US ERA ARCHIVE DOCUMENT

### 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 Address:	21 North Church Street, Addison, Illinois 60101			
Facility EPA ID #:	ILD 000 672 139			
groundwater,	ble relevant/significant information on known and reasonably suspected releases to soil, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been <b>considered</b> in this ion?			
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				

**Facility Name:** 

### **Definition of Environmental Indicators (for the RCRA Corrective Action)**

FANSTEEL ESCAST

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).

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2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be "contaminated" 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)?

Yes No ? Rationale / Key Contaminants

Groundwater
Air (indoors)<sup>2</sup>
Surface Soil (e.g., <2 ft)
Surface Water
Sediment
Subsurf. Soil (e.g., >2 ft)
Air (outdoors)



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.

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 and Reference(s): References: RCRA Corrective Action Report with Demonstration for Closure, Carlson Environmental, Inc. (CEI), January 9, 1998 (Tables 2 through 6 show soil analytical results and comparisons with cleanup objectives). Also, the CEI's Groundwater Monitoring Report dated December 30, 1998, and two Fansteel Escast letters dated November 8 and November 23, 1999.

Most of the facility's soil contaminated areas were successfully treated by thermal desorption to levels below the U.S. EPA Region 5's limits for protection of groundwater. However, in the non-remediated area, the available data indicates that the maximum soil concentrations detected for 7 volatile organic compounds (VOCs) exceeded (slightly) the limits for protection of groundwater, in particular 1,1-dichloroethane and 1,1,1-trichloroethane. However, these concentrations were all below the Illinois Tier Approach to Corrective Action Objectives (TACO) for an industrial land use scenario (Tier 1, construction worker). [Fansteel Escast has accepted a land use restriction which was imposed by the Illinois EPA.]

Note: The groundwater data also indicates that the groundwater remediation conducted in 1996 was successful, and that the groundwater is not currently contaminated above appropriately protective levels. The December 1998 Groundwater Monitoring Report indicates that the only contaminant that could be of concern is 1,1-dichloroethane. However, the concentration level detected (in one well only) was 4.4 ug/l J (below quantitation limit of 5). This level is below the U.S. EPA Region 5's risk-based groundwater screening level of 810 ug/l and below the IEPA's (Class I)groundwater protection limit of 700 ug/l.

# Footnotes:

- <sup>1</sup> "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).
- <sup>2</sup>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

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contaminants) does not present unacceptable risks.

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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 Res	idents	Workers	Day-Care	Construction	Trespassers	Recreation	$Food^3$
Groundwater							
Air (indoors)							
Soil (surface, e.g., <2 ft)							
Surface Water							
Sediment							
Soil (subsurface e.g., >2 ft)							
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.

<u>X</u>	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) inplace, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional <u>Pathway Evaluation Work Sheet</u> 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.

<sup>&</sup>lt;sup>3</sup> Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

4.	Can the <b>exposures</b> from any of the complete pathways identified in #3 be reasonably expected to be " <b>significant</b> " (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 Re	terence(s):			

<sup>&</sup>lt;sup>4</sup> 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.

<sup>5.</sup> Can the "significant" exposures (identified in #4) be shown to be within acceptable limits?

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	If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing <u>and</u> referencing documentation justifying wh all "significant" 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
ationale and	Reference(s):

(e-mail)

rojo.juana@epa.gov

# Current Human Exposures Under Control Environmental Indicator (EI) RCRIS code (CA725)

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	ation is needed to make	a determination.	
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itle) Chie	f, Corrective Action Sec		
ferences may be	found:		
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FINAL NOTE: THE HUMAN EXPOSURES ELIS A QUALITATIVE S CREENING 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.

### DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

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

### Migration of Contaminated Groundwater Under Control

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Facility Address:	21 North Church Street, Illinois 60101
Facility EPA ID #:	ILD 000 672 139
groundwater me	le relevant/significant information on known and reasonably suspected releases to the edia, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units lated Units (RU), and Areas of Concern (AOC)), been <b>considered</b> in this EI determination?
<u>X</u>	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**

Facility Name

### **Definition of Environmental Indicators (for the RCRA Corrective Action)**

FANSTEEL ESCAST

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.

### <u>Definition of "Migration of Contaminated Groundwater Under Control" EI</u>

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).

