

US EPA ARCHIVE DOCUMENT

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:	Former Teledyne Monarch Rubber Plants 2 & 5
Facility Address:	State Road 43, Hartville, Ohio
Facility EPA ID #:	OHD 000 821 348

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 #6 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).

**Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)**

Page 2

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):

Trichloroethene (TCE) was identified in groundwater at site monitoring well MW-3 during June and August 2001 sampling events at concentrations of 12 : g/l and 13 : g/l, respectively. These concentrations exceed the federal drinking water Maximum Contaminant Level (MCL) of 5 : g/l.

A small pocket of oil (i.e., Light Non-Aqueous Phase Liquid [LNAPL]) was identified on the shallow groundwater table at well MW-2.

Concentrations of total arsenic and lead exceeded the MCLs in groundwater samples collected from monitoring well MW-8, the concentrations were 0.093 mg/l and 0.28 mg/l respectively, during the RCRA Subsurface Investigation conducted in 2001 (RCRA Subsurface Investigation Report, November 7, 2001). These concentrations exceed the MCLs of 0.05 mg/l arsenic and 0.015 mg/l lead (RCRA Subsurface Investigation Report, November 7, 2001). State and Federal drinking water standards were selected for groundwater contamination. These samples were collected using a bailer from monitoring wells completed in soils containing a significant amount of silt and clay, resulting in high turbidity and high metal results. Samples filtered with a 0.45-micron filter did not exceed MCLs.

Arsenic and lead-containing substances or wastes are not associated with the site, but rather are commonly found in the native glacial soils present in the region. Therefore, the USEPA requested further investigation using appropriate low-flow sampling techniques and documentation of concentrations in local groundwater (Response to USEPA Comments, RCRA Subsurface Investigation Report, November 6, 2002). The groundwater sample results indicated total metal concentrations of arsenic 0.0061 mg/l and lead 0.0045 mg/l (Transmittal of Analytical Data, November 2002 Groundwater Sampling, April 28, 2003). MACTEC (Teledyne contractor) collected local groundwater metals data which supported the conclusion that onsite arsenic and lead levels were consistent with levels found in local public water supply systems (Clarifications to Environmental Indicators Report, June 13, 2003).

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).

Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)
Page 3

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):

Verification that the Migration of Contaminated Groundwater Environmental Indicators associated with the presence of TCE in site groundwater are under control is based on the following factors:

- MW-3 is located on the western side of the site’s Main Parcel, 1,300 feet away from the down gradient property boundary. No TCE has been identified in wells located down gradient of MW-3, including wells located along the down gradient property boundary.
- MW-3 is located near the facility’s active and backup cooling water supply wells and MW-3 is within the capture zone of the supply wells which pump from the deeper zone of the overburden aquifer at a depth of 100 feet. Quarterly sampling and analyses of the supply wells have occurred since the 1980s and have not identified the presence of any TCE or any other volatile organic substance above the MCLs (Clarifications to Environmental Indicators (EI) Report, June 13, 2003).

LNAPL was identified on the shallow groundwater table at well MW-2. This well was installed in the former location of a small wastewater pond, which was closed in the early 1970s. Field observations and groundwater monitoring indicate that the oil is similar to machine oil or cutting oil and is limited to the immediate vicinity of MW-2. A pneumatic product recovery system was installed in MW-2 during the fall of 2002 as an interim measure (Summary of Product Recovery, March 1, 2002). Operation of the recovery system is ongoing. No LNAPL has been recovered from the well in the period from March 2003 to July 2003 (Progress Report-Second Quarter 2003, July 16, 2003).

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

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.

**Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)**

Page 4

_____ 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):

There is no discharge of contaminated groundwater into surface water bodies. The depth to groundwater is six feet to 18 feet in the eastern and north western portion of the site respectively (RCRA Subsurface Investigation Report, November 7, 2001).

Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)

Page 5

5. Is the **discharge** of “contaminated” groundwater into surface water likely to be “**insignificant**” (i.e., the maximum concentration³ 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 concentration³ 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 concentration³ 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 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.

Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)
Page 6

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 implemented⁴)?

_____ 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.

Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)

Page 7

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 monitoring of MW-3, MW-4, MW-5, MW-7, and West Well are proposed semiannually for two years and annually thereafter to evaluate the horizontal and vertical extent of TCE contamination (Phone Log, August 25, 2003).

LNAPL monitoring is conducted monthly and will continue at monitoring well MW-2 area, until the LNAPL is reduced to the point where recovery is no longer technically feasible.

Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)

Page 8

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 Former Teledyne Monarch Rubber Plants 2 & 5 facility, EPA ID #OHD 000 821 348, located at State Route 434, Hartville, Ohio. 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) _____ Date _____
 (print) John Nordine
 (title) Geologist

Supervisor (signature) _____ Date _____
 (print) George Hamper
 (title) Chief, Corrective Action Section
 (EPA Region or State) EPA Region 5

Locations where References may be found:

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