

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

RCRA Corrective Action Environmental Indicator (EI) RCRAInfo code (CA750) Migration of Contaminated Groundwater Under Control

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

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in 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).

Migration of Contamination Groundwater Under Control
Environmental Indicator (EI) RCRAInfo code (CA750)
Page 2

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

If yes - check here and continue with #2 below.

If no - re-evaluate existing data, or

If data are not available, skip to #8 and enter "IN" (more information needed) status code.

BACKGROUND

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.

**Migration of Contamination Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)**

Page 3

2. Is **groundwater** known or reasonably suspected to be "**contaminated**"¹ above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

_____ If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

 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 known or reasonably suspected to be "contaminated."

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale:

Background Groundwater Quality. Historical water 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.

(a) 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.

(b) 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

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).

**Migration of Contamination Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)**

Page 4

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.

References:

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

Migration of Contamination Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)
Page 5

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"² as defined by the monitoring locations designated at the time of this determination)?

_____ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"².

_____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"²) - skip to #8 and enter "NO" status code, after providing an explanation.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale:

References:

²"existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

Migration of Contamination Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)
Page 6

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

_____ If yes - continue after identifying potentially affected surface water bodies.

_____ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale:

References:

**Migration of Contamination Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)**

Page 7

5. Is the **discharge** of “contaminated” groundwater into surface water likely to be “**insignificant**” (i.e., the maximum concentration³ 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 concentration³ of key contaminants discharged above their groundwater “level,” the value of the appropriate “level(s),” and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

_____ If no - (the discharge of “contaminated” groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration³ of each contaminant discharged above its groundwater “level,” the value of the appropriate “level(s),” and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations³ greater than 100 times their appropriate groundwater “levels,” the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

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

Rationale:

Type here

References:

Type here

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

**Migration of Contamination Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)**

Page 8

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 implemented⁴)?

_____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site’s surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR

2) providing or referencing an interim-assessment,⁵ appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment “levels,” as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no - (the discharge of “contaminated” groundwater can not be shown to be “**currently acceptable**”) - skip to #8 and enter “NO” status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

_____ If unknown - skip to 8 and enter “IN” status code.

Rationale:

Type here

References:

Type here

⁴Note, 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.

⁵The 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.

**Migration of Contamination Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)**

Page 9

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

_____ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

_____ If no - enter "NO" status code in #8.

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

Rationale:

Type here

**Migration of Contamination Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)**

Page 10

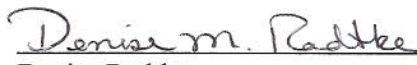
8. Check the appropriate RCRAInfo status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

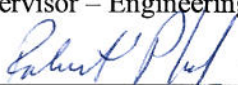
YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the **Ciba Corporation** facility, EPA ID # **NYD000818419**, located at **Jenkinsville Road, Queensbury, New York**. 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:  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 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 number and e-mail:

Mr. Gary D. Casper
(581) 402-8594
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Figure 1
Ciba Corporation - Secure Landfill
Location Map

