building known as the crystallizer building processes the battery acid into a recyclable product. A small office complex adjacent to the Main Plant houses most of the staff at the site. Beyond the buildings are several parking lots. A railroad spur is located adjacent to the Main Plant and Containment Building that is used by Revere for transporting product.

Beyond the active facility to the north and east are several acres of overgrown fields, mature woodlands, wetlands, and a pond. The pond empties into an unnamed stream. To the west of the active facility are a mowed front lawn area and another unnamed stream. The two unnamed streams which run through the site converge off the site to the south of the railroad tracks to form the Phillipsburg Creek, on property still owned by Revere. The Phillipsburg Creek discharges into the Wallkill River approximately one mile south of the site.

The site is zoned as Light Enterprise by the Town of Wallkill. Approximately one quarter of the site is actively used by Ecobat for their operations described above. Environmental Investigations have identified impacts to environmental media resulting from site operations. Lead and arsenic are the primary constituents of concern (COCs). Remedial actions have been completed at the site to address this contamination and are described below.

The site currently contains four Operable Units. These operable units are as follows:

OU-1 consists of all environmental media other than groundwater on the 60.6-acre Class 2 site, excluding the active facility (OU-4), as well as all environmental media other than groundwater within six off-site properties (four of which are owned by Ecobat) where impacts from the site have been documented;

OU-2 is groundwater contamination outside the barrier wall surrounding the active facility;

OU-3 is impacted off-site environmental media (soil and sediments) other than groundwater which are not

a part of OU-1; and

OU-4 is the active facility including groundwater beneath the active facility within the barrier wall surrounding the facility.

In February 2011, Revere signed a Consent Order with the Department which required several improvements to infrastructure and operating protocols for the active facility (OU-4), the implementation of remedial programs for OU-1, OU-2 and OU-3, and the completion of a Resource Conservation and Recovery Act (RCRA) Facility Investigation and Corrective Measures Study (RFI/CMS) for OU-4.

A Record of Decision for OU-1 was issued in September 2011. The remedy set forth in that Record of Decision included excavation and treatment of soil and sediment and placement of treated materials in an on-site containment cell. As of June 2017, excavation and treatment of OU-1 materials are complete.

A Record of Decision for OU-3 was issued in March 2020. OU-3 includes portions of seven off-site private properties. In the case of all seven properties, the impacted portions of OU-3 on these properties are not developed. Five of these properties are used for commercial use, one property is a DOT right of way, and one property is a private residence. The Remedial Design for OU-3 was approved in April 2024 and remedial construction is scheduled to start in early 2025.

A Statement of Basis was issued for OU-4 in February 2017. The Statement of Basis established the required remedial action for OU-4 at present and upon closure of the Revere Smelting and Refining facility. As stipulated in the Statement of Basis, groundwater contamination within OU-4 is contained by a low-permeability slurry wall and an extraction and treatment system installed under an Interim Corrective Measure and completed in 2014.

A Groundwater Summary Report was prepared by Ecobat in September 2024. This report summarizes groundwater monitoring results from across the site for the last ten years and confirms the effectiveness of previously implemented remedial actions on groundwater. Upon approval the Groundwater Summary Report, OU-1 will be modified to include groundwater previously designated as OU-2 and OU-2 will be removed from the Consent Order. This Groundwater Summary Report documents that remedial actions previously implemented on OU-1 and OU-4 have effectively contained groundwater contamination, and therefore a remedial program for groundwater under OU-2 (as stipulated by the Consent Order) is no longer necessary.

Groundwater is encountered in both overburden soil and bedrock beneath the site and generally flows to the south-southeast across the site towards the Wallkill River. Overburden groundwater is generally encountered at a depth of ten feet below grade.

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?

__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 known or reasonably suspected to be "contaminated."

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

Rationale:

Two Operable Units (OUs) contain groundwater within the shallow (overburden) and bedrock aquifers which exceeds the NYSDEC Class GA groundwater standards: OU-2 and OU-4. OU-2 is henceforth referred to as OU-1 for clarity, as OU-2 will be incorporated into OU-1 concurrent with the completion of this evaluation. The constituents of concern in groundwater (groundwater standard in parenthesis) include arsenic (25 part per billion (ppb)), antimony (3 ppb), cadmium (5 ppb), chromium (50 ppb), lead (25 ppb), and sulfate (250 ppm).

Quarterly groundwater monitoring has been completed at the site since the 1990's and will continue for the foreseeable future under Ecobat's RCRA operating permit (OU-4) and the Site Management Plan for OU-1. To document attainment of groundwater contamination control based on remedial actions completed at OU-1 and OU-4, Ecobat prepared and submitted the September 2024 Groundwater Summary Report which documents groundwater conditions at the site over the last 10 years.

Three overburden monitoring wells (MW-9S, MW-19S, MW-20S) and one bedrock monitoring well (MW-21D) are present in OU-4 to monitor levels of groundwater contaminants contained within the slurry wall and groundwater extraction area. Over the last ten years, chromium has not been detected in any well or during any sampling event in OU-4. Lead has been detected consistently in monitoring wells MW-9S (maximum concentration 17,500 ppb, current concentration 2,290 ppb) and MW-21D (maximum concentration 56.3 ppb, current concentration 6.0 ppb). Antimony has been detected consistently in monitoring well MW-9S (maximum concentration 410 ppb, currently non-detect). Arsenic has been detected consistently in monitoring well MW-9S (maximum concentration 253 ppb, currently non-detect). Cadmium has been detected consistently in monitoring well MW-20S (maximum concentration 88.1 ppb, currently non-detect). Sulfate has been detected consistently in monitoring wells MW-9S (maximum concentration 2,120 ppm, current concentration 191 ppm), MW-20S (maximum concentration 5,320 ppm, current concentration 2,240 ppm), and MW-21D (maximum concentration 3,410 ppm, current concentration 320 ppm).

