ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

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ROD R. BLAGOJEVICH, GOVERNOR DOUGLAS P. SCOTT, DIRECTOR

217/524-3300

December 4, 2008

Certified Mail
7007 2560 0003 2096 5242

US EPA RECORDS CENTER REGION 5
1000442

Dennis M. Wilt
Waste Management
Midwest Group
720 E. Butterfield Rd.
Lombard, Illinois 60148

Re: 1970450002 -- Will County
Laraway Recycling and Disposal Facility
ILD07441745
Log No. B-141-M-53
RCRA Permit File
Permit Approval

Dear Mr. Wilt:

Enclosed is a final Class 3 modification of the RCRA Part B Permit for the Laraway Recycling and Disposal Facility (Laraway). The modification addresses the approved Groundwater Management Zone (GMZ) at the facility. The final permit decisions are based on the administrative record contained in the Illinois EPA's files. The contents of the administrative record are described in 35 Ill Adm. Code 705.211. Read this document carefully. Failure to meet any portion of the permit could result in civil and/or criminal penalties.

Within 35 days after the notification of a final permit decision, the permittee may petition the Illinois Pollution Control Board to contest the issuance of the permit. The petition shall include a statement of the reasons supporting a review, including a demonstration that any issues raised in the petition were previously raised during the public comment period. In all other respects, the petition shall be in accordance with the requirements for permit appeals as set forth in 35 Ill. Adm. Code Part 105. Nothing in this paragraph is intended to restrict appeal rights under Section 40(b) of the Illinois Environmental Protection Act (35 Ill. Adm. Code 705.212(a).

A copy of the Illinois EPA's responses to Laraway's comments provided on the August 22, 2008 Draft Modified RCRA Part B Permit are also attached to this letter. The Illinois EPA's responses to Laraway's comments were developed as a result of reviewing the comments submitted by Laraway in a submittal dated October 7, 2008 and received by the Illinois EPA on October 9, 2008. A summary documenting Illinois EPA's modifications to the Permit as part of this action is provided in Attachment A to this letter.

Work required by this letter, your submittal or the regulations may also be subject to other laws governing professional services, such as the Illinois Professional Land Surveyor Act of 1989, the Professional Engineering Practice Act of 1989, the Professional Geologist Licensing Act, and the Structural Engineering Licensing Act of 1989. This letter does not relieve anyone from compliance with these laws and the regulations adopted pursuant to these laws. All work that falls within the scope and definitions of these laws must be performed in compliance with them. The Illinois EPA may refer any discovered violation of these laws to the appropriate regulating authority.

If you have any questions regarding groundwater issues associated with this permit, please contact Scott Kaufman at 217/785-6869. If you have any other questions regarding this permit, please contact Mark Crites at 217/524-3269.

Sincerely,

Stephen F. Nightingale, P.E.
Manager, Permit Section
Bureau of Land

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Attachment: Attachment A - Illinois EPA's Response to Laraway's Comments
Attachment B - Changes to the RCRA Part B Permit
Final Modified RCRA Part B Permit

cc: USEPA Region V, Dale Meyer – w/o Attachment
(Laraway Repository) – w/o Attachment

ATTACHMENT A

ILLINOIS EPA'S RESPONSE TO COMMENTS
Laraway Recycling and Disposal Facility
Draft Class 3 RCRA Permit Modification
Dated October 7, 2008

The responses below address comments received from Laraway Recycling and Disposal Facility (Laraway), dated October 7, 2008 and received by the Illinois EPA on October 9, 2008.

FACILITY COMMENT 1 - PROPOSED REVISIONS TO CONDITION I.D.3, LIST D3 PQLs

In addition to the permit conditions originally identified above, that specify the required PQLs for analysis of the list D3 constituents, the following information is provided:

Condition D.5.a addressing the establishment of appropriate concentration limits and background values, required that, "...the background value shall be established as either the lowest PQL contained in 35 Ill. Adm. Code 724 Appendix I or the appropriate 35 Ill. Adm. Code 620 Groundwater Quality Standard, whichever is lower." Thus, the PQLs are dictated by these regulatory limits.

Conditions G.2.a and G.2.c provide the statistical procedures to be used for the List D3 groundwater constituents. These permit conditions require comparisons of the analytical results to the PQL. Neither of these conditions specify the PQL that should be used for comparisons (e.g. laboratory PQL, method PQL, or permit listed PQL).

35 Ill. Adm. Code 724 Appendix I (f), provides the following definition, "Practical Quantitation Limits ("PQLs") are the lowest concentrations of analytes in groundwater that can be reliably determined within specified limits of precision and accuracy by the indicated methods under routine laboratory operating conditions. The PQLs listed are generally stated to one significant figure. Caution: The PQL values in many cases are based only on a general estimate for the method and not on a determination for individual compounds: PQLs are not a part of the regulation."

As provided in R07-8, the Illinois Pollution Control Board, has indicated that, "..any established PQL may not in any case exceed any level established by the Board as a groundwater quality standard under the Illinois Groundwater Protection Act." (35 Ill. Adm. Code 620).

In acknowledging the Agency's concerns with our original request to remove the PQLs from List D3, the following changes to List D3 PQLs are being proposed, to address the ambiguity in the regulations and the permit. Rationale for each selected PQL is provided. The notes at the end of the table should be considered an integral part of his proposal and should be addressed accordingly in the permit modification.

Hazardous Constituent	***PQL (ug/L)***	***Rationale***
1,2-dichloropropane	*5.0*	*35 IAC 620 Standard* *Previous Method Apx I PQL* *Current Method (8260B) PQL*
Toluene	*5.0*	*Previous Method Apx I PQL* *Previous Permit PQL* *Current Method (8260B) PQL*
Benzene	*5.0*	*35 IAC 620 Standard* *Previous Method Apx I PQL* *Current Method (8260B) PQL*
Chlorobenzene	*5.0*	*Previous Method Apx I PQL* *Current Method (8260B) PQL*
Methylene chloride	*5.0*	*35 IAC 620 Standard* *Previous Permit PQL* *Previous Method Apx I PQL* *Current Method (8260B) PQL*
Methyl ethyl ketone	*10.0*	*Previous Permit PQL* *Lowest Appendix I PQL* *Below Existing Standards*[1]
Ethyl benzene	*5.0*	*Previous Method Appendix I PQL* *Below Existing Standards*[1] *Current Method (8260B) PQL*
Xylene	*5.0*	*Previous Method Appendix I PQL* *Previous Permit PQL* *Below Existing Standards*[1] *Current Method (8260B) PQL*
Acetone	*100.0*	*Previous Method Appendix I PQL* *Previous Permit PQL* *Below Existing Standards*[1]
Isobutanol	*50.0*	*Lowest Appendix I PQL* *Previous Permit PQL* *Below Existing Standards*[1]
Ortho-dichlorobenzene	*10.0*	*Appendix I PQL* *Previous Permit PQL* *Below Existing Standards*[1]
Carbon disulfide	*5.0*	*Previous Method Appendix I PQL* *Previous Permit PQL* *Below Existing Standards*[1] *Current Method (8260B) PQL*
Pyridine	*10.0*	*Appendix I PQL*[2]
Hexachloropropene	*10.0*	*Appendix I PQL* *Previous Permit PQL*

		Current Method (8270C) PQL
Hexachlorophene	*50.0*	*Previous Permit PQL* *Current Method (8270C) PQL**
Kepone	*20.0*	*Previous Permit PQL* *Current Method (8270C) PQL**
Cadmium	*5.0*	*35 IAC 620 Standard* *Below Apx I PQL for method*
Chromium	*70.0*	*Appendix I PQL*
Lead	*7.5*	*35 IAC 620 Standard*
Arsenic	*50.0*	*35 IAC 620 Standard* *Below Apx I PQL for method*
Barium	*20.0*	*Appendix I PQL*
Mercury	*2.0*	*35 IAC 620 Standard* *Appendix I PQL*
Iron	*5000*	*35 IAC 620 Standard*

1 35 IAC 620 standard and/or TACO Tier 1, Class 1 GRO.
2 Non-TACO remediation objective is 7 ug/L. Current laboratory PQL cannot achieve the method 8270C PQL.
** Current laboratory PQL cannot meet the method 8270C PQL*

ILLINOIS EPA RESPONSE

1. The Illinois EPA has determined that it can approve the proposed List 3 PQLs for the following parameters: toluene; methylene chloride; methyl ethyl ketone; xylene; acetone; isobutanol; ortho-dichlorobenzene; carbon disulfide; hexachloropropene; kepone; and mercury. These proposed PQLs are equal to the current List D3 PQLs, therefore no revision to List D3 is necessary.

