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:DuPont La Porte, Texas
Facility Address:12501 Strang Road, La Porte, Texas 77572-0347
Facility EPA ID #:TXD 008079212

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).

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): The most recent groundwater analytical data review was presented in the Affected Property Assessment Report Addendum – SWMUs 1 through 8 (DuPont, April 2004). The State of Texas lists "levels" protective of groundwater as Protective Concentration Limits (PCLs). PCLs used in the Affected Property Assessment Report (APAR) were listed in Table 3 – Tier 1 Groundwater PCLs Residential and Commercial/Industrial (30 TAC Chapter 350, March 31, 2004). Tier 1 groundwater PCLs are based on primary Maximum Concentration Limits (MCLs) when available. All Tier 1 PCLs are for ingestion of groundwater ($^{GW}GW_{Ing}$). Use of these PCLs is a conservative measure to identify "contamination", however, groundwater is not used as a source of drinking water in these areas.

There are six groundwater-bearing sand units beneath the site within the first 150 feet in which contaminants have been defined; Shallow (shelly) Sand and Unit 1 through Unit 5 Sand. These sands are usually composed of silts and fine-grained sands, with thin, interlayered sandy clay or silty clay seams. Each unit is typically separated by a clay zone; however, there are areas where the clay zone is not present and two of the sand units are in direct contact with one another. The six groundwater-bearing units within the first 150 feet below ground surface are classified as either Class 2 or Class 3 using the State of Texas classification system. The State of Texas classifies groundwater resources based on total dissolved solids content, sustainable well yield, and actual use of the aquifer within a specified distance of the affected property. At the DuPont LaPorte site, groundwater is Class 3 because sustainable yield is less than 150 gallons per day, and Class 2 because sustainable yield is between 150 and 144,000 gallons per day.

The shallowest State of Texas Class 1 groundwater-bearing unit beneath the site is the Lower Chicot aquifer, located from 250-500 feet below ground surface. Operations at the DuPont LaPorte plant have not been found to have impacted this aquifer. Class 1 groundwater resources have sustainable yields greater than 144,000 gallons per day, have low total dissolved solids, and can be utilized to supply drinking water to a public water supply system.

The following tables from the APAR addendum list the primary constituents in groundwater that exceed their corresponding Tier 1 PCL.

Aniline Landfill/Carbamate Disposal Site (SWMU 1/SWMU 2)

Constituent of Concern	PCL [(1)] (mg/L)
Chlorobenzene	1.0E-01
1,2-Dichlorobenzene	6.0E-01
1,4-Dichlorobenzene	7.5E-02
Ethylbenzene	7.0E-01
Methylene chloride	5.0E-03
Tetrachloroethene	5.0E-03
Trichloroethene	5.0E-03

(1): PCL values are for Commercial / Industrial sites.

Lindane Disposal Site (SWMU 3)

Constituent of Concern	PCL (mg/L)
Benzene	5.0E-03
alpha-BHC	3.2E-04
beta-BHC	1.1E-03
gamma-BHC	2.0E-04
Chlorobenzene	1.0E-01
1,2-Dichlorobenzene	6.0E-01
1,4-Dichlorobenzene	7.5E-02
Methylene chloride	5.0E-03
Tetrachloroethene	5.0E-03

Trichloroethene	5.0E-03

THF Fill Area (SWMU 4)

Constituent of Concern	PCL (mg/L)
Chromium (III)	1.0E-01
Nickel	1.5E+00
Benzene	5.0E-03
Chlorobenzene	1.0E-01
1,4-Dichlorobenzene	7.5E-02
Trichloroethene	5.0E-03

Waste Averaging Basin/Polishing Lagoon/Emergency Retention Basin (SWMUs 5/6/7)

Constituent of Concern	PCL (mg/L)
Chlorobenzene	1.0E-01
Chloroform	4.3E+00
Chromium (III)	1.0E-01
1,2-Dichlorobenzene	6.0E-01
Methylene chloride	5.0E-03

Bio-Sludge Landfill (SWMU 8)

Constituent of Concern	PCL (mg/L)
Chlorobenzene	1.0E-01
Methylene chloride	5.0E-03
Trichloroethene	5.0E-03

