DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

RCRA Corrective Action
Environmental Indicator (EI) RCRAInfo code (CA725)
Current Human Exposures Under Control

Facility Name: **Ciba Corporation Secure Landfill**
Facility Address: **Jenkinsville Rd, Queensbury, NY**
Facility EPA ID #: **NYD000818419**

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EIs) 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 EIs 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 EIs 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).

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 is not available skip to #6 and enter "IN" (more information needed) status code.

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)?

	YES	NO	?	Rationale/Key Contaminants
Groundwater		X		Groundwater concentrations below applicable standards for all constituents
Air (indoors)[2]		X		VOCs not present
Surface Soil (e.g., <2 ft)		X		Closed and Capped Landfill
Surface Water		X		Non adjacent and groundwater concentrations below applicable standards for all constituents
Sediment		X		NA
Subsurface Soil (e.g., >2 ft)		X		Lined Landfill
Air (outdoors)		X		Capped Landfill

   __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

[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) suggests 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.

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):

The Ciba Corporation owned and operated a wastewater pre-treatment plant in the immediate vicinity of their Glens Falls, New York Main Plant Site. The Plant has been closed and has ceased manufacturing operations. The pre-treatment plant, during optimum operation, produced approximately 100-125 cubic yards of dewatered treatment sludges per week on a six day per week schedule. The sludge primarily consisted of metal hydroxides and was classified as a hazardous waste. Ciba disposed of the sludge in a hazardous waste landfill it operated on a 7.1 acre tract of land leased from the Town of Queensbury (See Figure 1). An adjacent surface impoundment was used to collect leachate from the landfill cell and runoff from a truck washing station.

The Permittee performed closure activities for the landfill during summer/fall of 1989 and completed closure in the summer of 1990. A Post-Closure Plan for the landfill is contained in Appendix V-C of the Facility's 6NYCRR Part 373 Hazardous Waste Permit.

The following known SWMUs located on-site and/or off-site:

1. Hazardous Waste Landfill - The hazardous waste landfill is a regulated unit and was closed during 1990. Modules IV and V of the Facility Permit contain the maintenance, monitoring, inspection, and all other post-closure care requirements for the landfill.

2. Hazardous Leachate Surface Impoundment - The surface impoundment was closed in 1990 in accordance with the approved closure plan stating that Ciba would attempt to remove all waste and waste residues. The Department has reviewed the closure certification for compliance with the approved closure plan and, by letters dated March 19, 1990, accepts Ciba's contention that all wastes and waste residue were removed. The Facility Permit does not contain any further requirements specifically for the former Hazardous Leachate Surface Impoundment

3. Hazardous Leachate Storage Container Area – Leachate pumped from the closed Landfill is stored temporarily in a double walled Storage Container located at the Site. A release occurred from the Hazardous Leachate Storage Container during the first quarter of 2008. Leachate, in an amount estimated at less than 300 gallons, was released to the surrounding soils. Sampling of the surrounding and underlying soils was performed in July 2008. Results from this sampling indicated there was no measurable impact from this release. Repairs to the container and support structures were completed and it was determined that no further actions were necessary.

Historical groundwater quality data, which was initially collected from the Landfill monitoring well network, indicated the presence of the Hazardous Constituents barium, cadmium, chromium, copper, cyanide and lead in the groundwater near the Landfill. An assessment of this contamination was conducted during 1990 - 1992 to determine the source(s). The results of this assessment demonstrated that

deteriorating steel monitoring well casings were the likely source of the lead contamination and possibly the other metals. A new well network constructed of PVC was installed in the fall of 1993. Data from the new well network has shown cyanide and barium to be the only widespread Hazardous Constituents.

Barium. Barium was detected at similar concentrations in both upgradient and downgradient monitoring wells and below the Groundwater Protection Concentration (GPC) of 1000 parts per billion. Historically, barium levels were occasionally elevated in Well 7A, but have remained well below the GPC in all wells since April 1989.

Cyanide. Since there has been no demonstrated alternative source for the cyanide, it is assumed to have originated from the landfill. Cyanide has historically been present at elevated levels in the landfill leachate and is expected to be mobile in the environment. Therefore, it has been used as a good indicator for detection of a release. Historically, cyanide was detected in downgradient Well 4D (replacement for Well 4B) at approximately three times (3X) the groundwater standard. Groundwater samples collected prior to landfill closure in 1990 evidenced a generally increasing trend in cyanide concentration in downgradient Well 4B. Since closure, the maximum concentrations in downgradient wells have fallen from approximately three times (3X) the groundwater standard to current levels which have remained well below the groundwater standard for a period of approximately ten years (with the one-time exception of a minor excursion in one well during 2003).