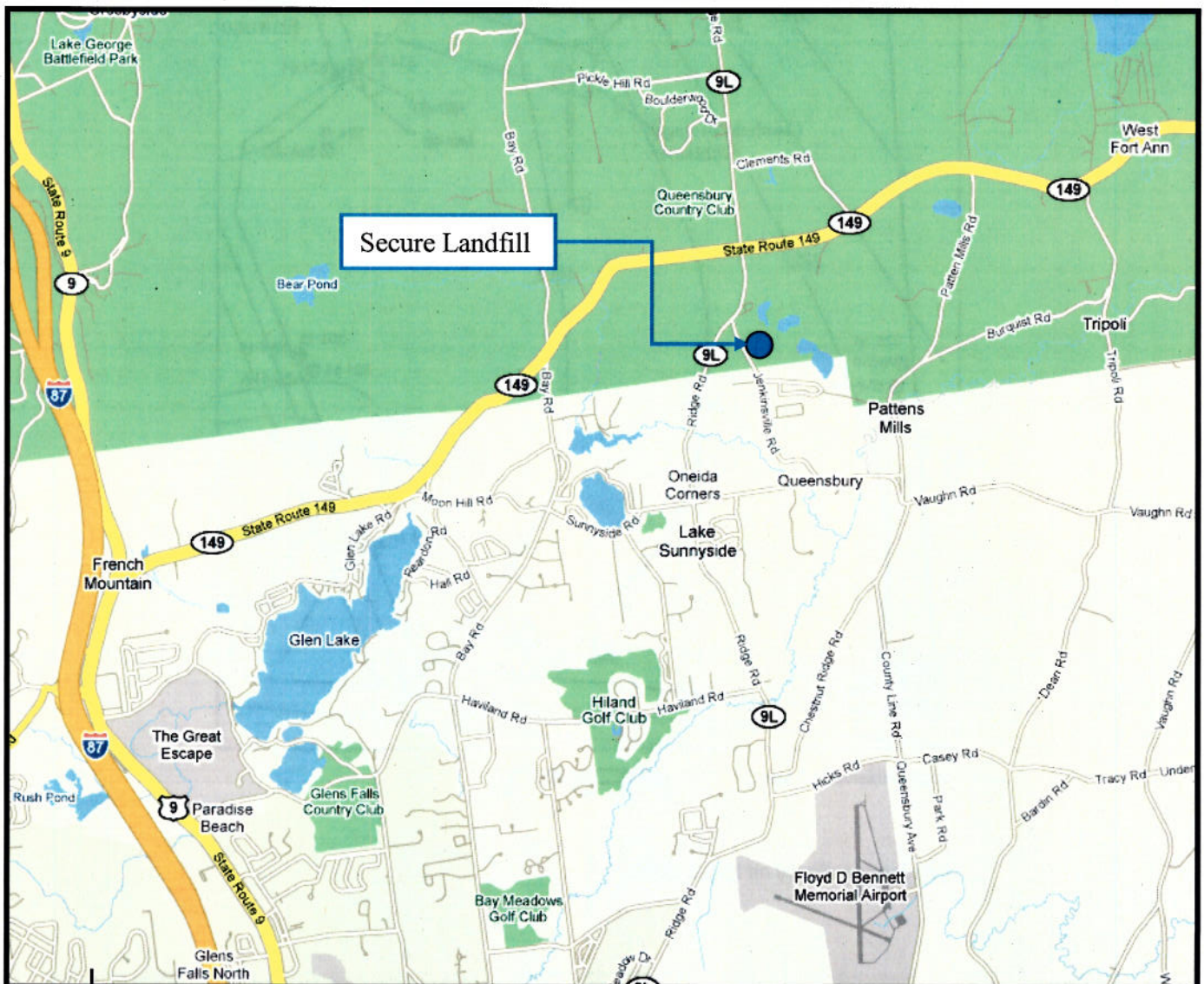
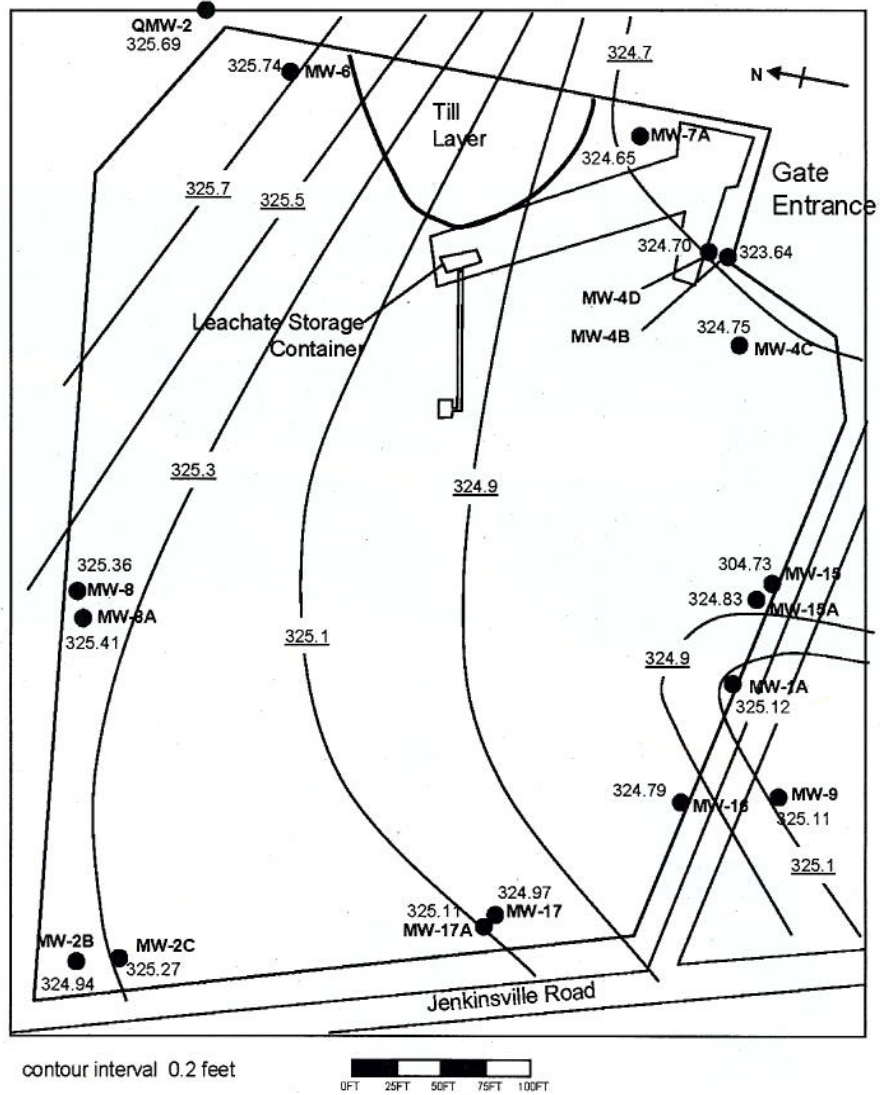


Figure 2
Ciba Corporation - Secure Landfill
Groundwater Monitoring Network and
Groundwater Contour Map



water levels collected on May 2, 2008.