2. The Illinois EPA has determined that the proposed PQLs for 1,2-dichloropropane; chromium; lead; and barium can be approved. However, these constituents will be deleted from List D3 as discussed below. Therefore, no revisions to List D3 as a result of this approval are necessary.

3. The Illinois EPA has determined that the proposed List 3 PQL for cadmium can be approved. The Permit has been modified accordingly.

4. The Illinois EPA has determined that it cannot approve the proposed List 3 PQLs for the following parameters: benzene, chlorobenzene, ethylbenzene, pyridine, arsenic, and iron. Illinois EPA review of applicable SW-846 methods indicates that the PQLs currently listed in the Permit are readily achievable and appropriate. Therefore, the List 3 PQLs for these parameters will not be revised herein.

FACILITY COMMENT 2 - PROPOSAL TO REMOVE PARAMETERS FROM LIST D3

Barium, Chromium, Lead and 1,2-Dichloropropane have already been added to List D1 and D2 and concentration limits have already been established for these constituents. By continuing to include these constituents on List D3, any analytical results above the permitted PQLs will require that the procedures identified in H.7 or H.8 be implemented. Condition H.7 addresses submittal of an alternate source demonstration. As these constituents have already been added to List D1 and D2 and concentration limits have been establish, there is no need to prepare an alternate source demonstration. Condition H.8 requires that concentration limits for these constituents and that these constituents be added to List D1 and D2. This has already y been completed.

Once again, based upon the Agency's concerns, we are proposing that additional language be added to Condition H.8 (or other location as deemed appropriate by the Agency), indicating that these procedures are not applicable to those constituents already present on List D1 and List D2.

ILLINOIS EPA RESPONSE

The Illinois EPA concurs that it is appropriate to remove barium, chromium, lead, and 1,2-dichloropropane from List D3. The Permit has been revised accordingly. The Illinois EPA has determined that the addition of language indicating that concentration limits be determined for parameters already included in Lists D1 and D2 is therefore not necessary.

FACILITY COMMENT 3 - PROPOSAL TO REVISE CONDITION I.G.2.b

Original Facility Proposal:

Condition G.2.b....should reference Conditions H.7 and/or H.8.

Initial Illinois EPA Response:

The proposal to revise Condition I.G.2.b to refer to Conditions I.H.7 and/or I.H.8 cannot be approved. The current reference to Conditions I.H.6 and/or I.H.7 are correct.

Facility Comment To Draft Modified Permit:

Additional clarification:

Condition G.1.b.(1) – Requires Observation well comparisons to List D1 GPS
Condition G.2.a.(1) – Requires Comparisons to List D3 PQLs
Conditions G.2.b – Requires Observation well comparisons to List D1 GPS
Condition H.6 – For Observation well comparisons to GPS (List D1)

Condition H.7 – For Condition G.1.b or G.2.b comparisons (Observation well comparisons to GPS)
Condition H.8 – For Condition G.2.a.(1)

Thus, Condition G.2.a.(1) should reference Condition H.8

ILLINOIS EPA RESPONSE

The Illinois EPA concurs that Condition I.G.2.a.1 should reference Conditions I.G.H.7 and I.G.H.8. The Permit has been revised accordingly.

ADDITIONAL FACILITY COMMENTS TO DRAFT MODIFIED PERMIT

Request to Modify Corrective Action Reporting Requirements

On June 5, 2008, the Illinois Pollution Control Board amended various provisions of the hazardous waste regulations (Docket R07-5) consistent with the USEPA RCRA Burden Reduction Initiative. These regulations change the requirements for both semi-annual report detailing the effectiveness, and the progress, of the corrective action program, to annual reporting. As such, we would like to request that the appropriate reporting for the Laraway corrective action program be changed to annual reporting.

Request to add a New Permit Condition

Add a new condition to the permit, Condition I.5 to define when the next GMZ re-evaluation due date.

ILLINOIS EPA RESPONSE

1. The Illinois EPA has determined that it can approve the facility's request to modify the requirement for semi-annual corrective action effectiveness reports to annual reports. Condition I.H.5 has been revised to require annual submittal of the effectiveness reports with a due date of July 15 of each year. The facility must continue routine semi-annual groundwater monitoring and reporting in accordance with Conditions I.H.1 through I.H.10 of the Permit.

2. The Illinois EPA has determined that it can approve the request to add a condition providing a deadline for submittal of a GMZ review. Condition I.H.11 will be added to the Permit, which will read as follows:

   "11. In accordance with 35 Ill. Adm. Code 620.250(c), a review of the GMZ must take place no less often than every five years and the results shall be presented to the Agency in a written report. The most recent GMZ review was approved by a

December 6, 2007 Illinois EPA letter. The next GMZ review must be submitted to the Illinois EPA by December 6, 2012."

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ATTACHMENT B

Changes to the RCRA Part B Permit Included in This Class 3 Modification

B-141-M-53

1. Condition I.C.1, Table 1 GMZ Wells:

   a. The proposal to discontinue groundwater extraction at wells EW-2, EW-3, EW-5, EW-7, and EW-8 has been approved. Footnote "(2)" of Condition I.C.1, Table 1 has been revised to read:

      "(2) Extraction well currently off-line. The well must be maintained in accordance with the requirements of Condition I.C.7 in the event that additional hydraulic control becomes necessary."

   b. The proposal to remove extraction well EW-9 has been approved under the condition that the well is properly abandoned in accordance with Condition I.C.4 of the Permit. Condition I.C.1 of the Permit has been revised to include footnote "(3)" which will read:

      "(3) Extraction well approved for abandonment."

   c. The proposal to remove yet-to-be installed extraction wells EW-10, EW-11 and EW-12 has been approved. These extraction wells have been deleted from Condition I.C.1 and footnote "r*" has been deleted.

2. Condition I.C.1, Table 2 Observation System Wells:

   a. The proposal to discontinue groundwater quality monitoring at Wells R114, G147 and G149 has been approved due to their upgradient locations. To avoid confusion with Table 1, the footnote "**" has been added which reads as follows:

      "** -- represents monitoring well used only for groundwater elevation measurements."

   b. The proposal to add monitoring wells G105, G109, G167, G168, and G169 to the Table 2 Observation System wells has been approved. Condition I.C.1 has been revised accordingly.

   c. The proposal to remove well G160 from Table 2 has been approved. Condition I.C.1 has been revised accordingly. Well G160 must be properly abandoned in accordance with the requirements of Condition I.C.4 of the Permit.

3. Condition I.D.1, List D1

   a. The proposal to discontinue monitoring of TOC has been approved. List D1 has been revised accordingly.

   b. The proposal to change the concentration limit for 1,2-dichloropropane to the Class I GQS of 5 ug/L has been approved. List D1 has been revised accordingly.

4. Condition I.D.1, List D2

   a. The proposal to discontinue monitoring of TOC has been approved. List D2 has been revised accordingly.

   b. The proposal to change the concentration limit for 1,2-dichloropropane to the Class I GQS of 5 ug/L has been approved. List D2 has been revised accordingly.

5. Condition I.D.3, List D3

   a. The PQL for cadmium has been revised to 5.0 ug/L.

   b. Barium, chromium, lead, and 1,2-dichloropropane have been removed from List D3.

6. Condition I.D.4, List D4 - The title of List D4 has been revised to indicate semi-annual sampling.

7. Condition I.E.3 - It has been revised to read:

   "... at least annually from the monitoring wells listed...".

8. Condition I.E.4 - It has been revised to read:

   "...and every two years (during the second quarter), or...".

9. Condition I.F.3 - It has been revised to read:

   "Samples shall be analyzed according to the procedures specified in the approved Permit Application or as otherwise approved by the Illinois EPA."

10. Condition I.G.1 - It has been revised to read:

    "...during the fourth quarter sampling events identified...".

11. Condition I.G.2.a.1 - This condition has been revised to reference Conditions I.H.7 and I.H.8.

12. Condition I.H.5

    a. The proposal to include well maintenance reports required by Condition I.H.9 in semi-annual Corrective Action Reports has been approved. Condition I.H.5 will be revised to include I.H.5.c which will read:

        "c. Groundwater extraction system maintenance information required by Condition I.H.9 below."

    b. This condition has been revised to require annual submittal of the effectiveness reports with a due date of July 15 of each year.

13. Condition I.H.11 - This condition has been added to the Permit, and will read as follows:

    "11. In accordance with 35 Ill. Adm. Code 620.250(c), a review of the GMZ must take place no less often than every five years and the results shall be presented to the Agency in a written report. The most recent GMZ review was approved by a December 6, 2007 Illinois EPA letter. The next GMZ review must be submitted to the Illinois EPA by December 6, 2012."

14. Attachment D, Additional Special Conditions, Condition D.1 has been added to address new requirements for prior conduct certification pursuant to 39i of the Act.