As a direct result of closure of the Secure Landfill Cell, dramatic reduction in leachate generation and the concentrations of hazardous constituents in the leachate have resulted. Groundwater concentrations also significantly responded to the Landfill closure and they have now remained at levels below Groundwater Protection Standards for many years. With the continued implementation the Post-Closure Plan and Groundwater Monitoring Program through the Post-Closure Permit at this facility, leachate volume is expected to continue to decrease and further groundwater impacts are not expected to occur. Groundwater monitoring will continue through the post-closure period to confirm that this is the case.

Semi-Annual and Annual Groundwater Monitoring Reports for all years.
Attached Figures:

Figure 2 - Groundwater Monitoring Network and Groundwater Contour Map

Figure 3 - Monitoring Well Results For Cyanide

Figure 4 - Leachate Flow Rates

Figure 5 - Leachate Sump Results For Cyanide

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~~							
~~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).

__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):

No media impacted above applicable standards.

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

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

_____ 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):

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

_____ If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why 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

Rationale and Reference(s):

Type Here

[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.

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

__X__ YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the **Ciba Corporation** facility , EPA ID # **NYD000818419** ,located at **Jenkinsville Road, Queensbury, New York.** under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

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

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

Completed by: _____ Date: 9-10-2009
Gary Casper
Senior Engineering Geologist

Supervisor: _____ Date: 9-10-2009
Denise Radtke
Supervisor – Engineering Geology Section

Director: _____ Date: 9-10-2009
Robert J. Phaneuf, P.E. - Acting Director
Bureau of Hazardous Waste and Radiation Management
Division of Solid and Hazardous Materials

Locations where References may be found:

New York State Department of Environmental Conservation, Central Office
Division of Solid and Hazardous Materials
625 Broadway 9th Floor
Albany, New York 12233-7252

Contact telephone and e-mail numbers:

