ADEM

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September 28, 2001

MEMORANDUM

TO: Stephen A. Cobb, Chief
Hazardous Waste Branch
Land Division

THRU: Vernon H. Crockett, Chief
Industrial Facilities Section
Land Division

FROM: Naveen C. Sharma
Industrial Facilities Section
Land Division

SUBJ: Evaluation of status under the RCRAInfo Corrective Action Environmental Indicator Event Codes (CA725 and CA750) for the Rentokil Initial Environmental Services Inc.(RIES) facility in Creola, Mobile County, Alabama
EPA I.D. Number: ALD 021 257 951

I. PURPOSE OF MEMO

This memo is written to formalize an evaluation of the RIES, Alabama facility's status in relation to the following corrective action event codes defined in the Resource Conservation and Recovery Act Information (RCRAInfo) database:

1) Current Human Exposures Under Control (CA725),

2) Migration of Contaminated Groundwater Under Control (CA750).

Concurrence by the Hazardous Waste Branch Chief is required prior to entering these event codes into RCRAInfo. Your concurrence with the interpretations provided in the following paragraphs and the subsequent recommendations is satisfied by dating and signing at the appropriate location within Attachments 1 and 2.

II. HISTORY OF ENVIRONMENTAL INDICATOR EVALUATIONS AT THE FACILITY AND REFERENCE DOCUMENTS

This particular evaluation is the second evaluation for the RIES Creola, Alabama. This EI evaluation was prepared by ADEM. A previous evaluation was completed by ADEM, dated September 11, 1998.

III. FACILITY SUMMARY

A predecessor company of Rentokil Initial Environmental Services, Inc. (RIES) Redwing Carriers Inc. previously operated a tank truck terminal on Highway 43 North in Creola, Alabama. Trimac/DSI Transports, Inc. currently operates the tank truck terminal on a portion of the facility that is leased from RIES. In the 1980s, three surface impoundments were used to handle wash water generated from the cleaning of trailers. These impoundments were closed in November 1986 under a closure plan approved by the Alabama Department of Environmental Management (ADEM). Under this closure plan the contaminated soils from all the three surface impoundments were closed as a single landfill unit with residual soil contamination remaining in-place. A Post-Closure Permit for corrective action for groundwater was issued on September 29, 1989, and an Underground Injection Control (UIC) Permit (ALSI 9949364) was issued on October 24, 1989. A RCRA Facility Investigation (RFI) was performed on September 18, 1990 by personnel of WCM Group Inc., Southern Earth Sciences Inc. The RFI concluded that there was no evidence of any contamination due to organics at the surface of the subject Ditch. A release of approximately 7 gallons of leachate water occurred on July 24, 1991. This leachate water release did not have any significant impact on human health or environment and no remediation was recommended. There was another release on January 5, 1999 from fuel island. Confirmatory was completed in January 2000 confirming the release and an RFI was recommended. The RFI Work Plan was approved by the Department on July 20, 2001.

The Post-Closure Permit was re-issued on December 18, 1997 and the UIC permit was re-issued on January 15, 1998. These new permits included modifications to the Corrective Action Treatment System (CATS) to increase its effectiveness. The Post-Closure Permit was modified on September 28, 1998 to incorporate additional design changes to the CATS. Permit Modification No. 2 was issued on September 7, 1999. This minor permit modification addressed installation of additional monitoring wells and incorporated the facility name change from Redwing Carriers/DSI Transports to Rentokil Initial Environmental Services Inc. Permit Modification No. 3 was issued on April 6, 2000 for the installation of an additional monitoring well. Permit Modification No. 4 became effective on September 18, 2000 to enhance the CATS to increase the efficiency of iron removal. Attempts to operate the system with new iron control measures did not prove effective. Therefore, the permit was again modified to revise the iron filtration system on March 9, 2001 by replacing the backwash filter skid with two bag filter vessels in series with three cartridge filter vessels. The current CATS consists of an extraction well and backup well, fluidized bed air striper, settling tank equipped with a filter wall, cartridge and bag filters, and a carbon adsorption unit. Treated groundwater is injected back into the semi-confined aquifer through an Underground Injection Control (UIC) system, which includes six injection wells located along the South property line, downgradient of the zone of contaminated groundwater.

Groundwater flow maps constructed prior to the operation of the modified CATS in June 1999 indicated that the regional groundwater flow in the semi-confined aquifer across the site was generally to the Southwest. After the modified CATS the groundwater flow pattern across the RIES property is influenced by a cone of depression that has developed in response to groundwater pumping. The cone of depression appears to extend to all property boundaries.

