SWR# 30022

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: **Celanese, Ltd., Clear Lake Plant**
Facility Address: **9502 Bayport Blvd., Pasadena, Texas 77057**
Facility EPA ID #: **TXD078432457**

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.

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).

Facility Information

The Celanese Clear Lake Plant (CCLP) is located on a 1,000 acre tract of land approximately three miles southwest of LaPorte, Harris County, Texas. A Compliance Monitoring Program required by TCEQ Compliance Plan CP-50201 is specific to the Closed Surface Impoundment, identified as Well Surge Pond #2 (closed as a landfill) Notice

of Registration (NOR) Unit No. 1, and the Drum Storage Area, identified as Old Plant Drum Storage Area (Inactive) NOR Unit No. 27. One Background Well, nine Point of Compliance Wells, and three Observation Wells make up the Compliance Monitoring System.

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 and Reference(s):

Celanese Ltd., Clear Lake Plant detected a release to groundwater from a regulated unit (Well Surge Pond #2) during 1990 and pro actively implemented a pump and treat program to remediate the plume. The constituents of concern (COCs) that were detected were 1,1-dichloroethene (1,1-DCE), 1,2-dichloroethane (1,2-DCA), 1,1-dichloroethane (1,1-DCA) and vinyl chloride. The TCEQ issued Compliance Plan No. CP-50201 during 1994 to formally establish a RCRA Corrective Action Program. This program effectively reduced levels of these COCs below the MCLs and/or medium-specific concentrations (MSCs), with the exception of 1,1-DCE which remains at a concentration (0.073 mg/L) that is marginally above the MCL of 0.007 mg/L for this constituent under 40 CFR Part 141. Corrective action was terminated during 1998 following TCEQ approval of an Alternate Concentration Limit (ACL) Demonstration that established the following site-specific ACLs: 1.057 mg/L for 1,1-DCE, 14.00 mg/L for 1,2-DCA, 0.144 mg/L for 1,1-DCA, and 0.180 mg/L for vinyl chloride. Celanese Ltd., Clear Lake Plant is currently authorized to implement a RCRA Compliance Monitoring Program, which includes semi-annual monitoring and annual reporting of results, in accordance with applicable provisions of Compliance Plan No. CP-50201.

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).

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.

Rationale and Reference(s):

Celanese utilized groundwater modeling to estimate future migration of the contaminant plume, and these simulations indicate that the COCs will not migrate offsite above MCLs and/or MSCs (see Alternate Concentration Limit Demonstration Report, dated February 22, 1996 and Addendum to ACL Demonstration, dated November 6, 1996). In accordance with provisions of Compliance Plan No. CP-50201, Celanese installed three Corrective Action Observation Wells during 1995 and has monitored these wells on a semi-annual basis since that time to verify that the plume had stabilized. None of the COCs has ever been detected above laboratory reporting limits in any of these observation wells, which confirms that the contaminated groundwater plume has stabilized (see Annual Report - Compliance Monitoring Program, dated January 19, 2000, Annual Report - Compliance Monitoring Program, dated January 17, 2001, and Annual Report - Compliance Monitoring Program, dated January 16, 2002).

[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.

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):

Annual Reports - Compliance Monitoring Program

5. Is the **discharge** of " contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[3] 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)?

Not Applicable

____ 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[3] 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[3] 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[3] 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):

Not Applicable

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

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[4])?

Not Applicable

____ 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,[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.

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):

Groundwater samples are collected from the facility's RCRA Compliance Monitoring System on a semi-annual basis and results are reported to the TCEQ annually with applicable provisions of Compliance Plan No. CP-50201. Point of Compliance (POC) Wells MW-1A, MW-4A, MW-5A, MW-6A, MW-19, MW-21, MW-22, MW-23, and MW-28, and Observation Wells MW-29, MW-30,, and MW-32 will be sampled semi-annually until the end of the Compliance Period (scheduled to end in 2009).

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 **Celanese, Ltd., Clear Lake Plant** facility , EPA ID # **TXD078432547**, located at **9502 Bayport Blvd., Pasadena, Texas 77507**. 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 12/31/2003
Douglas Crist
Project Manager

Supervisor _____ Date _____
Jason Wang
Supervisor
Texas Commission on Environmental Quality

Locations where References may be found:

Attach a copy of this facility's database printout. Highlight the reports which support the "YE" determination.

TCEQ Central Files and/or Celanese Clear Lake Plant Files.

Contact telephone and e-mail numbers

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Final Note: The purpose of the Migration of Contaminated Groundwater EI is to verify that the groundwater plume is stable. A "YE" determination does not constitute a screening tool to end the corrective action process. The "YE" determination may be changed at any time as new information becomes available.