Numerous soil and groundwater investigations have been conducted at the La Porte facility since 1988. Based on the results of these investigations, the Solid Waste Management Units (SWMUs) identified in the site's RCRA Permit (HW-50213) that required RCRA Facility Investigations (RFI) are: SWMU 1 – Aniline Landfill; SWMU 2 – Carbamate Disposal Site; SWMU 3 – Lindane Disposal Site; SWMU 4 – THF Fill Area; SWMU 5 – Waste Averaging Basin; SWMU 6 – Polishing Lagoon; SWMU 7 – Emergency Retention Basin; SWMU 8 – Bio-Sludge Landfill. SWMUs 1 and 2 are adjacent to one another and have been investigated together as SWMU 1/2. SWMUs 5, 6, and 7 are also located adjacent to one another and have been investigated together as SWMUs 5/6/7. SWMUs 5/6/7 were investigated initially as Task I Area SWMUs, while SWMUs 1/2, 3, 4, and 8 were investigated as Task II Area SWMUs

An initial summary of the investigations around SWMUs 5/6/7 and the installation of a horizontal well and its performance are documented in the Stabilization Report (DuPont, September 1998). A complete summary of the soil and groundwater conditions for the Task I Area SWMUs was presented in the Affected Property Assessment Report for Task I Area SWMUs (DuPont, revised April 2002). This is also considered the completed RFI for these SWMUs and was approved by the Texas Natural Resource Conservation Commission, now the Texas Commission on Environmental Quality (TCEQ), in November 2002. A complete summary of the soil and groundwater conditions for the Task II Area SWMUs was presented in the Affected Property Assessment Report for Task II Area SWMUs – SWMUs 1, 2, 3, 4, and 8 (DuPont, December 2001). The most recent groundwater analytical data review was presented in the Affected Property Assessment Report Addendum – SWMUs 1 through 8 (DuPont, April 2004).

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): Documentation of the containment in the Task I (high priority) area was initially is provided in the Stabilization Report (DuPont, September 1998). This was supported by more recent plant wide data in the APAR submittals (DuPont 2001, 2002, 2004), which also defined the plumes in the Task II areas. Additional historical references are provided in the APARs.

Data indicates that the overall horizontal and vertical migration of groundwater has stabilized and groundwater impacted above Tier 1 PCLs will remain within the delineated area. Groundwater monitoring wells will continue to be sampled in the future to verify these results. Additionally, any potential plume growth is limited by proximity of the San Jacinto Bay. See question No. 4 for more information on potential groundwater to surface water discharges.

Finally, DuPont has submitted data which indicates that methylene chloride in groundwater under SWMUs 5/6/7 is spatially contained because of natural attenuation. Documentation of the containment is provided in the Stabilization Report (DuPont, September 1998). Although is appears that the plume is not migrating, DuPont is in the process of improving the recovery and treatment system so that the horizontal well can be used as part of the corrective action system to be incorporated into a Compliance Plan.

[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?

__X__ If yes - continue after identifying potentially 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): Information presented in the APAR addendum (DuPont, April 2004) indicated that several of the groundwater-bearing units present beneath DuPont LaPorte within the first 150 feet of ground surface were contiguous across most of the site (and in particular, near the shoreline). While not definitive, constituents in groundwater could potentially extend out beneath the shallow Upper or Lower San Jacinto Bay and could potentially discharge into the Houston Ship Channel, at least 4,000 feet away from the downgradient plant boundary. The San Jacinto Bay is listed as State of Texas classified Segment #2427 in Appendix C of the current Texas Surface Water Quality Standards 30 TAC §307.1-307.10. Use is classified as High (H) for aquatic life use, contact recreation, and is not listed as a public water supply source. San Jacinto Bay is relatively shallow (less than 10 feet); however, the Houston Ship Channel cuts into the underlying sediments to about 40 feet. The Lower Chicot aquifer (the shallowest public water supply aquifer) does not discharge to either the shallow Upper San Jacinto Bay or the deeper dredged Houston Ship Channel. In the APAR addendum, DuPont conservatively assumed that there was discharge of contaminated groundwater to the Houston Ship Channel.

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)?

.