IV. CONCLUSION FOR CA725

As indicated in attachment 1, a "YE" (yes) status code can be assigned to the site for Human Exposures Controlled because there are no complete pathways for human exposure to contaminated media at the site. The previous evaluation conducted by the Department concluded that only possible completed pathway was contaminated groundwater above the MCL and that the contaminated plume extended beyond property boundary. Since that time RIES has purchased additional property and the contaminant plume is now confined within RIES property boundaries. The attached figure 2-3 from the April 2001 Semi-Annual Groundwater Monitoring Report shows the position of the carbontetrachloride plume boundary with respect to the site property boundaries. RIES controls all property above the contaminant plume and restricts access to groundwater. No groundwater is extracted from the contaminated zone of groundwater for any other purpose than pumping of the CATS production well to provide hydraulic containment of the plume. Therefore there is no completed exposure

pathway for any environmental media and "YE" is the proper designation for CA 725.

V. CONCLUSION FOR CA750

A "YE" designation can be entered for " Migration of Contaminated Groundwater Controlled" (CA750). Improvements to the CATS designed to achieve hydraulic control of the plume were completed in late June 1999. The increased pumping rate of the renovated CATS has resulted in hydraulic containment of the plume. Water level measurements made during the January 2000 Semi-Annual Groundwater Monitoring event clearly indicate the zone of capture developed by the pumping well. The attached figure 2-1 from the Semi-Annual 2001 Groundwater Monitoring and Corrective Action Report presents contoured groundwater elevation data for the site. Overlaying the contaminant plume boundary from figure 2-3 from the Semi-Annual 2001 Groundwater Monitoring and Corrective Action Report on figure 2-1 shows that the CATS is now controlling the migration of the contaminant plume and assuring that contaminants will not migrate past the property boundaries. The plume is stabilized. Therefore the "YE" status code is the appropriate designation for CA750.

Attachments:
1. CA725: Current Human Exposures Under Control
2. CA750: Migration of Contaminated Groundwater Under Control

ATTACHMENT 1
DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
RCRA Corrective Action
Environmental Indicator (EI) RCRAInfo Code (CA725)
Current Human Exposures Under Control

Facility Name: Rentokil Initial Environmental Services, Inc.
Facility Address: 10565 Highway 43, Axis, Mobile County, Alabama
Facility EPA ID #: ALD 021 257 951

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 RCRAInfo national database ONLY as long as they remain true (i.e., RCRAInfo 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			
Air (indoors)[2]		X		
Surface Soil (e.g., <2 ft)		X		
Surface Water		X		
Sediment		X		
Subsurface Soil (e.g., >2 ft)	X			
Air (outdoors)		X		

____ 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.

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[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.

Rationale:

Surface and Subsurface Soil:

As discussed in Section III of the memorandum, three hazardous waste surface impoundments were closed as a single landfill unit with residual soil contamination remaining in-place. These soils are secured under a protective cap which is constructed in accordance with ADEM Admin. Code R. 335-14-5-.14. The area surrounding the impoundment is contained within a locked chain-link fence. Protective cap and site security measures prevent direct exposure to contaminated soil.
The RFI Report on the leachate release in 1990, concluded that this leachate water release did not have any significant impact on human health or the environment and no remediation was recommended. There was another release on January 5, 1999 from the fuel island. This release impacted the soil beneath the two sumps (subsurface soil) with diesel range hydrocarbons. Confirmatory sampling was completed in January 2000 confirming the release and an RFI was recommended for further investigation. These sumps are downgradient of fuel island. The RFI Work Plan for the Fuel Island was approved by the Department on July 20, 2001.

Groundwater:

Groundwater is known to be impacted by previous waste management activities at the Rentokil Initial Environmental Services site. Carbon tetrachloride and chloroform are present in the groundwater at concentrations exceeding MCLs. The contaminated plume is now contained within the property boundary.

Surface water/Sediment:

Surface water issues at Rentokil Initial Environmental Services facility are limited to storm water runoff, which is currently regulated under an NPDES permit. Although previous investigations were limited to soil and groundwater, there are no known or expected plausible human exposures related to surface waters.

Air:

A review of the documents indicates that residual contamination from regulated units is limited to groundwater and subsurface soils only. At this time there are no known or expected plausible human exposures associated with the air pathway.

References:
Post Closure Permit, 1997
Post Closure Permit Modifications 1through 5
E.I. Memo for Rentokil Initial Environmental Services September 30, 1998
Semi Annual and Annual Groundwater Monitoring and corrective Action Reports 1997-2001

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[3]
Groundwater	no	no	no	no	no	no	no
Air (indoors)							
Soil (surface, e.g., <2 ft)							
Surface Water							
Sediment							
Soil (subsurface, e.g., >2 ft)	no	no	no	no	no	no	no
Air (outdoors)							

Instructions for Summary Exposure Pathway Evaluation Table:

1. For Media which are not "contaminated" as identified in #2, please strike-out specific Media, including Human Receptors' spaces, or enter "N/C" for not contaminated.

