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: BP Oil Company Alliance Refinery
Facility Address: P.O. Box 395, Belle Chasse, Louisiana 70037
Facility EPA ID #: LAD056024391

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).

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): Two areas of affected ground water are known to exist at the Alliance Refinery. The first is associated with the Solid Waste Landfill. The Landfill is a SWMU which has been evaluated under the facility RFI program. The Landfill RFI final report was completed on December 5, 1991. The investigation concluded that the unit had not released detectable hazardous constituents to the environment. The RFI recommended no further action and the unit was removed from the RFI list.

In October 1996, a thin film of phase separated hydrocarbon (PSH) was noted in Well L-34 during routine sampling. BP made several attempts to obtain a sample of the PSH in late 1996 and regularly through most of 1997. The volume of the product in the well was so small that it lightly coated a sample bailer leaving an insufficient volume for analyses. Once the film of PSH was removed from the well, a noticeable amount would not return for a period of months. A sufficient volume of the product was obtained in late 1997 and submitted for GC fingerprinting to identify the general class of hydrocarbon present. This analysis indicated that the PSH was an emulsion of diesel fuel and water. These results were presented to LDEQ in December 1997 with the notification of release.

BP collected additional samples of the material in October 1998 and April 1999. The analysis confirmed the material was diesel and the analysis indicated that no Skinner List hazardous constituents were present (volatile and semi-volatile) at the limit of quantitation. Copies of all collected analytical information and ground water monitoring reports documenting this unit have been provided to LDEQ Solid Waste Division and Ground Water Protection Division.

LDEQ's Solid Waste Division currently has authority over the evaluation of the unit. Under their direction, BP has completed an investigation of the extent of the affected area. Based upon this evaluation, the affected zone appears to be confined to the immediate area of the Landfill. LDEQ has indicated that monitoring of the unit is sufficient at this time. No active remedial measures are necessary. Copies of the investigation report were provided to LDEQ in 1998.

The second area is associated with the process block area of the refinery. In 1996, BP initiated a soil boring program designed to collect site assessment information necessary for obtaining an air permit for several potential facility expansion projects. This project was known as the GEN-860 project. During the course of this assessment program, affected soil and ground water were discovered within and near the process block area. The primary areas of affected material were in the general areas of process units 191, 491, 1291, and 891.

These areas of affected soil and ground water appear to be the result of small leaks and spills from the process units and sewers over the life of the facility. The primary constituents noted are BTEX, and several Skinner list semi-volatile constituents. Concentrations range from non-detected to 20 ppm in ground water. These concentrations are in excess of Louisiana Risk criterion. The ground water reports are on file at the facility and at LDEQ.

According to the definition of a SWMU contained in the July 27, 1990 Proposed Rule for Corrective Action, this area is not considered a SWMU because it is not the result of "routine and systematic releases". Because of this, this area is not directly subject to RCRA Corrective Action. It is currently managed under state authority by LDEO's Ground Water Protection Division.

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): BP has completed initial evaluations of both areas of affected ground water. In 1998, BP submitted an assessment report on the affected ground water near the Solid Waste Landfill. The report indicated that the affected area was localized and did not appear to be increasing in concentration or extent. The LDEQ concurred and has indicated that only monitoring is necessary at this time. Documentation of the assessment and LDEQ's conclusions is available in the facility files and at LDEQ.

BP is still in the process of completing the evaluation of the affected areas near the process block. However, sampling conducted around the perimeter indicates the affected ground water has not migrated outside the process block area. Based upon this information and a site wide hydrogeologic study which defined the subsurface structure and ground water flow directions, the affected ground water is unlikely to leave the site before natural attenuation has reduced the constituent levels below detection. Sampling data from the assessments is available on-site and in LDEQ's files. The site wide hydrogeologic study is also available in the facility files.

[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): BP has completed initial evaluations of both areas of affected ground water. In 1998, BP submitted an assessment report on the affected ground water near the Solid Waste Landfill. The report indicated that the affected area was localized and did not appear to be increasing in concentration or extent. The LDEO concurred and has indicated that only monitoring is necessary at this time. Documentation of the assessment and LDEO's conclusions is available in the facility files and at LDEO.

BP is still in the process of completing the evaluation of the affected areas near the process block. However, sampling conducted around the perimeter indicates the affected ground water has not migrated outside the process block area. Based upon this information and a site wide hydrogeologic study which defined the subsurface structure and ground water flow directions, the affected ground water is unlikely to leave the site before natural attenuation has reduced the constituent levels below detection. Sampling data from the assessments is available on-site and in LDEO's files. The site wide hydrogeologic study is also available in the facility files.

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)?

_____ 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):_____

[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])?

_____ 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?"

_____ 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):_____

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).

__YE__ 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 BP Oil Company Alliance Refinery facility, EPA ID # LAD056024391, located at Belle Chasse, Louisiana. 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) Stafford Frank Date 8/16/99
(print) Stafford Frank
(title) Engineer

Supervisor (signature) Date 8/16/99
(print) Henry Hencoat
(title) Director of Environmental Services
(EPA Region or State) VI

Locations where References may be found:

LDEQ Hazardous Waste Division Files
LDEQ Solid Waste Division Files
LDEQ Ground Water Protection Division Files
On-site facility records and correspondence files

Contact telephone and e-mail numbers

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