Within OU-1, arsenic has not been detected in any monitoring well over the last ten years. Antimony,

[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).

chromium, and lead have only been detected sporadically over single monitoring events in OU-1 over the last ten years. Antimony was detected in one well (MW-17S) in one quarterly sampling event (July 2017) at a concentration of 12 parts per billion (ppb). Chromium was detected in three wells (MW-29I, MW-29D, MW-30S) during the January 2016 sampling event with a maximum concentration of 333 ppb. Lead was detected at monitoring wells MW-7S, MW-17S, MW-18D, MW-29I, MW-29D, MW-30S during single sampling events with a maximum concentration of 130 ppb. Sporadic detections of arsenic, antimony, chromium, and lead in OU-1 groundwater during the last ten years are most likely attributed to entrained sediments in groundwater samples and are therefore not attributable to site related released.

Cadmium has been detected consistently in monitoring wells MW-23S, MW-23D and MW-24S (all located in OU-1 immediately down gradient of OU-4) over the last ten years with a maximum concentration of 36.6 ppb in overburden groundwater and a maximum concentration of 72.4 ppb in bedrock groundwater. Most recent concentrations of cadmium in groundwater at these wells are 21 ppb at MW-23S, 57.4 ppb at MW-23D, and Non-Detect at MW-24S.

Elevated levels of sulfate have consistently been detected in several wells in OU-1 over the over the last ten years. These wells include MW-13S (maximum concentration 2,230 parts per million (ppm), current concentration 1,640 ppm), MW-23S (maximum concentration 2,500 ppm, current concentration 1,110 ppm), MW-24S (maximum concentration 1,550 ppm, current concentration 1,030 ppm), MW-13B (maximum concentration 1,540 ppm, current concentration 985 ppm), and MW-23D (maximum concentration 7,180 ppm, current concentration 7,140 ppm).

References:

"Groundwater Summary Report," GHD, September 2024.

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)?

    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[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.

[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.

Rationale:

Groundwater contamination present at the site is stable. This conclusion is supported by three lines of evidence: Groundwater containment, groundwater contaminant concentrations over time, and down gradient groundwater sampling.

Groundwater contamination within OU-4 is hydraulically controlled by a low-permeability slurry wall which surrounds OU-4 and a groundwater extraction and treatment program which lowers the groundwater level within OU-4.

As demonstrated in the September 2024 Groundwater Sampling Report, elevated levels of lead, antimony, and arsenic persist in certain monitoring wells within the groundwater containment area, but these impacts do not extend outside the groundwater contamination area.

As illustrated in the September 2024 Groundwater Summary Report, concentrations of cadmium and sulfate, the constituents consistently detected over time in OU-1 monitoring wells (outside of the OU-4 containment area), are stable.

Cadmium impacts in OU-1 are limited to monitoring wells MW-23S, MW-23D, and MW-24S, all of which are immediately down gradient of OU-4. There are several monitoring wells further down gradient of these monitoring wells in OU-1 which show no evidence of cadmium impacts.

Sulfate impacts in groundwater extend through the down gradient portion of OU-1. Monitoring wells MW-27A and MW-27B were installed down gradient of all other OU-1 monitoring wells in 2009 to delineate sulfate impacts. These monitoring wells have shown stable concentrations of sulfate over the last ten years with concentrations of sulfate substantially decreasing over the last two years.

References:

"Groundwater Summary Report," GHD, September 2024.

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 "contaminated" does not enter surface water bodies.

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

Rationale:

To document the impacts of groundwater contamination on surface water at the site, quarterly surface water samples were collected as part of the groundwater monitoring program for the site until the second quarter of 2020 when it was determined they were no longer necessary. Surface water samples were collected from two locations (SW-1 and SW-5) along the Phillipsburg Creek, the primary surface water feature transversing the site.

Prior to remedial action implementation for OU-1 & OU-4, lead at SW1 and SW-5 and sulfate at SW-5 consistently exceeded surface water standards of 7.8 ppb and 250 ppm respectively. Following implementation of remedial actions, surface water sporadically marginally exceeded surface water standards, then was not detected for several quarters and sulfate no longer exceeded surface water standards. Based on these trends it was determined that surface runoff and groundwater were no longer causing surface water impacts, and quarterly surface water monitoring was discontinued.

References:

"Groundwater Summary Report," GHD, September 2024.

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 Aexisting 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:

Quarterly groundwater monitoring has been completed at the site since the 1990's and will continue for the foreseeable future under Ecobat's RCRA operating permit (OU-4) and the Site Management Plan for OU-1.

8. Check the appropriate RCRAInfo 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 Texaco Research Center, EPA ID # NYD091894899, located at Old Glenham Road, Glenham, NY 12527**.** Specifically, this determination indicates that the migration of known or reasonably suspected to be "contaminated" groundwater is under control, and that monitoring will be conducted, as necessary, 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: _____ Date: 9/30/2024
Richard Mustico, Project Manager
Assistant Engineer

Supervisor: _____ Date: 9/30/2024
William Bennett, Section Chief
Professional Engineer 2

Director: _____ Date: 9/30/2024
Scott Deyette, Bureau Director
Division of Environmental Remediation

Locations where References may be found:

https://extapps.dec.ny.gov/data/DecDocs/336053/

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