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 assigned spaces in the above table. While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

__X__ 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).

____ 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 and Reference(s): Figure 2-3 and 2-4 from the April 2001 Semi-Annual Groundwater Monitoring Report shows the position of the carbon tetrachloride and chloroform plume boundary

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

with respect to the site property boundaries. RIES controls all property above the contaminant plumes and restricts access to groundwater. No groundwater is extracted from the contaminated zone of groundwater for any other purpose than pumping of the CATS production well to provide hydraulic containment of the plume.

RFI Report on Leachate Release in 1990, concluded that this leachate water release did not have any significant impact on human health or environment and no remediation was recommended. There was another release on January 5, 1999 from fuel island. This release impacted the soil beneath the two sumps (subsurface soil) with diesel range hydrocarbons. Since the contamination is limited to the subsurface soil there is no complete pathway to human receptors.

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)?

_____ 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 and
Reference(s):_____

[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.

Completed by: Naveen C. Sharma. Date: September 28, 2001

Naveen C. Sharma
Industrial Facilities Section
Hazardous Waste Branch
Land Division

Supervisor: _____ Date: September 28, 2001

Vernon H. Crockett, Chief
Industrial Facilities Section
Hazardous Waste Branch
Land Division

Supervisor: _____ Date: September 28, 2001 [5]

Stephen A. Cobb, Chief
Hazardous Waste Branch
Land Division

Locations where references may be found:

Alabama Department of Environmental Management
1400 Coliseum Boulevard
Montgomery, Alabama 36110

U.S. EPA Region 4
61 Forsythe Street
Atlanta Federal Center
Atlanta, Georgia 30303

Rentokil Initial Environmental Services Inc.
10565 Highway 43
Creola AL 36525

Rentokil Initial Environmental Services Inc.
P. O. Box 5963
Kingwood TX 77325

Contact telephone and e-mail numbers

[5] **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.**

ATTACHMENT 2
DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
RCRA Corrective Action
Environmental Indicator (EI) RCRAInfo Event Code (CA750)
Migration of Contaminated Groundwater Under Control

Facility Name: Rentokil Initial Environmental Services Inc.
Facility Address: 10565 Highway 43, Creola, Alabama
Facility EPA ID #: ALD 021 257 951

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 Determination should remain in the RCRAInfo national database ONLY as long as they remain true (i.e., RCRAInfo 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:
The key contaminants are carbon tetrachloride and chloroform above the MCL in the semi-confined aquifer.

References:

Semi Annual Groundwater Monitoring and Corrective Action Report 2001.

3. Has the **migration** of contaminated groundwater **stabilized** such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"[6] 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"[6]).

____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[2]) -

[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).

[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

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): Improvements to the CATS designed to achieve hydraulic control of the plume were completed in June 1999. The increased pumping rate of the renovated CATS has resulted in hydraulic containment of the plume. Water level measurements made during the January 2000 Semi Annual Groundwater Monitoring event clearly indicates the zone of capture developed by the pumping well. The attached figure 2-1 from Semi-Annual 2001 Groundwater Monitoring and Corrective Action Report presents contoured groundwater elevation data for the site. Overlaying the contaminant plume boundary from figure 2-3 from Semi-Annual 2001 Groundwater Monitoring and Corrective Action Report on figure 2-1 shows that the CATS is now controlling the migration of the contaminant plume and assuring that contaminants will not migrate past the property boundaries. The plume is stabilized.

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):_____

_____

_____

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[8] 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[8] 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) providing a statement of professional judgement/explanation (or reference documentation)

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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.

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[8] of <u>each</u> 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," providing 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 identifying if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown - enter "IN" status code in #8.

Rationale and
Reference(s):_____

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

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

[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.

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):_____

_____
_____
_____
_____
_____
_____

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) The wells are required to be monitored according to the Post Closure Permit conditions for at least another 20 years.

_____
_____
_____

8. Check the appropriate RCRAInfo 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 Rentokil Initial Environmental Services Inc. EPA ID # ALD 021 257 951 located at Creola Alabama. 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: Naveen C. Sharma Date: September 28, 2001

Naveen C. Sharma
Industrial Facilities Section
Hazardous Waste Branch
Land Division

Supervisor: _____ Date: September 28, 2001

Vernon H. Crockett, Chief
Industrial Facilities Section
Hazardous Waste Branch
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Supervisor: _____ Date: September 28, 2001

Stephen A. Cobb, Chief
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ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

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Land 279-3050
Water 279-3051
Groundwater 270-5631
Field Operations 272-8131
Laboratory 277-6718
Education/Outreach 213-4399

MEMORANDUM

September 11, 1998

To: Wm. Gerald Hardy, Chief 9/30/98
Hazardous Waste Branch
Land Division

Through: Stephen A. Cobb, Chief SAC 9/30/98
Industrial Facilities Section
Hazardous Waste Branch
Land Division

From: Chip Crockett
Industrial Facilities Section
Hazardous Waste Branch
Land Division

RE: Evaluation of status under the RCRIS Corrective Action Environmental Indicator Event Codes (CA725 and CA750)
Redwing Carriers, Inc.
EPA I.D. No. ALD 021 257 951

I. Purpose of Memo

This memo is written to formalize an evaluation of Redwing Carriers' status in relation to the following corrective action event codes defined in the Resource Conservation and Recovery Information System (RCRIS):

1) Human Exposures Controlled Determination (CA725).