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

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ROD R. BLAGOJEVICH, GOVERNOR DOUGLAS P. SCOTT, DIRECTOR

RCRA Post-Closure Permit Log B-141

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

RCRA POST-CLOSURE PERMIT

1970450002 -- Will County
ILD074411745
Waste Management of Illinois, Inc.
Laraway Recycling & Disp Fac
RCRA -- Post-Closure Permit - Administrative Record

Issue Date: September 29, 1989
Effective Date: November 3, 1989
Expiration Date: November 3, 1999
Modification Date: December 4, 2008

Waste Management of Illinois, Inc.
William R. Schubert, Vice President
720 Butterfield Road
Lombard, Illinois 60148

Waste Management of Illinois, Inc.
Laraway Recycling and Disposal Facility
Attn: Scott Combis
21101 West Laraway Road
Elwood, Illinois 60424

This RCRA permit modification is hereby granted pursuant to the Illinois Environmental Protection Act, and Title 35 Illinois Administrative Code (Title 35 Ill. Adm. Code) parts 702, 703, 705, and 720 through 729 to Waste Management of Illinois, Inc. (WMI) for post-closure care of a waste management facility which was previously involved in the treatment and disposal of hazardous waste. WMI's Laraway Recycling and Disposal Facility is located within the W 1/2 of the NE 1/4 and E 1/2 of the NW 1/4, Section 31, Township 35 North, Range 10 East of the 3rd Principal Meridian, Will County, Illinois. When final, this permit will supercede all previous permits.

This permit modification consists of the conditions contained herein (including those in any attachments and appendices) and applicable regulations contained in the Illinois Environmental Protection Act and Title 35 Ill. Adm. Code Parts 702, 703, 705 and 720 through 729 in effect on the effective date of this permit. The Environmental Protection Act (Ill. Rev. Stat., Chapter 111 1/2, Section 1039) grants the Illinois Environmental Protection Agency the authority to impose conditions on permits which are issued.

If you have any questions regarding this permit, please contact Mark L. Crites at 217/524-3300.

Sincerely,

Stephen F. Nightingale, P.E.
Manager, Permit Section
Bureau of Land

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RCRA POST-CLOSURE PERMIT

ISSUED TO

LARAWAY RECYCLING AND DISPOSAL FACILITY

ELWOOD, ILLINOIS

STATE ID # LPC 1970450002

ILD074411745

Part B PERMIT LOG NO. 141

RCRA POST-CLOSURE PERMIT

LARAWAY RECYCLING AND DISPOSAL FACILITY

ELWOOD, ILLINOIS

STATE ID # LPC 1970450002

ILD074411745

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LIST OF ATTACHMENTS
State ID # LPC 1970450002
ILD074411745

Attachment A -- Monitoring Well Construction Diagram,
Completion Report for Groundwater Monitoring Well,
and Illinois EPA Groundwater Formatting Requirements

Attachment B -- IEPA Monitoring Well Plugging Procedures

Attachment C -- Prediction Limit Test

Attachment D -- Additional Special Conditions

Attachment E -- Post-Closure Inspection
Schedule

Attachment F -- Approved Permit Application
Identification

Attachment G -- Groundwater Reporting Forms

Attachment H -- Statistical Procedures Flow Chart

GENERAL FACILITY DESCRIPTION
LARAWAY RECYCLING AND DISPOSAL FACILITY
Elwood, Illinois
ILD074411745

I. General

The Laraway Recycling and Disposal Facility is owned and operated by Waste Management of Illinois, Inc. (WMI). It was a commercial facility involved in storage, treatment and disposal of solid and hazardous waste. At the present time the facility is only permitted to receive municipal incinerator ash, non-hazardous special waste, construction debris, and non-putrescible waste into permitted solid waste landfill units at the facility. Nearly all of the hazardous wastes handled at the facility were generated off-site by various industries.

The total property encompasses approximately 157 acres. Of the total, 110 acres were permitted for waste management in 1972 by the Illinois EPA's Division of Land Pollution Control (DLPC). Of that 110 acres, Landfill Areas 1 and 2 occupy about 55 acres of what was previously permitted for solid and hazardous waste disposal.

The purpose of this RCRA Post-Closure Permit is to require that all of the hazardous waste management units where hazardous waste is left in place at closure receive post-closure care for at least thirty (30) years after the date their closure certifications are approved by the Illinois EPA's DLPC or the date this Post-Closure Permit becomes effective, whichever is later. Groundwater monitoring must continue through the post-closure care period. Inspections during this post-closure care period must identify any maintenance needed, including, but not limited to, maintaining the integrity of the final cover system and vegetation. A written record of the post-closure inspections and maintenance activities performed must be kept at the facility.

II. Site Description

The Laraway Recycling and Disposal Facility is located within the W 1/2 of the NE 1/4 and E 1/2 of the NW 1/4, Section 31, Township 35 North, Range 10 East of the 3rd Principal Meridian, Will County, Illinois. The Laraway Recycling Disposal Facility is located approximately 2 miles southwest of Joliet, Illinois. The Laraway Recycling and Disposal Facility's mail address is, Laraway Recycling and Disposal Facility, 21101 West Laraway Road, Elwood, Illinois 60421. A portion of the USGS Topograph Map, NW 1/4 Wilmington 15' Quadrangle is included as Figure 5 of the Approved Permit Application to show the exact location of the Laraway Recycling and Disposal Facility.

LIST OF PLANS AND DOCUMENTS CONTAINED IN THE APPROVED PERMIT APPLICATION

Under Illinois solid and hazardous waste requirements, the Permittee has prepared the following formal plans and documents covering various facets of the design, operation, and monitoring of hazardous waste management units. The location of each plan or document in the Approved Permit Application is included.

Plan or Document	Location in the Approved Permit Application
1. Contingency Plan	Section 7.0*
2. Training Program	Section 6.6*
3. Groundwater Sampling and Analysis Procedures	Section 5
4. Groundwater Monitoring System	Section 5
5. Post-Closure Plan	Section 6

*The Contingency Plan and Training Plan were modified by a permit modification request identified in Item 6 of Attachment F.

All of the above referenced documents were also modified by a permit modification request identified in Item 8 of Attachment F.

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SECTION I
CORRECTIVE ACTION PROGRAM

A. SUMMARY

Hazardous constituents released from Laraway Recycling and Disposal Facility have been detected in groundwater within the upper Silurian Dolomite. The contamination is located at the closed RCRA codisposal landfill designated as "Area 1" and extends beyond the Point of Compliance. As a result, the Corrective Action Program detailed in this section must be implemented to remove the groundwater contamination and ensure compliance with the Groundwater Protection Standards. The Corrective Action Program is designed to meet the requirements of 35 Ill. Adm. Code 724.200 and includes conditions pursuant to Section 39(d) of the Environmental Protection Act to achieve compliance with additional State administrative rules.

The Corrective Action Program is comprised of a groundwater recovery and monitoring system for the areas which are contaminated (hereafter this contaminated area is referred to as the "Groundwater Management Zone") and a groundwater monitoring system for the areas which are not contaminated (hereafter this area is referred to as the "Observation Monitoring Zone"). The Program includes:

1. Establishment of a 35 Ill. Adm. Code 620.250 Groundwater Management Zone (GMZ). A GMZ is a three-dimensional region containing groundwater being managed to mitigate impairment caused by the release of contaminants from a site that is subject to corrective action or for which the owner/operator undertakes an adequate corrective action in a timely and appropriate manner and provides written confirmation to the Illinois EPA;

2. Extraction of contaminants dissolved in the groundwater through the pumping of well(s) located within the GMZ. This extraction is also designed to maintain hydraulic control of the flow of groundwater within the GMZ. The hydraulic control should prevent further off-site migration of contaminants from the boundaries of the facility and draw groundwater containing dissolved organic and inorganic contaminants, which had previously migrated off-site, back to the facility boundary.

3. Monitoring to ensure the effectiveness of the groundwater recovery system within the GMZ. This monitoring will involve: (a) evaluating the zone of influence of the groundwater recovery system and (b) groundwater sampling and analysis to monitor the reduction of contaminant concentrations.

4. Monitoring in the area designated as the Observation Monitoring Zone. This monitoring will determine if groundwater located outside the GMZ is in compliance with the Groundwater Protection Standard and will identify additional hazardous constituents which may be present in the uppermost aquifer.

B. IMPLEMENTATION

1. The Permittee shall implement the corrective action program established in this Permit upon the effective date of this Permit modification. On that date, the corrective action and groundwater monitoring requirements set forth in this Permit shall supersede those established in the previous Post-Closure Part B Permit for Laraway Recycling and Disposal Facility.

