

Documentation of Environmental Indicator Determination

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

Facility Name: Lenox China, Inc.
Facility Address: Tilton Road, Pomona New Jersey
Facility EPA ID: NJD002325074

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 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 Determination 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).

FACILITY

Lenox China, a Division of Lenox, Incorporated
Tilton Road
Pomona, New Jersey 08648
NJD002325074

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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.

Rationale: All of the SWMUs/AOCs identified at the facility are considered for this evaluation. They are:

1. Degreaser Sludge Pit
2. Sludge Disposal Area
3. Waste Pile
4. Polishing Lagoon
5. Tilton Road Pond
6. Underground Effluent Transfer Pipe
7. Equalization Sump
8. Piping
9. Underground Storage Tank
10. Glaze Basin (closed RCRA Regulated Unit and currently under post-closure care)
11. Slip Basin (closed RCRA Regulated Unit and currently under post-closure care)
12. Drum Storage Area (closed RCRA Regulated Unit)
13. Area between Monitoring Well #10 and Aloe Street
14. Two Tanks (Neutralization)
15. Filter Press
16. Precious Metal Incinerator
17. South Site

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 “contaminated.”

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

Rationale:

Groundwater at the site, including the 2 regulated and closed surface impoundments, Glaze Basin and Slip Basin, has been monitored under an NJDEP NPDES Permit since the early 1980s. Monitoring found elevated levels of trichloroethylene (TCE). A post-closure permit was issued in July 1990 for the Glaze Basin and November 1992 for the Slip Basin. A HSWA permit was issued by EPA in 1992 to address corrective action. After completing delineation of the extent of the TCE plume, GW remediation began in 1990. The groundwater is contaminated on-site and off-site above applicable standards. The constituents exceeding standards are TCE, lead and zinc. TCE concentrations in GW have been as high as 7700 ppb, lead has been as high as about 300 ppb and zinc, about 5000 ppb. The TCE profiling investigation delineated vertical and horizontal extent of TCE contamination in groundwater. The Classification Exception Area (CEA)² vertical boundary is the impermeable first shallow

¹ “Contamination” and “contaminated” described 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).

² Pursuant to Section 7:9-6.6 of the Ground Water Quality Standards (N.J.A.C. 7:9-6), January 7, 1993, a CEA is delineation of an area where the quality of ground water is temporarily not in compliance with constituent standards established based on the classification of the ground water and its designated uses. Pursuant to 7:9-6.6 (c) and (d), all designated uses of the ground water will be suspended during the life of the CEA.

The report, entitled “Statistical Monitoring Program and Classification Exception Area (CEA)” dated June 30, 1998, establishes a CEA for Lenox China. The CEA is adopted through a final major modification of the New Jersey Pollutant Discharge Elimination System (NJPDES)/Discharge to Ground Water (DGW) Permit dated February 23, 1999.

clay layer of the Cohansey Aquifer, which occurs at approximately 65 to 70 feet below grade at the site.

Constituent	Maximum Conc. (ppb)	Standard (ppb)
TCE	7,700	1
Lead	~ 300	10
Zinc	~ 5,000	36.7

Reference(s):

The 1 ppb groundwater protection standard for trichloroethylene (TCE), has been selected through a major modification of the New Jersey Pollutant Discharge Elimination System/Discharge to Ground Water Permit, dated February 23, 1999. The standard is based on the New Jersey Ground Water Quality Standards (GWQS), N.J.A.C. 7:9-6, promulgated on January 7, 1993.

The site groundwater protection standards for lead and zinc are 10 ppb and 36.7 ppb, respectively. The 10 ppb lead standard is based on the New Jersey GWQS and the 36.7 ppb for zinc is the background concentration, which is derived from the statistical analysis of the 3-year groundwater monitoring data. These standards were approved in an NJDEP letter dated July 31, 1998 and were also adopted for the 2 closed surface impoundments through the February 23, 1999 major modification of the NJPDES/DGW permit.

There was a 3-year sitewide groundwater monitoring program conducted. The report from this monitoring program was entitled “Statistical Monitoring Program and Classification Exception Area (CEA),” dated June 30, 1998. Quarterly monitoring of groundwater continues.

3. *Has the migration of contaminated groundwater stabilized (such that contaminated groundwater is expected to remain within “existing area of contaminated groundwater”³ 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.,*

³ “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.

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”³.

- _____ *If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the “existing area of groundwater contamination”³) - skip to #8 and enter “NO” status code after providing an explanation.*
- _____ *If unknown - skip to #8 and enter “IN” status code.*

Rationale:

The TCE groundwater remediation program has been in operation since 1990. The remediation program originally consisted of pumping of groundwater up to 350 gallons per minute through six recovery wells and treating it via a dual vessel granular activated carbon system. Groundwater data collected since the implementation of the groundwater remediation shows that the groundwater gradient is generally flat in the vicinity of the recovery wells. A site plan and groundwater flow maps are provided in Attachment 1.