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2.	Is <b>groundwater</b> known or reasonably suspected to be "contaminated" 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.			
	_X	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):

References: December 30, 1998, Groundwater Monitoring Report prepared by Carlson Environmental, Inc. (CEI) on behalf of Fansteel Escast, Inc. It contains groundwater analytical data which indicates that only two laboratory contaminants (at very low levels), and a one-time detection of 1,1-dichloroethane (DCA) were observed on the last round of groundwater sampling at Fansteel Escast facility. The DCA was detected at a level of 4.4 ug/l J (below the quantitation limit of 5 ug/l). This level is below the U.S. EPA Region 5's risk-based groundwater screening level of 810 ug/l and below the IEPA's (Class I) groundwater protection limit of 700 ug/l.

[The CEI January 9, 1998, document titled RCRA Corrective Action with Demonstration of Closure also contains groundwater sampling data and a brief description of the groundwater cleanup procedures.]

Footnote

s l"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 <b>migration</b> of contaminated groundwater <b>stabilized</b> (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater" as defined by the monitoring locations designated at the time of this determination)?			
	If yes - continue, after presenting or referencing the ph sampling/measurement/migration barrier data) and ratio groundwater is expected to remain within the (horizonta "existing area of groundwater contamination" <sup>2</sup> ).	onale why contaminated		
	If no (contaminated groundwater is observed or expect designated locations defining the "existing area of grou #8 and enter "NO" status code, after providing an explain	andwater contamination"2) - skip to		
	If unknown - skip to #8 and enter "IN" status code.			
	Rationale and Reference(s):			

<sup>&</sup>lt;sup>2</sup> "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 <b>discharge</b> into <b>surface water</b> bodies?			
	1	f yes - continue after identifying potentially affected surface water bodies.		
		f 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.		
	I	f unknown - skip to #8 and enter "IN" status code.		
	Rationale and Refe	rence(s):		

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5.	maximum concent appropriate groun discharging conta	ration <sup>3</sup> of each contaminant discharging into surface water likely to be "insignificant" (i.e., the ration <sup>3</sup> of each contaminant discharging into surface water is less than 10 times their dwater "level," and there are no other conditions (e.g., the nature, and number, of minants, or environmental setting), which significantly increase the potential for acts 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 <sup>3</sup> of <u>key</u> 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 <sup>3</sup> 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 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.

 $<sup>^3</sup>$  As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

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6.	acceptable" (i.e.	ge of "contaminated" groundwater into surface water be shown to be "currently, not cause impacts to surface water, sediments or eco-systems that should not be allowed a final remedy decision can be made and implemented <sup>4</sup> )?
		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, 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.

<sup>&</sup>lt;sup>4</sup> 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.

<sup>&</sup>lt;sup>5</sup> 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 <b>monitoring</b> / 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?"				
		yes - continue after providing or citing documentation for planned activities or future ampling/measurement events. Specifically identify the well/measurement locations hich will be tested in the future to verify the expectation (identified in #3) that coundwater contamination will not be migrating horizontally (or vertically, as necessary on the "existing area of groundwater contamination."			
		If no - enter "NO" status code in #8.			
		If unknown - enter "IN" status code in #8.			
	Rationale and Re	ference(s):			

•	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					
				nentation 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 FANSTEEL ESCAST, Inc. facility, EPA ID # ILD 000 672 139, located at 21 North Church Street, Addison, Illinois, 60101. 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 - Un	acceptable migration of contain	minated groundwater is observed or expec	ted.	
		IN - Mor	re information is needed to make	ke a determination.		
	Completed by	(signatur	re)	Date		
		(print)	Juana E. Rojo			
		(title)	Corrective Action Projec	t Manager		
	Supervisor	(signatur	re)	Date		
		(print)				
		(title)				
		(EPA Re	gion or State)			
	Locations wher	e Reference	es may be found:			
			A Files. The complete remedi t the IEPA (Bureau of Land) fi	ation and closure documents about iles in Springfield, Illinois.		
	Contact telephor	ne and e-ma	il numbers			
	(name)		nna E. Rojo			
	(phone		2) 886-0990	<del></del>		
	(e-mail		o.juana@epa.gov	<del></del>		
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