2. The compliance period when the groundwater protection standard applies is the number of years equal to the active life of the waste management area (including any waste management activity prior to permitting and the closure period). The compliance period at the Laraway Recycling and Disposal Facility has been defined as thirty (30) years following the issuance of the November 3, 1989 Post-Closure permit.

3. The corrective action program shall continue during the compliance period until the Permittee demonstrates the groundwater protection standard has not been exceeded for four (4) consecutive quarters. However, if the owner or operator is engaged in a corrective action at the end of the defined compliance period, the compliance period is extended until the owner/operator can demonstrate that the groundwater protection standard has not been exceeded for three (3) consecutive years.

4. The uppermost aquifer is defined as a composite zone consisting of outwash sand and gravel deposits, where present and the underlying weathered, fractured, and/or jointed Silurian Dolomite.

5. The point of compliance is specified as the vertical plane hydraulically down-gradient of the waste management unit that is delineated at the ground surface by an imaginary line that connects the monitoring points identified below, in Condition C as point of compliance wells. The point of compliance extends down into the uppermost aquifer underlying the regulated unit.

C. WELL LOCATIONS AND CONSTRUCTION

1. The wells/piezometers, as identified in the tables below, shall be maintained as part of the Corrective Action Program.

TABLE 1. Groundwater Management Zone -- wells within the GMZ. The geographic location of each well is shown in Figure 5-2 of the application for permit modification.

IEPA Well No.	Well Depth (ft. bgs.)	Boring Depth (ft. bgs)	Ground Surface Elevation (ft. MSL)	Top of Casing Elevation (ft MSL)	Well Screen Interval (ft. MSL)	Screen Length (ft.)
m G123	51.4	53.0	619.73	622.68	587.53--568.33	19.2
m G124	45.6	47.0	618.36	620.86	587.16--572.76	14.4
m G125	50.5	52.0	618.94	621.79	587.24--568.44	19.12
m G126	50.6	52.0	619.12	622.07	587.62--568.52	19.1
m G127	54.2	56.0	620.01	623.26	585.01--565.81	19.2
m A128	51.0	57.0	622.35	625.60	581.35--571.35	10.0
m R29S	45.5	46.0	623.24	625.44	582.74--577.74	5.0
m R29D	55.5	58.0	622.91	624.61	572.41--567.41	5.0
m G130	61.0	61.0	624.52	627.37	583.83--564.62	19.2
m G131	63.6	65.0	624.41	627.01	579.87--560.81	19.1
mG132	60.7	62.0	620.76	623.26	579.26--560.06	19.2
m G133	60.0	61.5	622.11	625.01	581.81--562.11	19.7
m R134	50.0	50.5	623.30	625.05	583.30--573.30	10.0
m R139	36.6	38.0	620.83	622.93	589.23--584.23	5.0
m G135	60.8	61.5	622.11	625.16	580.41--561.31	19.15
m G136	61.0	62.0	621.96	624.93	584.96--560.96	24.0
m G137	58.1	61.0	621.23	623.88	587.13--563.13	24.0
m G138	59.0	62.0	621.63	624.63	587.43--562.63	24.8
m G161	41.0	42.0	621.49	623.60	585.49--580.49	5.0
m G142	49.8	50.0	618.57	621.77	588.07--568.77	19.3
m R144	40.0	40.5	618.07	621.67	588.07--578.07	10.0
m R4D2	59.0	59.0	620.16	620.56	567.16--561.66	5.5
m R40S	38.5	39.5	619.0	621.76	585.71--580.51	5.2
r EW-1(1)	N/A	N/A	N/A	N/A	N/A	20.0
r EW-2(2)	54.5	54.5	620.06	620.56	586.66--567.77	19.0
r EW-3(2)	65.5	65.5	623.18	623.68	579.18--559.18	20.0
r EW-4	66.5	66.5	624.36	624.86	579.36--559.36	20.0
r EW-5(2)	57.5	57.5	620.87	621.37	584.87--564.87	20.0
r EW-6	63.5	63.5	623.96	624.46	581.96--561.96	20.0
r EW-7(2)	58.5	58.5	621.77	622.21	584.71--564.71	20.0
r EW-8(2)	57.5	57.5	622.14	622.64	586.14--566.14	20.0
r EW-9(3)	50.5	50.5	613.77	614.27	584.77--564.77	20.0

(1) EW-1 is installed but is not being used at present time. If field conditions dictate, EW-1 may be redeveloped to correct silting problems or it may be replaced. Conversely, EW-1 may not be needed at all.
(2) Extraction well currently off-line. The well must be maintained in accordance with the requirements of Condition I.C.7 in the event that additional hydraulic control becomes necessary.
(3) Extraction well approved for abandonment.
m -- represents point of compliance monitoring well
r -- represents groundwater recovery well

TABLE 2. Observation System -- wells outside the Groundwater Recovery Zone. The geographic location of each well is shown in Figure 5-2 of the application for permit modification.

IEPA Well No.	Well Depth (ft. bgs.)	Boring Depth (ft. bgs)	Ground Surface Elevation (ft. MSL)	Top of Casing Elevation (ft MSL)	Well Screen Interval (ft. MSL)	Screen Length (ft.)
m R122	44.0	45.0	620.52	623.07	586.52--576.52	10.0
m R143	41.0	40.0	N/A	N/A	592.57--577.57	15.0
m G53S	39.0	39.0	624.79	627.84	591.29--585.79	5.5
m G53D	49.5	64.0	624.73	627.88	570.73--565.23	5.5
*R112	49.0	50.0	613.03	615.97	574.07--564.07	10.0
**R114	43.5	43.5	624.65	627.25	591.65--581.15	10.5
m G145	61.0	63.0	618.50	621.32	587.17--557.57	29.6
m G146	53.5	57.0	618.04	620.79	583.74--564.54	19.2
** G147	54.1	57.0	617.38	620.38	584.37--565.27	19.1
m G148	50.4	51.0	618.08	620.77	581.89--567.59	14.3
** R149	37.2	39.0	622.74	625.36	590.64--585.64	5.0
G105	50.2	50.5	622.84	625.65	577.84—572.84	5.0
G109	48.0	48.0	617.57	619.99	574.79—569.79	5.0
G167	39.0	39.5	605.30	607.80	576.30—566.72	9.58
G168	46.0	47.0	611.74	614.28	575.74—566.17	9.58
G169	55.5	56.0	618.61	621.39	573.11—563.53	9.58

* -- represents background monitoring well
** -- represents monitoring well used only for groundwater elevation measurements
m -- represents point of compliance monitoring well

2. Written approval from the Illinois EPA must be obtained prior to changes being made to the facility's Groundwater Recovery System. The Permittee shall submit a proposal

for the installation and addition, or for the removal, of any Groundwater Recovery System well, located within the GMZ as it is currently defined in Condition C.1 (Table 1) above. This proposal shall be in the form of a Class I* Permit Modification Request.

3. This permit may be modified by the Permittee or the Illinois EPA in accordance with 35 Ill. Adm. Code 705.128 if information becomes available that the current well spacing is not adequate to detect contamination from the hazardous waste management areas to the uppermost aquifer.

4. Construction of each new or replacement monitoring well/piezometer shall be in accordance with the "Cross-Section of Typical Monitoring Well" diagram contained in Attachment A to this Permit, or details and diagrams approved by the Illinois EPA's Division of Land Pollution Control (DLPC). Each new monitoring well/piezometer to be installed shall be continuously sampled and logged on an Illinois EPA approved boring log and well completion report. A copy of a log and report are included as Attachment A to this Permit.

   The Permittee shall submit the appropriate completed data sheets from the installation and development of each new or replacement well to the Illinois EPA at the address below within thirty (30) days of the date that installation of the well is completed. In addition, the Permittee shall submit certification that plugging and abandonment of a well was carried out in accordance with the approved procedures to the Illinois EPA at the address below within thirty (30) days of the date that the well is plugged and abandoned. All information shall be submitted to the appropriate Agencies.

   (NOTE: Monitoring well/piezometer construction shall comply with the minimum standards set forth in 77 Ill. Adm. Code Part 920 regulations).

   Illinois Environmental Protection Agency
   Bureau of Land -- #33
   Permit Section
   1021 North Grand Avenue East
   P.O. Box 19276
   Springfield, Illinois 62794-9276

5. The Permittee shall notify the Illinois EPA within thirty (30) days in writing if any of the wells identified in Condition C.1 are damaged, the structural integrity has been compromised, or if as a result of poor construction and/or development, have become consistently dry or unserviceable. A proposal for the replacement of the subject well(s) shall accompany this notification. The proposal shall also request written approval

from the Illinois EPA regarding the replacement well installation procedures, location (within ten (10) feet of the existing well) and construction. The well shall not be plugged until the new well is on-line and monitoring data has been obtained and verified, unless the well is extremely damaged and would create a potential route for groundwater contamination. Prior to replacing the subject well(s), the Permittee shall obtain written approval from the Illinois EPA regarding the proposed installation procedures and construction.