2) Groundwater Releases Controlled Determination (CA750).

Concurrence by the Hazardous Waste Branch Chief is required prior to entering these event codes into RCRIS. Your concurrence with the interpretations provided in the following paragraphs and the subsequent recommendations is satisfied by dating and signing above. See Attachment 1 for more specific information of the RCRIS definitions for CA725 and CA750.

II. History of Environmental Indicator Evaluations at the Facility and Reference Documents

This particular evaluation is the first evaluation performed by the Department for Redwing. The evaluation, and associated interpretations and conclusions on contamination, exposures and contaminant migration at the facility, is based on information obtained from the following documents:

- Post-Closure Permit Application dated January 27, 1997
- AHWMMA Post-Closure Permit dated December 18, 1997
- Interim RCRA Facility Assessment dated June 3, 1988
- Corrective Measures Study dated August 5, 1993
- Quarterly, Semi-Annual, and Annual Groundwater Monitoring and Corrective Action Effectiveness Reports, 1991 – 1997.

III. Facility Summary

The Redwing Carriers facility is located in northern Mobile County in the town of Creola at 10565 Highway 43 North. Redwing is the former operator of a tanker truck terminal which performed dispatching, maintenance and repair services, and rinsing of the tanker trailers. The terminal and wash-rack are still active and operated by DSI Transports, Inc. The facility is bordered to the North by U.S. Highway 43, to the West by Suttles® Trucking Co., a similar trucking facility, and to the South and East by undeveloped woodlands.

Past waste management practices included the use of three earthen surface impoundments for the storage of hazardous wastewaters associated with the tanker rinsing operation. The impoundments were closed in-place in 1986. An AHWMMA Post-Closure Permit for post-closure care and corrective measures for groundwater contamination was issued in 1989 and renewed December 18, 1997. A RCRA Facility Assessment (RFA) was completed in 1988, identifying two Solid Waste Management Units (SWMUs) requiring additional investigation. A RCRA Facility Investigation (RFI) and Corrective Measures Study was completed in 1993. Currently, a groundwater extraction and treatment system is operating, and serves as the remedy for both the regulated units and SWMUs.

IV. Conclusion for CA725

As more fully explained in Attachment 2, because human exposures to contamination are not currently controlled for groundwater, it is recommended that CA725 NO be entered into RCRIS.

V. Conclusion for CA750

Based on data contained in the documents referenced in Section II and summarized in the groundwater portion of Attachment 2, releases from SWMUs and/or AOCs have contaminated groundwater at concentrations above relevant action levels. Groundwater control measures required under the previous permit were ineffective in controlling plume migration. It is believed that the enhanced system required under the current permit will be more successful, however these enhancements are not yet fully operational.

Because of the inefficiency of the previous system and operational status of the current system at this facility, it is recommended that CA750 NO be entered into RCRIS.

VI. Summary of Follow-Up Actions

As described in Attachment 2, Redwing's Post-Closure Permit renewal, issued December 18, 1997, requires significant enhancement to the facility groundwater extraction and treatment system. It is believed that these enhancements will be successful in controlling plume migration, although they are not yet on-line. The facility should be re-evaluated following the collection of sufficient data after the enhanced system in placed into operation.

VHC/sem:L::Redwing EI Memo

Attachments (2)

cc: Kent Williams, EPA Region 4

File: Redwing Carriers
EPA ID No. ALD 021 257 951

ATTACHMENT 1

A. Human Exposures Controlled Determination (CA725)

There are five (5) national status codes under CA725. These status codes are:

1) YE Yes, applicable as of this date [i.e., human exposures are controlled as of this date].

2) NA Previous determination no longer applicable as of this date.

3) NC No control measures necessary.

4) NO Facility does not meet definition [i.e., human exposures are not controlled as of this date].

5) IN More information needed.

The first three (3) status codes listed above were defined in January 1995 Data Element Dictionary for RCRIS. The last two (2) status codes were defined in June 1997 Data Element Dictionary.

