DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Name:	**Safety-Kleen (Baton Rouge), Inc.**
Facility Address:	**13351 Scenic Highway, Baton Rouge, LA 70807-1021**
Facility EPA ID #:	**LAD010395127**

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?

   __√__ 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?

   __√__ 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): See Table C-1, included in Appendix B Attachments, from the response to comments from the LDEQ regarding the Corrective Measures Study (CMS), for a list of key contaminants and their appropriate "levels." The LDEQ proposed corrective action levels in a document titled: *Proposed Louisiana Department of Environmental Quality Risk Based Corrective Action Program*, Corrective Action Group, Louisiana Department of Environmental Quality, March 14, 1997.

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)?

√ 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) (References included in Appendix B Attachments):

To demonstrate that the migration of contaminated groundwater has stabilized horizontally, Safety-Kleen has enclosed the volatile organic compound, semi-volatile organic compound, and pesticide/herbicide isopleth maps from the 1995 *Corrective Measures Study* (Figures 3- 22 through 3-30) and the 2000 *Annual Groundwater Monitoring Report* (Figures 18 through 26). Four shallow hydrostratigraphic units (Units 3, 4, 6, and 8) are monitored as required by the Resource Conservation And Recovery Act Part B Permit for the facility. Unit 8 is underlain by approximately 50 feet of clay With relatively low hydraulic conductivity. Beneath this clay is a hydrostratigraphic unit known as the 400-foot sand. The 400-foot sand occurs at about 200 feet below graded surface at the site and is the shallowest aquifer used for beneficial purposes in the area.

As of the 2000 annual groundwater monitoring event, 4 of the 31 monitoring wells in the lowest hydrostratigraphic unit (Unit 8) sampled have had detections of key contaminants above the corrective action levels established by the Louisiana Department of Environmental Quality (LDEQ). The VOCs detected in Unit 8 are expected to remain within the "existing area of contaminated groundwater" due to the existing groundwater recovery system and additional corrective measures proposed for the site. The corrective measures proposed in the Corrective Measures Study(CMS) have been designed to remove the key contaminants at the site. The LDEQ approved the CMS on October 1, 1998. Once the public comment period is completed on the CMS, the proposed corrective measures will be implemented.

[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.

__√__ 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) (References included in Appendix B Attachments):

The nearest surface water body that could be impacted by key contaminants emanating from groundwater is located adjacent (west) of the Port Commission Property. Detectable concentrations of key contaminants emanating from the Safety-Kleen site would have to extend to the western portion of the site to discharge to surface water bodies, which is not the case. Groundwater monitoring well sample results from the 2000 Annual Groundwater Monitoring Report are displayed on the enclosed figures (Figures 18 through 26). These figures show that the detection's of volatile organic compounds, semi-volatile organic compounds, pesticides, and herbicides dissipate prior to reaching the downgradient (western) boundary of the Safety-Kleen facility.

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) (References included in Appendix B Attachments):

Corrective measures that are designed to control and remove current levels of key contaminants have been proposed as part of the *Corrective Measures Study*, which was approved by the LDEQ on October 1, 1998. Monitoring of groundwater at the facility will be performed annually in accordance with the RCRA Part B Permit (LAD010395127), which became effective on February 8, 1993. A detailed list of the monitoring wells sampled and required analyses performed as of the 2000 groundwater sampling/monitoring event are outlined in Table 7 from the 2000 *Annual Groundwater Monitoring Report*.

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 - 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 Safety-Kleen (Baton Rouge), Inc. facility, EPA ID #LAD010395127, located at 13351 Scenic Highway, Baton Rouge, LA 70807-1021. 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 6-27-01
	(print) Dennis P. Piper	
	(title) Geologist 3	
Supervisor	(signature)	Date 6-28-01
	(print) Douglas Bradford	
	(title) Geologist Supervisor	
	(EPA Region or State) State of Louisiana	

Locations where References may be found:

All references are available from Safety-Kleen or Louisiana Department of Environmental Quality's files for the site:

Terra. 1993. *Risk Assessment for the Rollins Environmental Services (LA) Site*, Baton Rouge, Louisiana. December 2, 1993.
Encotec 1995. Draft Corrective Measures Study. August 1995
Ecology and Environment, 1997. *Responses to Louisiana Department of Environmental Quality's Comments for the Risk Assessment Prepared for the Laidlaw Environmental Services (Baton Rouge), Inc.* (Formerly, Rollins Environmental Services [LA], Inc.) Facility. November 1997.
Louisiana Department of Environmental Quality, 1997. *Proposed Louisiana Department of Environmental Quality Risk Based Corrective Action Program*, Corrective Action Group, March 14, 1997.
Aquaterra, 1998. *1997 Annual Groundwater Monitoring Report*, February 1998.
Safety-Kleen, 2000. 2000 *Annual Groundwater Monitoring Report*, February 2001.

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