Figure 3
Ciba Corporation - Secure Landfill
Monitoring Results For Cyanide

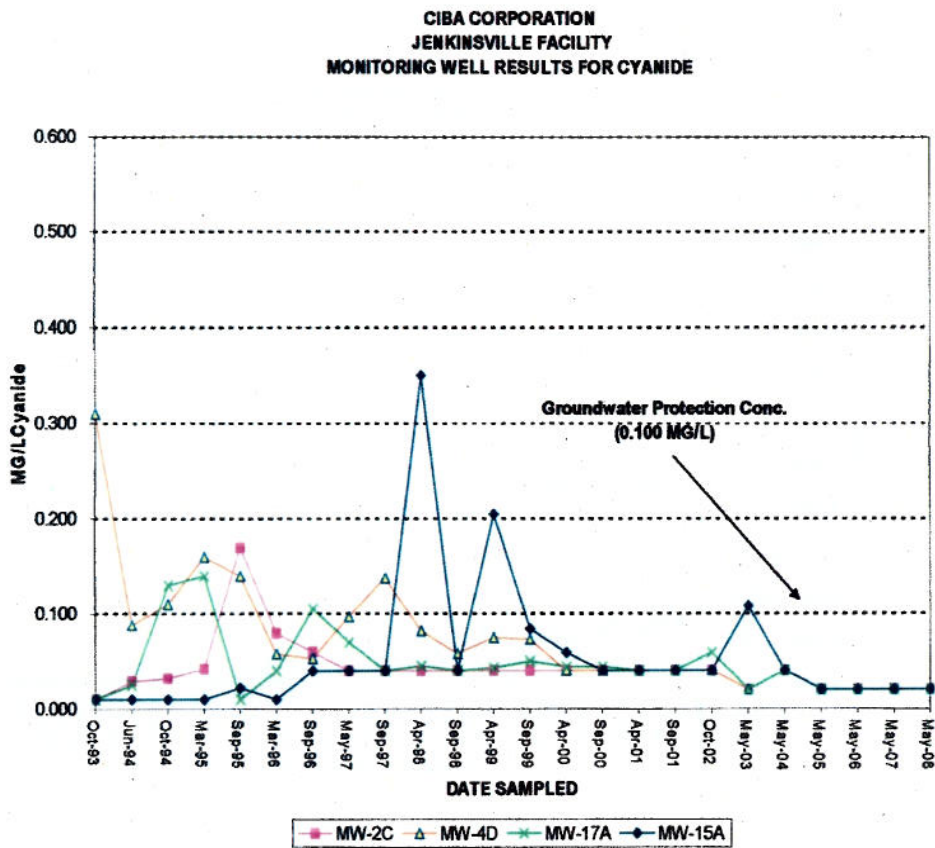


Figure 4
Ciba Corporation - Secure Landfill
Leachate Flow Rates

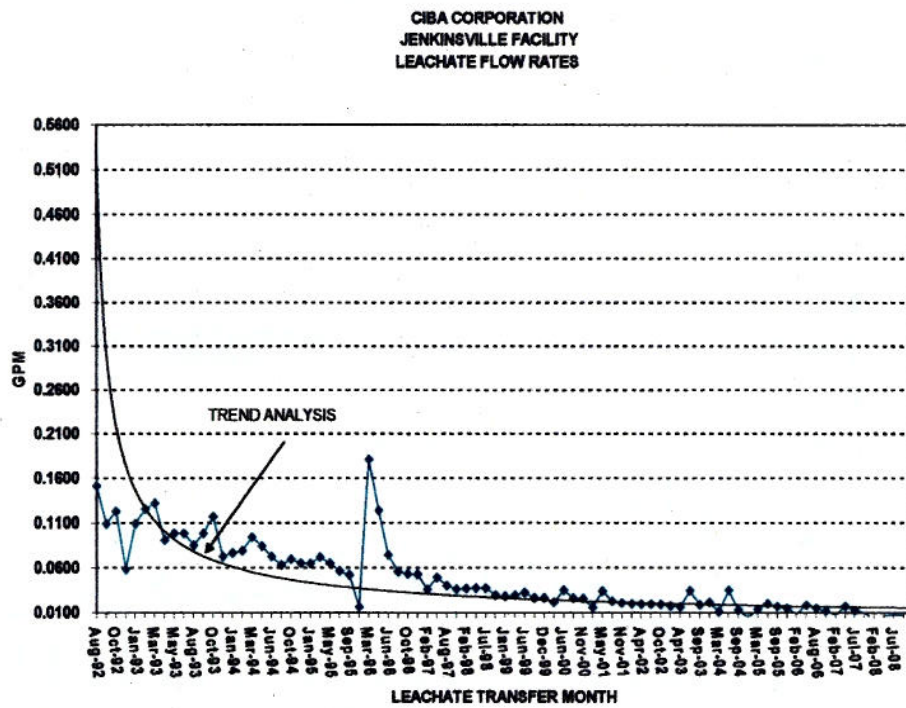


Figure 5
Ciba Corporation - Secure Landfill
Leachate Sump Results For Cyanide