Note that CA725 is designed to measure human exposures over the entire facility (i.e., the code does not track SWMU specific actions or success). Every area at the facility must meet the definition before a YE or NC status code can be entered for CA725. The NO status code should be entered if there are current unacceptable risks to humans due to releases of hazardous wastes or hazardous constituents from any SWMU(s) or AOC(s). The IN status code is designed to cover those cases where insufficient information is available to make an informed decision on whether or not human exposures are controlled. If an evaluation determines that there are both unacceptable and uncontrolled current risks to humans at the facility (NO) along with insufficient information on contamination or exposures at the facility (IN), then the priority for the EI recommendation is the NO status code.

The Department has been advised by EPA Region 4 that the previous relevance of NA as a meaningful status code is eliminated by the June 1997 Data Element Dictionary's inclusion of NO and IN to the existing YE and NC status codes. In other words, YE, NC, NO and IN cover all of the scenarios possible in an evaluation or reevaluation of a facility for CA725. Therefore, only YE, NC, NO and IN should be utilized to categorize a facility for CA725. No facility in Alabama should carry a NA status code.

B. Groundwater Releases Controlled Determination (CA750)

There are five (5) status codes listed under CA750:

1) YE Yes, applicable as of this date [i.e., groundwater releases are controlled as of this date].

2) NA Previous determination no longer applicable as of this date.

3) NR No releases to groundwater.

4) NO Facility does not meet definition [i.e., groundwater releases are not controlled as of this date].

5) IN More information needed.

The first three (3) status codes listed above were defined in January 1995 Data Element Dictionary for RCRIS. The last two (2) status codes were defined in June 1997 Data Element Dictionary.

The status codes for CA750 are designed to measure the adequacy of actively (e.g., pump and treat) or passively (e.g., natural attenuation) controlling the physical movement of groundwater contaminated with hazardous constituents above relevant action levels. The designated boundary (e.g., the facility boundary, a line upgradient of receptors, the leading edge of the plume as defined by levels above action levels or cleanup standards, etc.) is the point where the success or failure of controlling the migration of hazardous constituents is measured for active control systems. Every contaminated area at the facility must be evaluated and found to have the migration of contaminated groundwater controlled before a "YE" status code can be entered.

If contaminated groundwater is not controlled in any area(s) of the facility, the NO status code should be entered. If there is not enough information at certain areas to make an informed decision as to whether groundwater releases are controlled, then the IN status code should be entered. If an evaluation determines that there are both uncontrolled groundwater releases for certain units/areas (NO) and insufficient information at certain units/areas of groundwater contamination (IN), then the priority for the EI recommendation should be the NO status code.

The Department has been advised by EPA Region 4 that the previous relevance of NA as a meaningful status code is eliminated by the June 1997 Data Element Dictionary's inclusion of NO and IN to the existing YE and NC status codes. In other words, YE, NC, NO and IN cover all of the scenarios possible in an evaluation or reevaluation of a facility for CA725. Therefore, only YE, NC, NO and IN should be utilized to categorize a facility for CA725. No facility in Alabama should carry a NA status code.

ATTACHMENT 2

A. Human Exposures Controlled (CA725) Determination – Media by Media Evaluation

1. Groundwater

Groundwater is known to be impacted by previous waste management activities at the Redwing site. Various volatile and semi-volatile contaminants, including Carbon Tetrachloride, Dinoseb, and Chloroform, are present in the groundwater at concentrations exceeding Maximum Contaminant Levels (MCLs). The contaminant plume is known to extend beyond the Redwing property boundary. A review of past groundwater monitoring data indicates that corrective action efforts, to date, have been unsuccessful at preventing plume migration. The inefficiency of the corrective action system, which utilizes common 'pump-and-treat' technology, has been attributed to inadequate pumping rates and maintenance problems.

Enhancements to the groundwater extraction and treatment system have been approved and are required by Redwing's current AHWMMA Post-Closure Permit. These enhancements include the installation of new extraction wells which will operate at increased pumping rates. The treatment system will be reconfigured to increase its capacity. New components, such as an Iron pre-treatment system, and backup systems, such as a redundant extraction well, will be installed, and a more aggressive maintenance program will be implemented in an effort to reduce system down-time. The enhanced system in expected to be completed and in operation by the end of 1998.

2. Surface Water

Surface water issues at the Redwing facility are limited to storm water runoff, which is currently regulated under an NPDES permit. Although previous investigations were limited to soil and groundwater, there are no known or expected plausible human exposures related to surface waters.

3. Air

A review of the documents described in Section II of the cover memorandum indicates that residual contamination from regulated units and SWMUs is limited to subsurface soils and groundwater. At this time, there are no known or expected plausible human exposures associated with the air pathway.

4. **Soil**

As discussed in Section III of the cover memorandum, three hazardous waste surface impoundments were closed as a single landfill unit with residual soil contamination remaining in-place. These soils are secured under a protective cap which is constructed in accordance with ADEM Admin. Code R. 335-14-5-.14. The area surrounding the impoundments is contained within a locked chain-link face.