This new (replacement) well shall monitor the same zone as the existing well and be constructed in accordance with the current IEPA groundwater monitoring well construction standards at the time that the wells are replaced. A replacement well which is more than ten (10) feet from the existing well and which does not monitor the same geologic zone shall be approved by the Illinois EPA and designated as a new well.

6. Each well/piezometer number shall be clearly identified on the protective casing and shall be equipped with protective caps and locks. Monitoring wells/piezometers located in high traffic areas shall be protected with bumper guards.

7. Each well/piezometer not utilized in the approved groundwater monitoring system, but retained by the facility, shall be constructed and maintained in accordance with 77 Ill. Adm. Code 920 regulations.

D. <u>GROUNDWATER PROTECTION STANDARD, WASTE CONSTITUENTS and FIELD PARAMETERS</u>

1. The concentration limits listed for the following hazardous and non-hazardous constituents comprise the Groundwater Protection Standard at the point of compliance, hereafter referred to as List D1.

LIST D1 (Groundwater – Semi-annually)

ORGANICS (Total Conc.)	STORET	Concentration Limit (ug/l, except as noted)
Chloroethane	34311	ND
Chloromethane	34418	ND
Dichlorodifluoromethane	34668	1400
1,1-Dichloroethane	34496	700
1,2-Dichloroethane	34531	5 (2)
1,1-Dichloroethylene	34501	7 (3)
cis-1,2-Dichloroethylene	77093	70 (3)
trans-1,2-Dichloroethylene	34546	100 (3)
1,2-Dichloropropane	34541	5
p-Dioxane	81582	5 (1)
Tetrachloroethylene	34475	5 (2)
Trichloroethylene	39180	5 (2)
1,1,1-Trichloroethane	34506	200 (3)
1,1,2-Trichloroethane	34511	5 (3)
Trichlorofluoromethane	34488	2100
Vinyl Chloride	39175	2 (2)
Chloride	00940	200.0 mg/L
Inorganics		
Arsenic	01002	50.0
Barium	01007	1000.0
Chromium	01034	70.
Lead	01051	7.5

NOTE: (1) P-Dioxane is regarded as a carcinogen. Therefore 35 Ill. Adm. Code 620, Subpart F procedures direct that the groundwater concentration limit be set at its level of detection. The Illinois EPA has determined that a PQL of 5 ug/L for p-dioxane is reliably achievable using appropriate SW-846 methods.

(2) In addition to meeting the individual Concentration Limits in the tables above, the following equation must be satisfied in order to protect against liver tumors.

$$\frac{[\text{1,2-dichloroethane}]}{0.005\ \text{mg/l}} + \frac{[\text{tetrachloroethylene}]}{0.005\ \text{mg/l}} + \frac{[\text{trichloroethylene}]}{0.005\ \text{mgl}} + \frac{[\text{vinyl chloride}]}{0.002\ \text{mg/l}} \leq 1.0$$

(3) In addition to meeting the individual Class in groundwater recommendations indicated in the tables above, the following equation must be satisfied in order to protect against liver toxicity.

$$\frac{[\text{cis-1,2-dichloroethylene}]}{0.07\ \text{mg/l}} + \frac{[\text{trans-1,2-dichloroethylene}]}{0.1\ \text{mg/l}} +$$

$$\frac{[\text{1,1-dichloroethylene}]}{0.007\ \text{mg/l}} + \frac{[\text{1,1,1-trichlorothane}]}{0.2\ \text{mg/l}} +$$

$$\frac{[\text{1,1,2-trichloroethane}]}{0.005\ \text{mg/l}} \leq 1.0$$

ND: Not Determined. Insufficient data were available upon which to base a concentration limit. If the chemical(s) is/are still detected after all other concentration limits have been achieved, then the Illinois EPA will establish appropriate concentration limits at that time.

2. The following hazardous constituents comprise the routine monitoring list for the Groundwater Recovery System identified below in Subsection E., hereafter this list is referred to as List D2:

LIST D2 (Groundwater – Semi-annually)

Hazardous Constituent	STORET	Concentration Limit (ug/l)
ORGANICS		
Chloroethane	34311	ND
Chloromethane	34418	ND
trans 1,2-Dichloroethylene	34546	100
Dichlorodifloromethane	34668	1400
1,2-Dichloropropane	34541	5
p-Dioxane	81582	5 (see (1) above)
Trichlorofluoromethane	34488	2100

Inorganics

Arsenic	01002	50.0
Barium	01007	1000.0
Chromium	01034	70.0
Lead	01051	7.5

3. The following parameters comprise the annual waste constituent list, hereafter referred to as List D3.

LIST D3 (Groundwater - Annual)

Hazardous Constituent	STORET	PQL (ug/L)
Toluene	34010	5.0
Benzene	34030	2.0
Chlorobenzene	34301	2.0
Methylene Chloride	34423	5.0
Methyl ethyl ketone	81595	10.0
Ethyl benzene	78113	2.0
Xylene	81551	5.0
Acetone	81552	100.0
Isobutanol	77033	50.0
ortho-Dichlorobenzene	34536	10.0
Carbon disulfide	77041	5.0
Pyridine	77045	5.0
Hexachloropropene	70304	10.0
Hexachlorophene	73575	50.0
Kepone	81281	20.0
Cadmium	01027	5.0
Arsenic	01002	20.0
Mercury	71900	2.0
Iron	01045	1000.0

4. The following parameters comprise the field parameter list, hereafter referred to as List D4:

LIST D4 (Groundwater – Semi-annually)

Field Parameter	STORET	Units
Specific Conductance at 25^0C	00094	umhos/cm
pH	00400	standard
Temperature of Water Sample	00011	°F
Depth to Water (below land surface)	72019	Feet
Depth to Water (below measuring point)	72109	Feet
Elevation of Casing Measuring Point (M.S.L.)	72110	Feet
Elevation of Groundwater Surface (M.S.L.)	71993	Feet
Elevation of Well Bottom (M.S.L.)	72020	Feet

5. Pursuant to 35 Ill. Adm. Code 724.194(a), the appropriate concentration limits that comprise the Groundwater Protection Standard are either: (1) background concentration; (2) 35 Ill. Adm. Code 724.194 Table 1; or (3) an alternate concentration limit such as an appropriate 35 Ill. Adm. Code 620 Groundwater Quality Standard or submit the information required by 35 Ill. Adm. Code 724.194 paragraph (b). Total (unfiltered) values shall be used for comparison to the 35 Ill. Adm. Code 620 Groundwater Quality Standards. The following procedures may be used to change the established concentration limits (see List D1 above) or to propose a concentration limit when a constituent that is not currently part of the Groundwater Protection Standard (see List D1 above) is detected:

   a. To establish background of a constituent for the purpose of establishing the concentration limit, the following procedures shall be followed:

      Background shall be established on data obtained from the quarterly sampling of each upgradient well for one (1) year. Background shall be proposed to the Illinois EPA for approval within forty-five (45) days of receipt of the fourth quarter analytical results. For those monitoring parameters or constituents not detected above the practical quantitation limit (PQL) during background gathering, the background value shall be established as either the lowest PQL contained in 35 Ill. Adm. Code 724 Appendix I or the appropriate 35 Ill. Adm. Code 620 Groundwater Quality Standard, whichever is lower.

   b. Alternate concentration limits may be established where the Permittee can determine a constituent will not pose a substantial hazard to human health or the environment in accordance with 35 Ill. Adm. Code 724.194 (b).

(1) If the hazardous constituent has a standard listed in 35 Ill. Adm. Code 620, the facility may also need to apply for an adjusted standard as outlined in Section 28.1 of the Environmental Protection Act as part of the alternate concentration limit demonstration.

(2) If the hazardous constituent does not have a 35 Ill. Adm. Code 620 standard, the alternate quality standard proposed by the Permittee must be approved by the Agency.

E. REMEDIATION AND GROUNDWATER MONITORING

1. Groundwater Management Zone (GMZ)

a. The wells identified in Condition C.1 Table 1 are the wells that make up the GMZ. The Permittee shall implement, at these wells, the corrective measures detailed in Section 11 and Section 5 of the June 30, 1994 Addendum 3; and July 5, 1995 Addendum 3A to Section 11, with the following conditions:

1) Groundwater extraction from the pumping wells shall be maintained to ensure that groundwater flow is adequately controlled in the aquifer(s).

