DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)

Current Human Exposures Under Control

Facility Name: Fort Polk Military Reservation
Facility Address: 1919 23rd Street (Bldg 2501)
Facility EPA ID #: LA0214022725

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, 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 "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "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 "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

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. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

Media	Yes	No	?	Rationale/Key Contaminants
Groundwater	X			See Rationale
Air (indoors)[2]		X		See Rationale
Surface Soil (e.g., <2 ft)		X		See Rationale
Surface Water	X			See Rationale
Sediment		X		See Rationale
Subsurface Soil (e.g., >2 ft)	X			See Rationale
Air (outdoors)		X		See Rationale

_____ If no (for all media) - skip to #6, and enter "YE," status code after providing or citing appropriate "levels," and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

__X__ If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

_____ If unknown (for any media) - skip to #6 and enter "IN" status code.

Rationale

The Environmental Protection Agency (EPA) conducted a RCRA Facility Assessment (RFA) at the Installation in December 1993 to identify all Solid Waste Management Units and Areas of Concern. Based on the findings of the RFA, 31 SWMUs and 2 AOCs were identified as requiring an investigation to determine if there had been any release of hazardous constituents in the environment.

Fort Polk selected a phased approach to the Installation's RCRA Facility Investigation (RFI). The Phase I RFI (release assessment) determined the presence of hazardous constituents in the environment due to a release from the SWMU. The objective of the Phase I work was to determine if such releases occurred and if those releases should be further investigated in a Phase II (nature and extent) investigation. The Phase I field activities, conducted by Radian from September through November 1995, consisted of collecting soil and water samples at each of the Installation-Wide SWMUs (IWS). Samples were collected from soil borings, monitoring wells, creeks, lagoons, and leachate seeps.

The Phase II RFI was more intensive and focused on defining the nature and extent of those releases identified in the Phase I RFI. The Phase II RFI work was also intended to support risk assessment activities and a Corrective Measures Study (CMS). Phase II field activities were conducted by Radian from September through December 1997. Samples were collected from soil borings, monitoring wells, surficial soil locations, and creeks.

Phase III of the RFI included a LDEQ Risk Evaluation/Correction Action Program (RECAP) assessment of the results from the Phase I and Phase II Investigations. The results of the Phase I and Phase II RFI were evaluated using the Louisiana Department of Environmental Quality Risk Evaluation/Corrective Action Program (RECAP) Final Regulatory Proposal (LDEQ, 2000). The Installation-Wide SWMUs (IWS) RECAP Assessment included all

of the SWMUs except SWMU 17 (Mill Creek Landfill). SWMU 17 and the AOCs were evaluated separately. As a result of the RECAP Assessment, twelve SWMUs were identified as requiring further evaluation under the Management Option 3 RECAP (equivalent to a full baseline human health and ecological risk assessment). The Mangement Option 3 assessment, and the separate assessments for SWMU 17 and the AOCs preliminarily identified the following SWMUs/AOCs as requiring corrective measures.

- SWMU 17 - Mill Creek Landfill
- SWMU 21 - Construction Debris Landfill
- SWMU 26 - 2900 Block Vehicle Maintenance
- SWMU 38 - Former Firefighter Training Area
- SWMU 43 - DOL Waste Solvent Storage Area

The details of the investigations and the risk assessment are presented in the following section under "SWMU Detail".

Corrective Measures are in progress at SWMU 17. An engineered landfill cover system has been design and construction began in 2001. The cover system is expected to be complete in 2005. Interim Stabilization measures have been completed at SWMU 21 and are in progress at SWMU 43. At SWMU 21, seep liquid from the Construction Debris Landfill was identified as having elevated concentrations of metals. The design for the interim stabilization at SWMU 21 has been approved by the LDEQ and construction at the site began in October 2001. The interim stabilization measures are expected to be complete in the Spring of 2002. At SWMU 43, lead impacted soils have been removed and the area was backfilled with clean fill material.