It is understood that lead and zinc are strongly bound to soil through adsorption and ion exchange. The groundwater data supports that the lead and zinc groundwater contamination will remain within the original CEA, which was proposed in the June 30, 1998 report and approved in a letter from the New Jersey Department of Environmental Protection (NJDEP) to the company, dated July 31, 1998.

In 1999, Lenox was granted a positive determination for the control of groundwater contamination EI at the Pomona site based on groundwater data that supported the claim that TCE groundwater contamination would remain within the CEA. Routine groundwater monitoring since 1999, as well as Geoprobe® groundwater investigations conducted in 2002 and early 2003, demonstrated the presence of TCE at concentrations exceeding the GWQS beside and downgradient of the recovery system at levels less than 10 ppb. In addition, monitoring data provided in the facility’s January 2005 Quarterly Groundwater Monitoring Report indicated that TCE concentrations have increased in four of the original five sentinel wells (MW-76, -77, -78, and -79A).

To address the migration of TCE beyond the recovery system, Lenox expanded the existing pump and treat system to establish hydraulic control while monitoring and tracking the natural attenuation of the TCE in groundwater downgradient of the extraction system. Two new extraction wells (RW-8 and -9) were installed at the intersection of Atlantic Avenue and Mannheim Avenue. Four new monitoring wells (MW-82, -83, -84, and -85) have been installed in locations identified during the 2002-2003 Geoprobe® study and designated as new

sentinel wells. These sentinel wells will be used to redefine the CEA boundary to reflect current groundwater conditions and to reestablish compliance with the revised CEA. On August 31, 2005, the facility submitted data from samples of the sentinel wells indicating that all four wells are 'Non-Detect' for TCE.

Maps of the 2002-2003 Geoprobe® sample locations and groundwater sampling results, recovery well locations, sentinel well locations, sentinel well sample data, and current CEA boundary are provided in Attachment 2.

Reference(s):

Data from the January 2005 Quarterly Groundwater Monitoring Report; November 17, 2003, Remedial Action Work Plan; and August 31, 2005, sentinel well samples show that the combination of the groundwater remediation program and natural attenuation has resulted in compliance with TCE groundwater standards at the sentinel wells (MW-82 through -85). A summary of historical TCE sample data and a table of TCE and associated breakdown products from the January 2005 Quarterly Groundwater Monitoring Report, as well as a map of the extent of TCE contamination at the site are provided in Attachment 3.

Quarterly groundwater data have been collected for lead and zinc since 1993. MW-75 through -79A are the compliance wells for lead and zinc. Data for inorganic analytes from the March 1999 and January 2005 Quarterly Groundwater Monitoring Reports are provided in Attachment 4.

4. Does “contaminated” groundwater **discharge** into surface water bodies?

- If yes - continue after identifying 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):

The groundwater data from the investigation, remediation, and quarterly monitoring reports supports that there are no surface water bodies hydraulically interconnected to or impacted by contaminated groundwater at the site.

5. Is the **discharge** of “contaminated” groundwater into surface water likely to be “insignificant” (i.e., the maximum concentration⁴ of each contaminant discharging into surface water is less than 10 times their appropriate groundwater “levels,” 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 concentration⁴ 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 referencing 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 concentration⁴ 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

⁴ As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction zone.

appropriate groundwater “levels,” the estimated total amount (mass in kg/hr) 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.*

Justification and Reference(s): Not Applicable.

6. *Can the discharge of “contaminated” groundwater into surface water be shown to be “currently acceptable” (i.e., not cause impacts to surface water, sediment or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented⁵)?*

_____ *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,⁶ 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),*

⁵ 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.

⁶ 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.

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.*

Justification and Reference(s): Not Applicable.

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.*

Justification and Reference(s):

The groundwater monitoring requirements under the February 23, 1999, major modification of the NJPDES/DGW permit will continue to reassess and verify that contaminated groundwater remains under control.

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 Lenox China, a Division of Lenox, Incorporation facility, EPA ID # NJD002325074, located at Tilton Road, Pomona, New Jersey. 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: _____ **Date:** _____
Shane Nelson, Project Manager
RCRA Programs Branch
EPA Region 2

_____ **Date :** _____
Barry Tornick, Section Chief
RCRA Programs Branch
EPA Region 2

Approved by: Original signed by: _____ **Date:** September 26, 2005
Adolph Everett, Chief
RCRA Programs Branch
EPA Region 2

Locations where References may be found:

U.S. Environmental Protection Agency Region
2
290 Broadway
New York, New York 10007-1866

New Jersey Department of Environmental
Protection
401 East State Street
Trenton, New Jersey 08625

Contact Telephone and E-Mail Numbers

Mr. Shane Nelson
U.S. Environmental Protection Agency Region
2
RCRA Programs Branch
Tel: (212) 637-3130
E-Mail: nelson.shane@epamail.epa.gov

Mr. Frank F. Faranca
New Jersey Department of Environmental
Protection
Bureau of Case Management
Tel: (609) 984-4071
E-Mail: frank.faranca@dep.state.nj.us