Protective cap and site security measures prevent direct exposure to contaminated soils. The cap also prevents surface water infiltration which reduces the potential for the leaching of contaminants to the groundwater. Therefore, the only plausible human exposures are those associated with the groundwater pathway as discussed in A.1. above.

B. Groundwater Releases Controlled (CA750) Determination

Groundwater is known to be impacted by previous waste management activities at the Redwing site. Various volatile and semi-volatile contaminants, including Carbon Tetrachloride, Dinoseb, and Chloroform, are present in the groundwater at concentrations exceeding Maximum Contaminant Levels (MCLs). The contaminant plume is known to extend beyond the Redwing property boundary. A review of past groundwater monitoring data indicates that corrective action efforts, to date, have been unsuccessful at preventing plume migration. The inefficiency of the corrective action system, which utilizes common 'pump-and-treat' technology, has been attributed to inadequate pumping rates and maintenance problems.

Enhancements to the groundwater extraction and treatment system have been approved and are required by Redwing's AHWMMA Post-Closure Permit. These enhancements include the installation of new extraction wells which will operate at increased pumping rates. The treatment system will be reconfigured to increase its capacity. New components, such as an Iron pre-treatment system, and backup systems, such as a redundant extraction well, will be installed, and a more aggressive maintenance program will be implemented in an effort to reduce system down-time. The enhanced system in expected to be completed and in operation by the end of 1998.

Project Schedule for Meeting Environmental Indicators

I. Basic Information

Name and I.D. No.	Location (City or Town)	Date of Latest EI Memo	CA 725 Decision	CA 750 Decision

II. Brief Facility Background

III. Brief Outline of Issues Leading to an EI of NO or IN

A. CA 725

B. CA 750

IV. Discussion of What is Needed to Get to Yes, with Schedule (a.k.a EI Interim Milestone)

A. CA725

B. CA 750

EI Interim Milestone Schedule Format and Example

(FACILITY NAME)[1]				
Activity(ies) (events as defined in RCRIS)[2] and 3	**Activity CA RCRIS Event Code**	**Scheduled Date**[4] (QTR & FY)	**EI Code** (725/750)	**Remarks**[5] (Include unit and description of actions)
ex: Stabilization Measures Implemented	CA600	3/31/00	725	Site 17 – imposition of excavation and treatment of PCB contaminated soils above industrial RBC's Site 10 - imposition of institutional controls.
ex: Stabilization Measures Implemented	CA600	9/30/00	750	Site 1: imposition of SVE/AS system for VOC soil hot spot and GW plume

ex: Interim Measures Report Received	CA640	6/30/01	750	Site 1: GW effectiveness and monitoring report for VOC plume.
ex: Stabilization Construction Complete	CA650	9/30/01	750	Site 1: Review of GW effectiveness monitoring report shows stabilization objectives to have been met.
ex: Migration of Contaminated Groundwater Under Control	CA750	9/30/01	750	Revised EI Memo
ex: Int. Measures Progress Report Received	CA643	6/31/00	725	Site 10: Report on Institutional Controls Received
ex: Interim Measures Report Received	CA640	9/31/00	725	Site 17: Report on completion of soil excavation
ex: Stabilization Construction Complete	CA650	3/31/02	725	Interim Measures undertaken have been completed at Sites 17 and 10.
ex: Current Human Exposures Under Control Determination	CA725	3/31/02	725	Revised EI Memo

Note –

1) A table should be completed for each RCRA GPRA CA facility. The schedule should align with attainment of a positive EI determination date outlined within this memo and BYP projections.

2) For activities, use attached list of RCRIS CA Event Codes as a reference. Given site specific nature and differences, each Project Officer or RPM should use professional judgement in determining which RCRIS Events Codes would apply based on approach being used. Remarks should be provided that outline what specific actions and milestones are occurring to support attainment of a positive EI determination.

3) If **none** of the **existing CA Event Codes** fit the actions at your facility, a catch-all regional event and event code will be available for use. The actual CA Event Code will be provided at a later date. This catch-all CA Event Code will be called "Tech Memo/Report in Support of EI Determination."

4) Use last day of a fiscal Qtr for date – 12/31/XX, 3/31/XX, 6/30/XX, and 9/30/XX

5) For EI code column – only 725 or 750 or a combination (725/750) can be entered.

6) Include a brief summary of the **Remarks** in the corresponding RCRIS CA Event Code's Comment Field.