2) Changes in the pumping rate should be explained in the annual report. Extended periods of "downtime" greater than monthly shall be reported to the Illinois EPA.

3) Hydraulic head measurements shall be made semi-annually during the compliance period. This data shall be used to evaluate the long-term seasonal trends of water-table surfaces when subjected to the pumping stress of the gradient and source control systems, and to determine the size of the resulting capture zone.

4) Flow rate data shall be recorded on a weekly basis. The flow rate shall be calculated from the cumulative discharge data of each well as measured by its cumulative flowmeter. The semi-annual report shall present the weekly flowmeter data for the semi-annual period, and the flow rate calculated from this data. Flow rate data shall be calculated as the average volume pumped in gallons per minute for each well during each weekly measurement period, as well as the average flow rate for the semi-annual reporting period.

b. Upon initiation of the groundwater recovery system (detailed in a. above) and when hydraulic control of the groundwater contaminated areas is achieved, a 3-

dimensional region containing groundwater within the uppermost aquifer is established as a GMZ pursuant to 35 Ill. Adm. Code 620.250. The geographic location of the GMZ is from the wells listed in Condition C.1. Table 1 perpendicular to the nearest facility boundary.

The GMZ shall apply to the constituents comprising the Groundwater Protection Standard listed in Item D above. The GMZ shall remain in place as long as corrective actions are being conducted in a timely and appropriate manner. The GMZ shall expire upon the groundwater meeting the Groundwater Protection Standard. The Illinois EPA shall review the on-going adequacy of controls and continued management at the facility if constituents, as specified in 35 Ill. Adm. Code 620.450(a)(4)(B), remain in groundwater following completion of the corrective action.

c. The Permittee shall demonstrate the effectiveness of the groundwater recovery system by monitoring groundwater from wells identified in Condition C.1. Table 1. The effectiveness shall be evaluated semi-annually in accordance with the procedures outlined in Section 5 of the June 30, 1994 Addendum 3 and the following conditions:

(1) Monitoring wells listed in Condition C.1. Table 1 shall be sampled according to the schedule as noted on the table.

(2) Samples collected during the fourth quarter of each year shall be analyzed for List D2 and List D4 identified in Condition D above.

(3) Samples collected during the second quarter of each year shall be analyzed for Lists D1, D3, and D4. The detection limits utilized in this analysis shall at a minimum shall meet the concentration limit specified in List D1; and, analysis for the List D3 waste constituents shall, at a minimum, meet the PQLs listed in 35 Ill. Adm. Code 724 Appendix I or 35 Ill. Adm. Code 620, which ever is lowest.

(4) The hydraulic effects of the extraction system must be determined semi-annually at each well listed in Condition C.1 Table. To evaluate the hydraulic effects, scaled potentiometric maps with the zone of influence and capture created by the extraction system shall be developed. The pumping rate shall also be identified on the potentiometric maps.

(5) Sampling and analytical procedures utilized in the Groundwater Recovery System shall be in accordance with Condition F below.

2. Observation Monitoring Zone

   a. The Permittee shall determine whether the Groundwater Protection Standard has been exceeded and whether groundwater has been degraded below established background values within the observation (non-contaminated) wells. The wells identified in Condition C.1. Table 2, shall be used for this evaluation. These wells shall be evaluated on a semi-annual basis during the compliance period.

   b. Samples collected during the fourth quarter of each year shall be analyzed for List D1 and List D4 identified in Condition D above.

   c. Samples collected during the second quarter of each year shall be analyzed for Lists D1, D3 and D4. The detection limits utilized in this analysis shall at a minimum shall meet the concentration limit specified in List D1; and, analysis for the List D3 waste constituents shall, at a minimum, meet the PQLs listed in 35 Ill. Adm. Code 724 Appendix I or 35 Ill. Adm. Code 620, which ever is lowest.

   d. Sampling and analytical procedures shall be in accordance with Condition F below.

3. The Permittee shall determine the groundwater flow rate and direction in the uppermost aquifer at least annually from the monitoring wells listed in Condition C, Tables 1 and 2. The groundwater flow rate should be reported as a minimum and maximum range.

4. The Permittee shall determine the surveyed elevation of stick-up, referenced to MSL, when a well is installed (with as-built diagrams) and every two years (during the second quarter), or whenever the elevation changes, beginning with the first groundwater sampling event required by this permit.

5. Elevation, as referenced to MSL, of the bottom of each monitoring well (STORET 72020), is to be determined at least annually at wells that are not equipped with dedicated pump systems. The mandatory measurement shall be taken during the second quarter sampling event in Condition H. For wells containing dedicated pump systems, the mandatory measurement shall be taken in accordance with Condition H.10 below.

F. SAMPLING AND ANALYSIS PROCEDURES

The Permittee shall use the following techniques and procedures when obtaining and analyzing samples from the groundwater monitoring wells described in Condition C.1 above:

1. Samples shall be collected by the techniques described in the Approved Permit Application.

2. Samples shall be preserved, shipped, and handled in accordance with the procedures specified in the Approved Permit Application.

3. Samples shall be analyzed according to the procedures specified in the Approved Permit Application or as otherwise approved by the Illinois EPA.

4. Samples shall be tracked and controlled using the chain of custody procedures specified in the Approved Permit Application.

G. STATISTICAL PROCEDURES

1. The Permittee shall evaluate the quality of groundwater samples acquired during the fourth quarter sampling events identified above in Condition E.

   a. GMZ wells (see subsection E.1.c.(2)) shall be evaluated according to the following procedures:

      Data from the Monitoring System shall be evaluated following the procedures in Section 5.4.3.7 of the June 1994, Addendum 3 Permit Modification submitted.

   b. Observation Monitoring Zone wells (see subsection E.2.b) shall be evaluated according to the following procedures:

      (1) The concentration of each hazardous constituent which comprise the Groundwater Protection Standard (List D1) shall be compared to their respective Concentration Limit. If a parameter exceeds its Concentration Limit specified in Condition D above, the Permittee shall follow the procedures specified in Conditions H.6 and/or H.7 below.

      (2) Constituents detected below the PQL shall be determined to be showing no change and no action is necessary.

2. The Permittee shall evaluate the results of the annual analyses required by Condition E.1.c.(3) and E.2.c. by:

   a. Comparing the list of substances found in samples to the list of hazardous constituents contained in List D3. If a given constituent, is found above the PQL in the sample, collected from a well, the Permittee may resample within thirty (30) days. This sample shall be analyzed for the constituent(s) detected above the PQL in the initial sample.

      (1) If the constituent(s) of concern is (are) again detected above the PQL or the Permittee does not resample, the Permittee shall conclude that the constituent(s) of concern is (are) in the groundwater and follow the procedures in Conditions H.7 and/or H.8 below.

      (2) If the constituent of concern are not detected in the resample, the Permittee will not be required at that time to continue sampling for the particular constituent(s).

   b. Comparing the concentration of the samples from the Observation Monitoring Zone wells to the concentration limits of the Groundwater Protection Standard identified in Condition D, List D1. If this comparison indicates a constituent exceeds its Concentration Limit, the Permittee shall follow the procedures specified in Conditions H.6 and/or H.7 below.

   c. Determining the concentration trend at each well to identify areas that may have increasing contamination and to evaluate the effectiveness of the extraction system for reducing the concentration of contaminants within the Groundwater Recovery Zone.

      (1) Observation Monitoring Zone Wells shall be evaluated as follows:

         i. Constituents detected below the PQL shall be determined to be showing no change and no action is necessary.

         ii. Constituents detected above the PQL shall be plotted on graphs which show historical concentration versus time. Plots indicating a trend that has a positive or greater than 1.0 slope shall be reported, as part of Condition H.5 below, as a potential area of increasing contamination. In addition, the report shall contain an evaluation on whether the corrective actions are operating effectively and whether adjustments or

additional remedial actions are necessary based on the concentration trend.

(2) Groundwater Recovery Zone Wells shall be evaluated as follows:

Constituents detected above the PQL shall be compared to the historical data for each well and submitted as part of Condition H.5 below. The comparison shall include graphs which show the concentration versus time. The information shall be used to evaluate whether all constituents comprising the groundwater protection standard are being adequately remediated. This evaluation shall include an assessment of the current corrective actions and whether adjustments or additional remedial actions are necessary.

3. The Permittee shall evaluate the effectiveness of the groundwater extraction system to hydraulically capture and withdraw the off-site plume of groundwater contamination. The information required by Condition E.1.a and the July 6, 1994 addendum to the December 12, 1992 application shall be used for this evaluation. This evaluation shall be conducted semi-annually. If the evaluation indicates the off-site plume of contamination is not completely captured by the current extraction system design and present pumping rate status conditions, the Permittee shall submit within thirty (30) days of the semi-annual evaluation proper notification or modification (see conditions E.1.a.(2) and E.1.a.(3)) to achieve capture of the groundwater contamination.