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

Figure 1
Ciba Corporation - Secure Landfill
Location Map

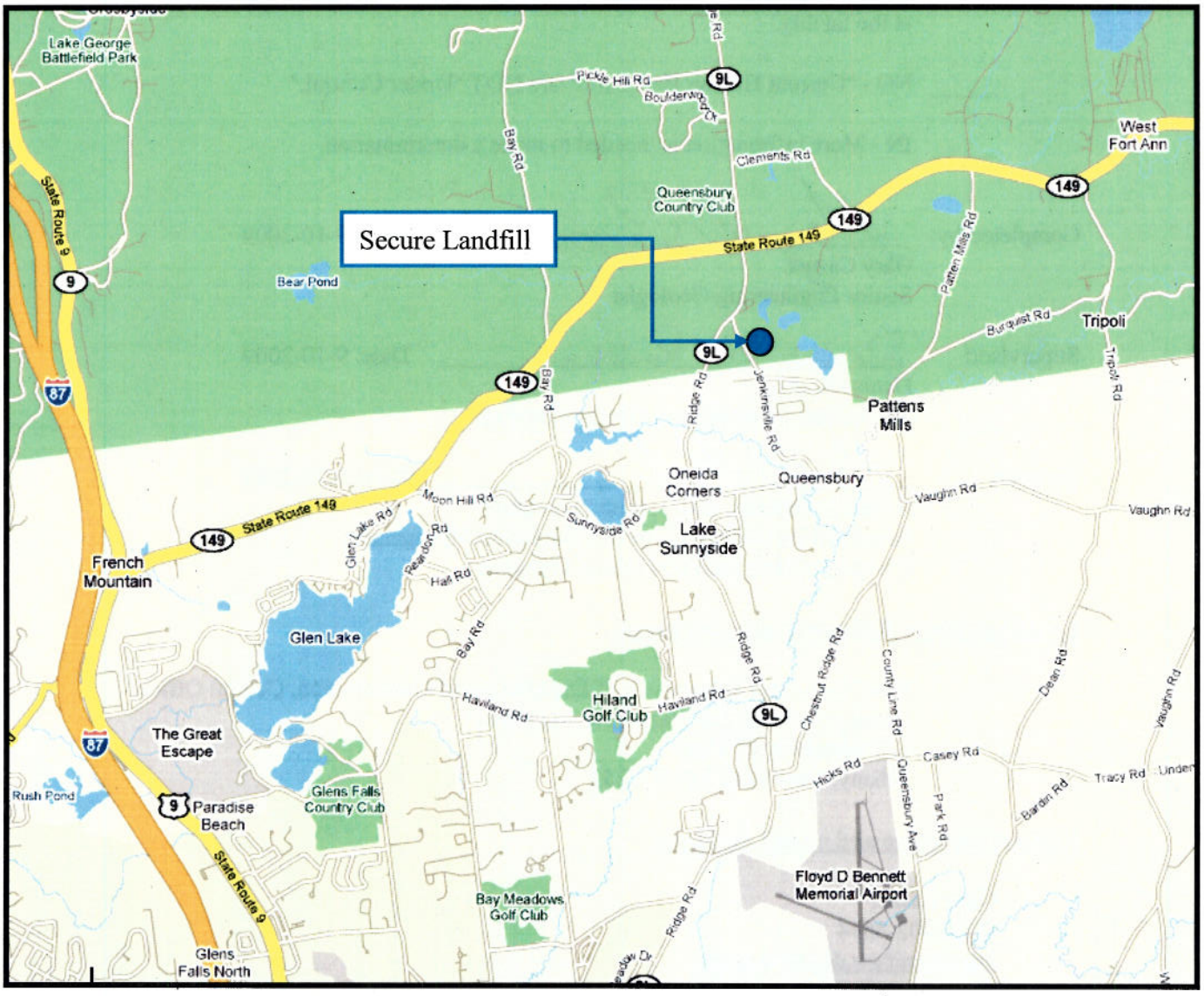
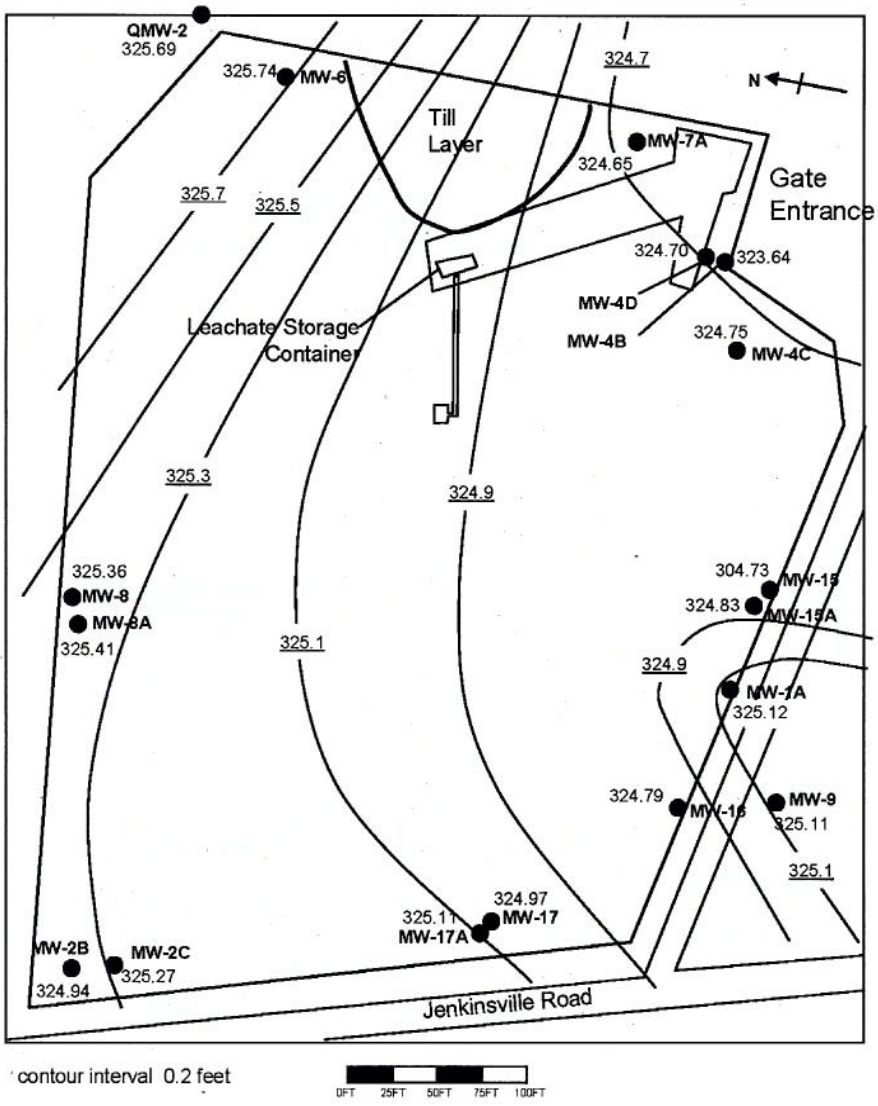


Figure 2
Ciba Corporation - Secure Landfill
Groundwater Monitoring Network and
Groundwater Contour Map



water levels collected on May 2, 2008.