V. Level of Confidence in Meeting EI's, and Major Issues

In addition to the narrative discussion to be provided here in the EI Project Schedule, please include a relative ranking of confidence in the RCRIS Comment Field for the scheduled date when CA725 and CA750 will be reached (i.e., High, Medium, Low). For example,

		Schedule	Actual
CA725 YE	Current Human Exposures Under Controlled Comment: High Confidence	3/31/02	- - -

9/2/97

4WD-RCRA

SUBJ: Evaluation of Redwing Carriers' status under the RCRIS Corrective Action Environmental Indicator Event Codes (CA725 and CA750)
EPA I.D. Number: ALD 021 257 951

FROM: Lael Butler
AL/MS Unit

THRU: Kent Williams, Acting Chief
RCRA Permitting Section

TO: G. Alan Farmer
Chief, RCRA Branch

I. PURPOSE OF MEMO

This memo is written to formalize an evaluation of the Redwing Carriers (Redwing), Creola, Alabama, facility status in relation to the following RCRIS corrective action codes:

1) Human Exposures Controlled Determination (CA725),

2) Groundwater Releases Controlled Determination (CA750).

The applicability of these event codes adheres to the definitions and guidance provided by the Office of Solid Waste (OSW) in the July 29, 1994, memorandum to the Regional Waste Management Division Directors.

Concurrence by the RCRA Branch Chief is required prior to entering these event codes into RCRIS. Your concurrence with the interpretations provided in the following paragraphs and the

subsequent recommendations is satisfied by dating and signing above.

II. HUMAN EXPOSURES CONTROLLED DETERMINATION (CA725)

There are three (3) national status codes under CA725. These status codes are:

1) YE Yes, applicable as of this date.

2) NA Previous determination no longer applicable as of this data.

3) NC No control measures necessary.

Region 4 added a regional status code to CA725 which tracks initial evaluations in which a determination is made that plausible human exposures to current contamination risks are not controlled. This regional status code is listed as "NO, not applicable as of this date." Use of the regional status code is only applicable during the first CA725 evaluation. Evaluations subsequent to the first evaluation will use the national status codes (i.e., YE, NA and NC) to explain the current status of exposure controls.

Note that the three national status codes for CA725 are based on the entire facility (i.e., the codes are not SWMU specific). Therefore, every area at the facility must meet the definition before a YE, NA or NC status code can be entered for CA725. Similarly, the regional status code, NO, is applicable if plausible human exposures are not controlled in any areas of the facility.

This particular CA725 evaluation is the **first evaluation** performed by EPA for the Redwing facility. Because assumptions have to be made as to whether or not human exposures to current media contamination are plausible and, if plausible, whether or not controls are in place to address these plausible exposures, this memo first examines each environmental media (i.e., soil, groundwater, surface water, air) at the entire facility including any offsite contamination emanating from the facility rather than

from individual areas or releases. After this independent media by media examination is presented, a final recommendation is offered as to the proper CA725 status code for Redwing.

The following discussions, interpretations and conclusions on contamination and exposures at the facility are based on the following reference documents:

- CMS Work Plan, 08/06/93;
- RFI Phase II Progress Report, 05/25/96; &
- Fourth Quarter 1995 Groundwater Monitoring Report, 03/05/96.

III. MEDIA BY MEDIA DISCUSSION OF CONTAMINATION AND THE STATUS OF PLAUSIBLE HUMAN EXPOSURES

Background

In 1971, Redwing began this truck terminal maintenance and dispatch services, a truck transportation company operated on a "for hire" basis. Wastewater from internal and external cleaning of transportation equipment was disposed in three surface impoundments. These were removed from service in February, 1985, and closed in September, 1986, according to an ADEM/EPA approved closure plan.

The wastewater removed from the impoundments during closure was determined hazardous due to the presence of "P"-listed compounds: dinoseb and carbon disulfide. A complex on-site landfill closure utilized components such as a two-foot compacted clay liner overlain by a synthetic liner and leachate collection system. Excavated material from the surface impoundments was then placed in this landfill and covered with a 2-foot, low permeability clay cap, an 18-inch soil covering and natural grass vegetation.

A post-closure plan was implemented along with corrective action to recover contaminated groundwater. Details are contained in the following sections.

Groundwater

In 1990, a corrective action program was initiated to remediate contamination from former surface impoundments located on the western portion of the property. The system has successfully recovered and treated over 100 million gallons of contaminated groundwater. Two groundwater wells, RW-1 and RW-2, recover contaminated groundwater and pump it to a 20,000 gallon holding tank prior to treatment in the air stripping towers. Cartridge filters then remove any solids and then finally, the groundwater is passed through a carbon filter system and reinjected upgradient at wells IW-1 and IW-2 (see attached figure).

Constituents of concern in the groundwater include carbon disulfide, chloroform and carbon tetrachloride (see attached). The contaminant plume which originated from the western impoundments prior to closure, has moved off-site to the east, south and west of the facility. Redwing purchased property immediately to the south and the west during 1994 in order to gain access and conduct the additional field tests and groundwater monitoring activities.