At SWMU 26, contaminated groundwater was identified. Additional Investigations to the Phase II RFI identified light non-aqueous liquids (LNAPL) in the groundwater at sample location SB-6. Due to the presence of LNAPL, the risk assessment could not be completed for this SWMU. However, a preliminary comparison of the site data to the RECAP Screening Standards identified hydrocarbon constituents including total recoverable petroleum hydrocarbons (TRPH) and lead in soil and benzene naphthalene and lead in groundwater. Based on the results of the investigations at SWMU 26, the site will be included in the Corrective Measures Study.

Based on the Management Option 3 RECAP Assessment at SWMU 38, the site will be included in the Corrective Measures Study. Concentrations of iron, lead, dieldrin, heptachlor, ß-hexachlorocyclohexane, and δ-hexachlorocyclohexane in groundwater and dieldrin in surface water exceeded the Management Option 3 RECAP Standards.

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 appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

[2]Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential **Human Receptors** (Under Current Conditions)							
Contaminated Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food
Groundwater	No	No	No	Yes			No
~~Air (indoors)~~							
~~Soil (surface, e.g., <2 ft)~~							
Surface Water	No	Yes			Yes	No	No
~~Sediment~~							
Soil (subsurface e.g., >2 ft)				Yes	No	No	No
~~Air (outdoors)~~							

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors' spaces for Media which are not "contaminated") as identified in #2 above.

2. enter "yes" or "no" for potential "completeness" under each "Contaminated" Media – Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential "Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces ("___"). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

_____ If no (pathways are not complete for any contaminated media-receptor combination) – skip to #6, and enter "YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

__X__ If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

_____ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code

Rationale

Groundwater - The groundwater at Fort Polk is not of sufficient quality or yield to be considered a drinking water source. Therefore, the only complete pathway for exposure to groundwater is direct contact for a construction worker. Constituents of concern for groundwater include: LNAPL (SWMU 26) and iron, lead, dieldrin, heptchlor, β-hexachlorocyclohexane, δ-hexachlorocyclohexane (SWMU 38).

Surface water - None of the surface water bodies at Fort Polk are classified as drinking water sources. However, military receptors occasionally drink surface water during training activities and construction workers may come in direct contact with the surface water. Constituents of concern for surface water include dieldrin (SWMU 38).

Subsurface Soil - Complete exposure pathways for subsurface soil are limited to direct contact by construction workers. Constituents of concern for subsurface soil include: hydrocarbons (SWMU 26).

[3]Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

4 Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **"significant"**[4] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

__X__ If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale

SWMU 26 - NO, The exposures at SWMU 26 can not be reasonable expected to be significant. Although potential exposure pathways exist, institutional controls (i.e. access restriction) are in place to prevent actual exposure. Sampling downgradient of the site indicates that the impacts are isolated to SWMU 26 and are not moving off-site. Options for remediating the groundwater impacts at SMWU 26 will be investigated in the Corrective Measures Study.

SWMU 38 - NO, The exposures at SWMU 38 can not be reasonably expected to be significant. The risk calculations for groundwater and surface water are very conservative and the site concentrations are within one order of magnitude of the RECAP Standards. Additionally, a fence that surrounds the site restricts access to SWMU 38.

[4]If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

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5 Can the "significant" **exposures** (identified in #4) be shown to be within **acceptable** limits?

_____ If yes (all "significant" exposures have been shown to be within acceptable limits) –continue exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

_____ If no (there are current exposures that can be reasonably expected to be "unacceptable")- continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

_____ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code

Rationale and Reference(s):

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6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

__X__ YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the **Fort Polk Military Reservation**, EPA ID #**LA0214022725**, located at in **Vernon Parish, Louisiana** under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

_____ NO - "Current Human Exposures" are NOT "Under Control."

_____ IN - More information is needed to make a determination.

Completed by (signature) Gail Hamilton Shaw III Date March 28/2002
(print) Gail Hamilton Shaw III
(title) Geologist

Supervisor (signature) Lewis Donlon Date 3/29/2002
(print) LEWIS DONLON
(title) GEOLOGIST SUPERVISOR
(EPA Region or State) 6

Locations where References may be found

LDEQ Hazardous Waste Division
Fort Polk Env & Nat Res Mgmt Div, Bldg 2502
Fort Polk Library (Allen), Bldg 400

*Reference for each individual SWMU are listed under "SWMU Detail"

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FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.