H. REPORTING AND RECORDKEEPING

1. The Permittee shall enter all monitoring, testing and analytical data obtained in accordance with Conditions D, E, F and G into the operating record.

2. Samples collected to meet the requirements of the Groundwater Monitoring Program described in Conditions D, E, F and G shall be collected during the second and fourth quarters of each calendar year, as identified in the table below. The results of the groundwater quality analyses conducted on the samples shall be submitted in accordance with this schedule.

Sampling event of calendar year	Samples to be collected in the months of	Results submitted to Illinois EPA by the following
Second Quarter	April-May	July 15
Fourth Quarter	October-Nov.	January 15

The Permittee shall report all information to the Illinois EPA in a form which can be easily reviewed. The report must present data in tabular form, and must include drawings and text (as necessary) which accurately describe and support all conclusions.

3. The Permittee shall submit a completed "RCRA Facility Groundwater, Leachate and Gas Reporting Form" (LPC 592) as a cover sheet for any notices or reports required by the facility's Permit for identification purposes. Only one copy of the LPC 592 must accompany your submittal. However, the Permittee must submit one (1) original and (excluding the groundwater and leachate monitoring results submitted in an electronic format) a minimum of two (2) copies of each notice or report you submit to the Illinois EPA. The form is not to be used for Permit modification requests.

4. Information required by Conditions E.1.a.3, E.4, E.5, and H.2 must be submitted in an electronic format. The information is to be submitted, as fixed-width text files formatted as found in Attachment A, in accordance with the schedule found in Condition H.2. Additional guidance regarding the submittal of the information in an electronic format can be found at www.epa.state.il.us/land/regulatory-programs/permits-and-management/index.html.

5. The Permittee shall submit a written report to the Illinois EPA annually which discusses the effectiveness of the Corrective Action Program and place it in the operating record for the facility. The report must be submitted by July 15 of each year. At a minimum, the report must:

   a. Address the information requirements in Conditions D, E, and F and G, and contain the information specified in Section 5.4.3.9 of the June 30, 1994 Addendum.

   b. Evaluate the effectiveness of the hydraulic control and contaminant removal from the GMZ, including the information required by Condition E.

   c. Groundwater extraction system maintenance information required by Condition I.H.9 below.

6. If the Permittee determines pursuant to Condition G.1.b above that any Concentration Limits specified in the Groundwater Protection Standard are being exceeded at any monitoring well within the Observation Monitoring Zone, the Permittee shall:

   a. Notify the Illinois EPA of this finding in writing within seven (7) days. The notification must indicate what Concentrations Limits have been exceeded.

   b. Submit to the Illinois EPA an application for a permit modification to establish a Corrective Action Program meeting the requirements of 35 Ill. Adm. Code 724.200 within 180 days or within ninety (90) days if an engineering feasibility study has previously submitted to the Illinois EPA. The application must at a minimum included the following information:

      1. A detailed description of corrective actions that will achieve compliance with the Groundwater Protection Standard.

      2. A plan for a groundwater monitoring program that will demonstrate the effectiveness of the corrective action. Such a groundwater monitoring program may be based on a compliance monitoring program.

7. If the Permittee determines, pursuant to Condition G.1.b or G.2.b that the groundwater Concentration Limits in Condition D are being exceeded at any monitoring well in the Observation Monitoring Zone, the Permittee may demonstrate that a source other than a regulated unit caused the contamination or that the detection is an artifact caused by an error in sampling, analysis or statistical evaluation, or natural variation in groundwater. In making a demonstration under this condition, the Permittee shall:

   a. Notify the Illinois EPA in writing within seven (7) days that it intends to make a demonstration under this condition;

   b. Within ninety (90) days, submit a report to the Illinois EPA which demonstrates that a source other than a regulated unit caused the standard to be exceeded or that the apparent noncompliance with the standards resulted from error in sampling, analysis or evaluation;

   c. Within ninety (90) days, submit to the Illinois EPA an application for a permit modification to make any appropriate changes to the Corrective Action Program at the facility, and;

   d. Continue to monitor in accordance with Condition .E.

8. If the Permittee determines that additional constituents not currently part of the Groundwater Protection Standard are present in the groundwater pursuant to Condition G.2.a.(1) above, the Permittee shall:

   a. Report the concentration of these additional constituents detected in the groundwater to the Illinois EPA within seven (7) days after completion of the analyses, and;

   b. Add the additional constituents to the monitoring list of the Groundwater Protection Standard, Lists D1 and D2 and establish the concentration limit for each additional constituent following procedures in Condition D.5 above.

9. In accordance with RCRA Permit, Log No. B-141-M-35, the Permittee shall submit to the Illinois EPA documentation associated with the Groundwater Extraction System maintenance procedures. The documentation must be submitted in semi-annual groundwater reports in accordance with the schedule found in Condition H.2 of the Permit. The documentation must include, at a minimum, the following:

   a. A brief description of the qualifications of personnel performing the maintenance procedures;

   b. Dates of inspection and/or service, identification of wells or specific well system components inspected and/or serviced, average time servicing the system (including re-circulation times and down-times) and future maintenance frequency and schedules;

   c. Problems observed, such as excessive biofouling and/or scaling, structural damage to wells or well system components, malfunctions in equipment (valves, container housing, lines, etc.). This should include a brief discussion of any field observations made during the maintenance event and proposed procedures to address any problems, if necessary;

   d. Values for the field parameters: conductivity, temperature, Eh, and pH for comparison of water quality before and after cleaning events;

   e. Supporting data confirming that groundwater quality returns to a natural level subsequent to the completion of the maintenance procedures (water quality must be pumped from the well until the water quality is essentially the same as prior to treatment); and

f. Identification of all cleaning compounds used for well maintenance, including, but not limited to, a discussion and supporting documentation regarding: (1) mixture concentrations, amounts, and injection rates; (2) general procedures used in the application of chemical compounds that are utilized to maintain the system; and (3) a performance evaluation. If the cleaning technique involves the application of acidic chemical compounds, at total concentration of 15% (2-3 times zone volume) should not be exceeded.

10. The Permittee shall maintain all equipment associated with groundwater monitoring wells. Dedication pump systems (contained in the applicable monitoring wells identified in Condition C.1) must be removed and inspected every five (5) years. The system must be repaired, if necessary. In addition, elevation measurements (as referenced to MSL) of the bottom of each monitoring well containing a dedicated pump system must be collected at this time. Information regarding inspection and maintenance of the pump systems must be reported by July 15 of that year. Total well depths will continue to be measured annually for wells that are not equipped with dedicated pump systems, in accordance with Condition E.5.

11. In accordance with 35 Ill. Adm. Code 620.250(c), a review of the GMZ must take place no less often than every five years and the results shall be presented to the Agency in a written report. The most recent review was approved by a December 6, 2007 Illinois EPA letter. The next GMZ review must be submitted to the Illinois EPA by December 6, 2012.

I. REQUEST FOR PERMIT MODIFICATION

1. If the Permittee determines that the corrective action program no longer satisfies the requirements of 35 Ill. Adm. Code 724, Subpart F, the Permittee shall, within ninety (90) days, submit an application for a permit modification to make any appropriate changes to the program.

2. Conditions in this section of the Permit may be modified in accordance with 35 Ill. Adm. Code 705.128 if there is cause for such modification, as defined in 35 Ill. Adm. Code 702.184. Causes for modification identified in this section include, but are not limited to, alteration to the permitted facility; additional information which would have justified the application of different permit conditions at the time of issuance; and new regulations.

3. If the Permittee determines that a GMZ well is no longer necessary to satisfy the requirements of 35 Ill. Adm. Code 620.250, the Permittee may submit an application for a permit modification to make any appropriate changes to the monitoring program.

4. The Permittee may submit a request for permit modification to alter the frequency of monitoring groundwater in accordance with 35 Ill. Adm. Code 703. Appendix A(c)(2). This request for permit modification may be submitted following hydraulic capture of the contaminant plume for a period of one year and no additional contaminants have occurred at the facility during this period of time. The permit modification request shall at a minimum include: groundwater flow maps and contaminant isoconcentration maps for the one year period; and, a summary of the groundwater contaminants that have been detected during this period of time.

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Section II: POST-CLOSURE

A. SUMMARY

Hazardous waste management units where waste is left in-place must receive post-closure care for at least 30 years after the date the certification of closure is approved in writing by the Illinois EPA's DLPC or the date this Post-Closure Permit becomes effective, whichever is later. As Areas 1 and 2 were used for the disposal of hazardous waste after July 26, 1982, and had closure approved on September 10, 1992, post-closure care must be provided for both units until September 10, 2022. Activities required during post-closure care include, but are not limited to, (1) maintenance of the final cover, (2) management of leachate, (3) monitoring of the groundwater, and (4) providing financial assurance for post-closure activities pursuant to 35 IAC Part 724.