Field investigations were performed in 1994 and 1995 to determine:

- the efficiency of the recovery wells;
- the rate and extent of the contaminant plume movements; &
- the effectiveness of the treatment system;

The recovery wells were found to be performing below capacity due to the clogging of the well intake screens with iron bacteria and poor maintenance practices. After the recovery wells and pipelines were treated with hydroxyacetic acid, the overall system yield was measured at 103 gpm. Repairs to the 50 gpm pump in RW-1 were also necessary. The pump in RW-2 is rated at 150 gpm, but it also is affected by the iron bacteria and requires routine maintenance.

Another result of the 1994-1995 fieldwork is that a new production well is proposed for installation to capture the

southern extent of the plume (see attached). This new production well will be an 8-inch diameter well to a total depth if anticipated to be 90 feet below ground surface. A 2-inch observation well will also be installed nearby.

Potential receptors are water wells within a one-mile radius and the nearby creek, Seymore Branch. Releases have contaminated groundwater at concentrations such that corrective action for groundwater is occurring. There are no onsite human exposures. However, there are still plausible offsite human exposures to contaminated groundwater. With the improved regular maintenance to the recovery and treatment system, and the additional groundwater production well and four new monitoring well clusters, Redwing is taking appropriate action to stop the further spread of the contaminant plumes. Until the new production well is on-line and sufficient water level measurements and other monitoring data are collected and analyzed with regard to groundwater plume recovery, plausible human exposures to groundwater contamination are not controlled.

Surface Water/Sediment

There are no immediately adjacent surface water bodies. The nearest body of water is the Seymore Branch. Direct releases to this creek and/or sediment are not known or expected to be occurring above relevant action levels.

Soil

The closed western surface impoundments were generally believed to be the source of the contamination detected in the groundwater. Soil had been impacted by contaminated water from the impoundments which had migrated into the underlying surficial aquifer. During the RCRA facility investigations and well installation, soil samples were collected and analyzed for the same parameters as the groundwater.

In addition to the area of the old ponds and the closed landfill, another area of concern was identified: the site's

drainage ditch, located west of the terminal building. An investigation ensued which determined that no contamination is present in the surface soils of the drainage ditch.

Lastly, soil samples collected during the installation of well T-20 (south of the terminal operations building), detected carbon disulfide, carbon tetrachloride and chloroform in small quantities at depths of ≈22 & 27 feet below ground surface. However, carbon disulfide was not detected in the groundwater sample which the other two constituents were. It is proposed that carbon tetrachloride and chloroform are present as an eastern edge component of the identified plume from the western impoundments.

Risk associated with these compounds in the soil is low due to the depths at which they were found. Also, as previously stated, a clay cap covers the area of the old ponds and prevents the transport of any subsurface soil contaminant to the ground surface. Human exposures to contaminated soil onsite are controlled and no direct risk exists.

Air

Releases to the air from either soil, groundwater, or surface water is not known or expected to be occurring above relevant action levels.

IV. STATUS CODE RECOMMENDATION FOR CA725:

As explained in Section III, offsite human exposures to contamination are not completely controlled for groundwater and surface water, it is recommended that **CA725 NO** be entered into RCRIS.

V. GROUNDWATER RELEASES CONTROLLED DETERMINATION (CA750)

There are three (3) status codes listed under CA750:

1) YE Yes, applicable as of this date.

2) NA Previous determination no longer applicable as of this date.

3) NR No releases to groundwater.

Region 4 also added an additional status code which tracks the initial evaluations in which a determination is made that groundwater releases are not controlled. This regional status code is listed as "NO, not applicable as of this date." Use of the regional status code is only applicable in the first CA750 evaluation. Subsequent evaluations will use the national status codes (i.e., YE, NA and NR) to explain the current status of groundwater control.

Note that the three national status codes for CA750 are designed to measure the adequacy of actively or passively controlling the physical movement of groundwater contaminated with hazardous constituents above relevant action levels. The point where the success or failure of controlling the migration of hazardous constituents is measured in termed the designated boundary (e.g., the facility boundary, a line upgradient of receptors, the leading edge of the plume as defined by levels above action levels or cleanup standards, etc.). Therefore, every contaminated area t the facility must meet the definition before these event/status codes can be entered. Similarly, the regional status code is applicable if contaminated groundwater is not controlled in any area(s) of the facility.

This evaluation for CA750 is the first formal evaluation performed for Redwing. Please note that CA750 is based on the adequate control of all contaminated groundwater at the facility.

The discussions in Section III are used as the basis for the following recommendation.

VI. STATUS CODE RECOMMENDATION FOR CA750:

Based on data contained in the documents referenced in Section II and summarized in Section III, releases from solid waste management units and/or areas of concern have contaminated groundwater at concentrations above relevant action levels. Because all groundwater contamination at or emanating from the facility is not controlled and this is the first evaluation of the Redwing facility, it is recommended that **CA750 NO** be entered into RCRIS.

Attachments