Figure 3
Ciba Corporation - Secure Landfill
Monitoring Results For Cyanide

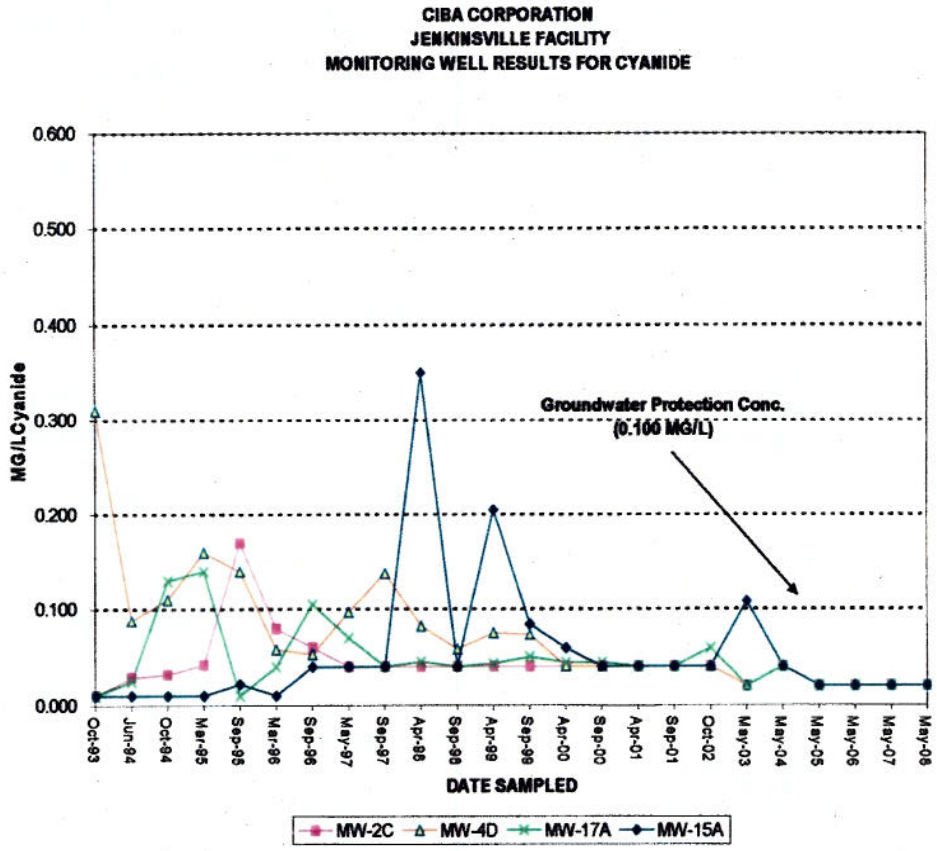


Figure 4
Ciba Corporation - Secure Landfill
Leachate Flow Rates

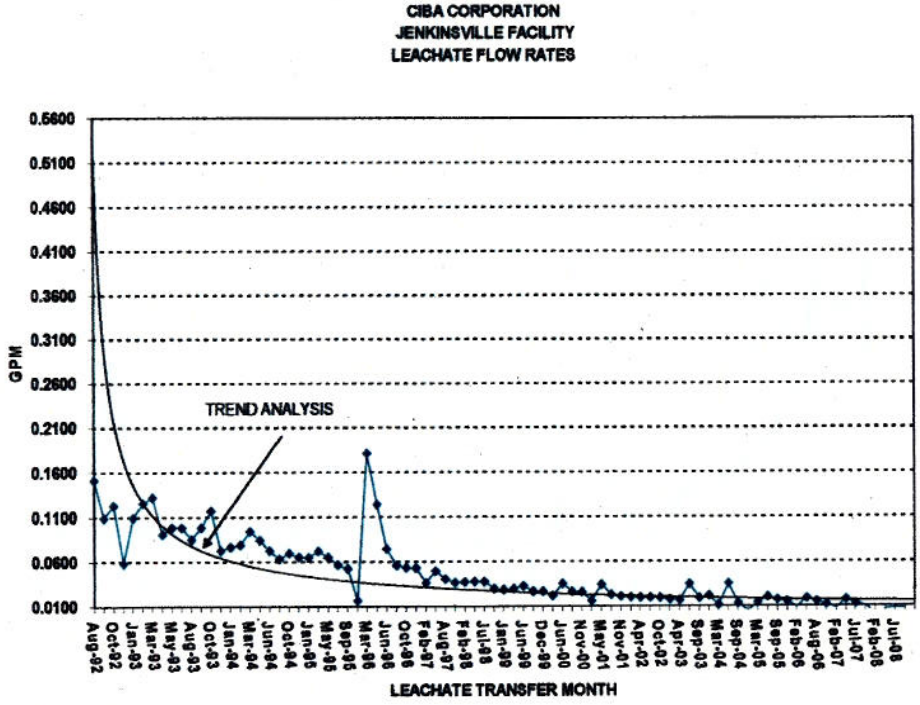


Figure 5
Ciba Corporation - Secure Landfill
Leachate Sump Results For Cyanide