__X__ 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): Although maximum concentrations of several contaminants in groundwater monitoring wells closest to the point of groundwater discharge to surface water are greater than 10 times their respective groundwater PCLs, the discharge of contaminated groundwater to surface water has been demonstrated to be insignificant based on the results of a groundwater model. The groundwater model utilized by DuPont is detailed as follows:

To examine the groundwater to surface water pathway, DuPont evaluated four groundwater-bearing units present beneath the facility that are relatively contiguous particularly near the shoreline. These units included Unit 2, Unit 3, Unit 4, and Unit 5. Contaminated groundwater in these four groundwater-bearing units could potentially discharge to the Houston Ship Channel. The ship channel was considered the most likely receptor because of the depth of the sand units and the shallowness of San Jacinto Bay. The following tables summarize the maximum known concentration of each constituent of concern detected in November 2003 in wells nearest the shoreline, and the State of Texas Tier 1 PCL. The tables list concentrations for the SWMUs 1/2/5/6/7/8 area and the SWMUs 3/4 area for each of the four groundwater-bearing units. Concentrations greater than 100 times their respective Tier 1 PCL are indicated in bold.

SWMUs 1/2/5/6/7/8

Constituent	PCL (mg/L)	Unit 2 (mg/L)	Unit 3 (mg/L)	Unit 4 (mg/L)	Unit 5 (mg/L)
Benzene	5.0E-03	n/a	1.4E-02	n/a	n/a
Chlorobenzene	1.0E-01	**6.7E+01**	**2.9E+02**	5.3E-01	n/a
Chloroform	4.3E+00	n/a	2.0E+01	n/a	n/a
1,2-Dichlorobenzene	6.0E-01	1.2E+01	1.0E+01	3.8E+00	n/a
1,4-Dichlorobenzene	7.5E-02	1.9E+00	**9.0E+00**	n/a	n/a
1,1-Dichloroethene	7.0E-03	n/a	8.0E-02	n/a	n/a
1,2-Dichloroethene	1.0E-01	n/a	4.8E-01	n/a	n/a
Methylene chloride	5.0E-03	**6.6E-01**	**1.5E+04**	**3.5E+02**	n/a

Tetrachloroethene	5.0E-03	3.7E-02	**1.1E+01**	2.2E-02	n/a
Trichloroethene	5.0E-03	1.7E-02	1.7E-02	n/a	n/a
Vinyl chloride	2.0E-03	n/a	2.6E-02	n/a	n/a

n/a = not applicable

SWMUs 3/4

Constituent	PCL (mg/L)	Unit 2 (mg/L)	Unit 3 (mg/L)	Unit 4 (mg/L)	Unit 5 (mg/L)
Benzene	5.0E-03	n/a	n/a	8.9E-03	n/a
alpha-BHC	3.2E-04	2.3E-03	**9.4E-02**	**9.4E-02**	n/a
beta-BHC	1.1E-03	9.4E-03	1.4E-02	1.4E-02	n/a
gamma-BHC	2.0E-04	9.5E-04	1.2E-02	1.2E-02	n/a
Chlorobenzene	1.0E-01	**2.6E+02**	**1.9E+02**	**1.9E+02**	7.2
1,2-Dichlorobenzene	6.0E-01	n/a	3.8E+00	3.8E+00	n/a
1,4-Dichlorobenzene	7.5E-02	n/a	9.6E-01	n/a	n/a
Methylene chloride	5.0E-03	**3.8E+00**	**1.5E+00**	**1.5E+00**	n/a
Tetrachloroethene	5.0E-03	n/a	**1.2E+00**	2.3E-01	n/a
Trichloroethene	5.0E-03	6.7E-03	5.7E-03	5.7E-03	n/a

Note: There is no intervening clay aquitard between groundwater-bearing Units 3 and 4 in the area of SWMUs 3 and 4.

To determine if there was a potential impact to the Houston Ship Channel (the most likely receptor) should constituents of concern discharge to the channel, a simple analytical groundwater model was created in an Excel spreadsheet. The following assumptions were made to characterize Units 2 through 5: (1) conservative hydraulic conductivity of Unit 2 equals 2.835 ft/day (or $1x10^{-3}$ cm/sec); (2) measured hydraulic conductivity of Unit 3 equals 4.96 ft/day (or $1.75x10^{-3}$ cm/sec); (3) default hydraulic conductivity of Unit 4 and Unit 5 equals 2.835 ft/day (or $1x10^{-3}$ cm/sec); (4) porosity in all units is 0.28; (5) hydraulic gradients equal those measured from potentiometric surfaces created from site-wide groundwater levels measured in November 2003 (Affected Property Assessment Report Addendum – SWMUs 1 through 8 [DuPont, April 2004]); (6) the 7Q10 flow (i.e., the seven day minimum flow in a 10 year period) in the Houston Ship Channel equals 60 cubic feet per second (cfs), and was calculated by summing historical minimum annual flows measured in the three major and two minor surface water bodies in the San Jacinto River Basin that discharge into the San Jacinto Bay/Houston Ship Channel (West Fork San Jacinto River, Buffalo Bayou, Greens Bayou, Hunting Bayou, and Sims Bayou); (7) the straight-line travel distance from the area of SWMUs 1/2/5/6/7/8 to the Houston Ship Channel is approximately 4,000 feet and the straight-line travel distance from the area of SWMUs 3/4 to the Houston Ship Channel is approximately 5,500 feet.

In addition, the following assumptions were made when modeling the transport of constituents through groundwater: (1) no natural attenuation of constituents occurs during transport to the Houston Ship Channel; (2) transport of constituents with Tier 1 PCL exceedance only; (3) concentrations in the above tables were used; (4) plume widths were weighted based on distance between adjacent wells; (5) measured constituent concentrations were assumed to extend through the entire saturated thickness of the groundwater-bearing unit. The following table summarizes the estimated annual mass loading to the Houston Ship Channel of constituents that exceed 100 times their respective groundwater PCL (as bolded in the previous two tables).

Mass Loading to Houston Ship Channel

Constituent	Mass Flux (kg/yr)
alpha-BHC	3.7E-02
Chlorobenzene	8.6E+02
1,4-Dichlorobenzene	1.1E+01
Methylene chloride	4.3E+04
Tetrachloroethene	1.4E+01

Note: This information was originally presented in the Affected Property Assessment Report Addendum – SWMUs 1 through 8 (DuPont, April 2004).

There is no evidence to support that the amount of discharging contaminants is increasing. Any "pinching out" of the groundwater-bearing units between the DuPont LaPorte site and the Houston Ship Channel would decrease the amount of annual mass flux. Evidence of ongoing natural attenuation of methylene chloride in the SWMUs 1/2/5/6/7/8 area will decrease the overall amount of potential mass flux to the Houston Ship Channel. If a conservative half life of 56 days is used for methylene chloride (from Handbook of Environmental Degradation Rates, P.H. Howard, et.al., Lewis Publishers, 1991), there is no resulting measurable mass flux to the Houston Ship Channel. Likewise, mass flux of alpha-BHC, chlorobenzene, 1,4-dichlorobenzene, and tetrachloroethene would all be immeasurably small if conservative half lives were applied.

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

As part of the State of Texas Affected Property Assessment Report (APAR), an Exclusion Criteria Checklist is completed that includes sections pertaining to groundwater, surface water, sediment, and soil exposure. A qualitative summary is included as an attachment to support checklist conclusions. Included in the Affected Property Assessment Report Addendum – SWMUs 1 through 8 (DuPont, April 2004) where updated Exclusion Criteria Checklists and Qualitative Summaries for all eight SWMUs, originally presented in the Affected Property Assessment Report for Task II Area SWMUs – SWMUs 1, 2, 3, 4, and 8 (DuPont, December 2001) and the Affected Property Assessment Report for Task I Area SWMUs (DuPont, April 2002) that dealt with SWMUs 5, 6, and 7. Part II, Subpart A of the Exclusion Criteria Checklists for all eight SWMUs indicated that, "COCs (have not) migrated and resulted in a release or imminent threat of release to either surface waters or to their associated sediments via surface water runoff, air deposition, groundwater seepage, etc." The following table and conclusion, prepared by a qualified Risk Assessor/Toxicologist, were presented in the Qualitative Summary portion of the Exclusion Criteria Checklist submittals.

SWMUs 1, 2, 3, 4, 5, 6, 7, and 8

Constituent	Mass Flux (mg/day)	Ship Channel Flow (cfs)	Resulting Concentration (mg/L) (a)	Surface Water Benchmark (mg/L) (b)	Notes	Exceed ? (Yes/No)
1,2-Dichlorobenzene	76,339.85	60	5.64E-04	9.90E-02		No
1,4-Dichlorobenzene	31,015.49	60	2.11E-04	9.90E-02		No
1,2-Dichloroethene	1,612.40	60	1.10E-05	6.80E-01		No
Benzene	67.04	60	4.57E-07	1.09E-01		No
alpha-BHC	101.39	60	2.63E-06	2.05E-02		No
beta-BHC	24.22	60	3.28E-07	8.30E-02	(c)	No
gamma-BHC	9.33	60	2.03E-07	2.50E-02	(d)	No
Chlorobenzene	2,359,226.13	60	2.51E-02	1.05E-01		No
Methylene Chloride	118,805,409.17	60	8.09E-01	5.42E+00		No
Tetrachloroethene	38,139.69	60	2.62E-04	1.45E+00		No
Trichloroethene	337.17	60	2.30E-06	9.70E-01		No
Chloroform	67,183.46	60	4.58E-04	4.10E+00		No
Vinyl chloride	87.34	60	5.95E-07	2.82E+00	(e)	No
Ethylbenzene	236.18	60	1.61E-06	2.50E-01		No
1,1-Dichloroethene	73.90	60	5.03E-07	1.25E+01		No

Notes:
(a) Predicted concentration in surface water.
(b) Values from Guidance for Conducting Ecological Risk Assessments at Remediation Sites in Texas (RG-263, revised 12/2001).
(c) Freshwater value for beta-BHC.
(d) Marine value for gamma-BHC.
(e) Freshwater value for vinyl chloride.

The presence of constant human activity and machinery makes the affected property not attractive to wildlife and would not serve as a valuable habitat, foraging area, or refuge for ecological communities.

[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.

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])?

_____

____ 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):

[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 monitoring and measurement data will be collected in the future to verify that contaminated groundwater remains within the horizontal and vertical dimensions of the "existing area of contaminated groundwater". Subsequent to submission of the Affected Property Assessment Report Addendum – SWMUs 1 through 8 (DuPont, April 2004), DuPont has replaced three small diameter piezometers with 2-inch diameter monitoring wells, replaced a damaged well, and installed additional monitoring wells to reduce hydraulically crossgradient spacing between wells.

The recent changes to the monitoring well network were intended to upgrade the system to RCRA standards in preparation for the upcoming Compliance Plan application submittal anticipated this year. Currently, the DuPont LaPorte facility is not under a Compliance Plan or other permit-driven groundwater monitoring program; however, groundwater from background monitoring wells and wells along the downgradient edge of the property boundary will periodically be sampled and analyzed for at least the constituents of concern referenced in Part 3 above, until the Compliance Plan is issued. The following table lists wells that will be monitored by SWMU grouping and water-bearing unit. Eight of the listed monitoring locations are new wells and are, therefore, subject to verification that the groundwater-bearing unit is present in the area. In the area of SWMUs 1, 2, 5, 6, 7, and 8, groundwater-bearing Units 1 and 2 are discontinuous and the representative monitoring locations have been grouped together. The Unit 5 groundwater-bearing is not present in the area of SWMUs 1, 2, 5, 6, 7, and 8, nor is the Unit 1 groundwater-bearing unit present in the area of SWMU 3 or SWMU 4. In addition, there is no confining unit present between groundwater-bearing Units 3 and 4 in the area of SWMU 4.

Location	**SWMUs 1,2,5,6,7,8**
background Units 1 & 2	MW-011R, MW-145
downgradient Units 1 & 2	MW-109, MW-112, MW-135, MW-141, MW-144
background Unit 3	MW-146
downgradient Unit 3	MW-030, MW-039, MW-044, MW-113, MW-117, MW-142, MW-143, MW-148, MW-150, PW-04
background Unit 4	MW-147
downgradient Unit 4	MW-040, MW-045, MW-114, MW-118, MW-149
	SWMU 3
background Unit 2	MW-122, MW-125
downgradient Unit 2	MW-129R
background Unit 3	MW-153
downgradient Unit 3	MW-126, MW-151
background Unit 4	MW-123, MW-154
downgradient Unit 4	MW-127, MW-152
background Unit 5	MW-124
downgradient Unit 5	MW-128
	SWMU 4
background Unit 2	MW-140
downgradient Unit 2	MW-059, MW-072, MW-102
background Units 3 & 4	MW-106, MW-108, MW-131
downgradient Units 3 & 4	MW-073, MW-101, MW-133
background Unit 5	MW-132
downgradient Unit 5	MW-134

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 DuPont La Porte facility , EPA ID # TXD008079212, located at DuPont La Porte Plant, 12501 Strang Road, La Porte, Texas 77572-0347. 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_____
Kera L. Bell
Project Manager

Supervisor _____ Date_10/19/05_____
Ada Lichaa
Environmental Cleanup 1 Team 3 Supervisor
Texas Commission on Environmental Quality

Locations where References may be found:

TCEQ Central Records, Austin, Texas _____
_____
_____
_____

Contact telephone and e-mail numbers:

Project Manager listed above
(512) 239-2343
corract@tceq.state.tx.us

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.