Surface Impoundments 5 and 6 were closed in accordance with 35 Ill. Adm. Code Part 725 and certified as such in a letter from Illinois EPA dated September 10, 1992. Post-closure care for surface impoundments 5 and 6 will not be necessary.

B. UNIT IDENTIFICATION

1. The Permittee shall provide post-closure care for the Area 1 and Area 2 hazardous waste landfills, subject to the terms and conditions of this permit.

2. Except for wastes exhumed from in and around Area 1 and Area 2 during corrective action activities, Area 1 and Area 2 are no longer permitted to accept hazardous waste.

C. MONITORING, MAINTENANCE, AND RECORDKEEPING

1. The Permittee shall conduct post-closure care for each hazardous waste management unit listed in Section II.B.1. above to begin after closure of each unit and continue until September 10, 2022.

2. Prior to the time that post-closure care is due to expire, the Board will extend or the Illinois EPA's DLPC may propose extension of the post-closure care period if it finds that the extended period is necessary to protect human health and the environment (e.g., leachate or groundwater monitoring results indicate a potential for migration of waste at levels which may be harmful to human health and the environment).

3. The Illinois EPA's DLPC may include restrictions upon the future use of the site if necessary to protect public health and the environment, including permanent prohibition of the use of the site for purposes which may create an unreasonable risk of

injury to human health or the environment. After administrative and judicial challenges to such restrictions have been exhausted, the Illinois EPA's DLPC shall file such restrictions of record in the Office of the Recorder of the county in which the hazardous waste disposal site is located.

4. Other than exhumation and re-deposition of wastes during corrective action activities, the Permittee shall not allow any use of the units designated in Section II.B which will disturb the integrity of the final cover, liners, any components of the containment system, or function of the facility's monitoring systems during the post-closure care period, unless such use is necessary to protect human health or the environment.

5. The Permittee shall implement the approved Post-Closure Plan contained in the Approved Permit Application. All post-closure care activities must be conducted in accordance with the provisions of the approved Post-Closure Plan.

6. The Permittee must request a permit modification to authorize a change in the approved Post-Closure Plan. This request must be in accordance with applicable requirements of 35 IAC Parts 702, 703 and 724 and must include a copy of the amended Post-Closure Plan for approval by the Illinois EPA's DLPC.

7. The Illinois EPA's DLPC may require, at closure, continuation of any of the security requirements during part or all of the post-closure period.

8. The Permittee shall maintain and monitor the groundwater monitoring system and comply with the other applicable regulations of 35 IAC 724 Subpart F (Groundwater Protection) during the post-closure period for both Area 1 and Area 2 landfills.

9. The Permittee shall maintain the integrity and effectiveness of the final cover, including making repairs to the cap as necessary to correct the effects of settling, subsidence, erosion, and other events.

10. The Permittee shall comply with the following requirements for Area 1 and 2 landfills as follows:

    a. Maintain the integrity and effectiveness of the final cover, including making repairs to the cap as necessary to correct the effects of settling, subsidence, erosion, cracking or other events.

       Corrective action for the cover shall be taken if problems, including, but not limited to, the following, occur:

ponding
cracks greater than one inch wide
gas problems
odor problems
dead or stressed vegetation
vegetation with taproots growing in areas not designed to accomodate such
vector problems
leachate popouts or seeps

b. Operate the newly installed leachate collection system to its capacity to reduce the amount (head) of leachate in areas 1 and 2. Removal of leachate must not be merely based on the ability to maintain the operation of the flares. WMI must continuously remove all pumpable leachate until the required maximum depth of 1 foot of leachate above the invert of the landfill liner is achieved. Upon achieving the required depth, leachate must be removed as necessary to maintain the required depth.

In order to accurately determine leachate levels throughout the landfill, the permittee must monitor and evaluate the leachate levels within the 13 leachate observation wells on a monthly basis. If such evaluation reveals that the improved leachate collection system is incapable of achieving the required leachate depth throughout the landfill, the Illinois EPA may require the Permittee to further improve the leachate collection system so that it is capable of achieving the required leachate depth throughout the landfill.

In accordance with the approved post-closure care plan, representative samples of leachate from the co-disposal hill and the drum trenches shall be collected from withdrawal points annually and analyzed individually (no compositing) for the constituents listed in 35 Ill. Adm. Code Part 724, Appendix I which have been accepted at the respective landfill or trench. These samples shall be collected during the first quarter inspections. The results of these analyses shall be submitted to the Illinois EPA's DLPC by June 1 each year. Leachate levels observed in each withdrawal point, the amount of leachate removed from each withdrawal point, leachate levels observed in each of the 13 Leachate Observation Wells and an evaluation of the effectiveness of the leachate removal system shall also be included with these submittals. The method proposed in Section 6.3.4.6 of the June 30, 1994 permit modification request for reduction of analytical parameters is approved, however, at least once every four years the Permittee must conduct a full Appendix I analysis on the leachate samples.

c. Prevent run-on and run-off from eroding or otherwise damaging the final cover.

d. Maintain and monitor the groundwater monitoring system and comply with all other applicable requirements of 35 IAC Part 724 Subpart F.

e. Protect and maintain surveyed benchmarks used in complying with surveying and recordkeeping requirements.

D. INSPECTIONS

1. The Permittee shall inspect the components, structures, and equipment at the site in accordance with the post-closure inspection schedule in Attachment E, subject to the following modification:

a. The Area 1 and Area 2 landfills shall be inspected quarterly to determine if corrective action for the final cover or any other structure at each landfill is needed. Inspection of the landfills and any corrective action taken shall be in accordance with the post-closure care plan in the approved permit application. If corrective action is taken, the site shall be re-visited one month later to ensure that the actions taken have indeed corrected the problem(s) noted.

E. NOTICES AND CERTIFICATION

1. After final closure has been certified, the person or office specified in the approved Post-Closure Plan must keep the plan during the remainder of the post-closure period.

2. No later than sixty (60) days after completion of closure of each permitted hazardous waste disposal unit, the Permittee shall submit to the local zoning authority, or the authority with jurisdiction over local land use, and to the Illinois EPA's DLPC a survey plat and a record of the type, location, and quantity of wastes disposed of within each cell or other disposal unit of the facility. For hazardous wastes disposed before January 12, 1981, the Permittee shall identify the type, location, and quantity of the wastes to the best of his knowledge and in accordance with any records he has kept. This plat must be prepared and certified by an independent registered land surveyor.

3. Within sixty (60) days after completion of closure of each hazardous waste disposal unit, the Permittee shall:

a. Record, in accordance with Illinois law, a notation on the deed to the facility property -- or on some other instrument that is normally examined during title search -- that will in perpetuity notify any potential purchaser of the property that:

(i) The land has been used to manage hazardous wastes

(ii) Its use is restricted under 35 IAC 724.217

(iii) The survey plat and record of the type, location, and quantity of hazardous wastes disposed within each cell or other hazardous waste disposal unit of the facility have been filed with the Illinois EPA's DLPC, the County Recorder, and any local zoning authority.

b. Submit a certification to the Illinois EPA's DLPC, signed by the Permittee, that he has recorded the notation specified in Condition II.E.3.a, including a copy of the document in which the notation has been placed.

4. If the Permittee or any subsequent owner or operator of the land upon which a hazardous waste disposal unit is located wishes to remove hazardous wastes and hazardous waste residues, the liner, if any, or contaminated soils, then he must request a modification to this post- closure permit in accordance with the applicable requirements in 35 IAC Parts 703, 705 and 724. The owner or operator must, at a minimum, demonstrate that the removal of hazardous wastes will satisfy the criteria of 35 IAC 724.217.

5. No later than sixty (60) days after completion of the established post-closure care period for each hazardous waste disposal unit, the Permittee shall submit to the Illinois EPA's DLPC, by registered mail, a certification that the post-closure care for the hazardous waste disposal unit was performed in accordance with the specifications in the approved Post-Closure Plan. The certification must be signed by the owner or operator and an independent registered professional engineer. Documentation supporting the independent registered professional engineer's certification must be furnished to the Illinois EPA's DLPC upon request until the Illinois EPA's DLPC releases the Permittee from the financial assurance requirements for post-closure care.

F. SUBSURFACE GAS MANAGEMENT

1. The Permittee shall flare the subsurface gas generated at Area 1 during the post-closure care period.

2. A corrective action plan to modify the facilities existing gas control system shall be submitted to the Illinois EPA's DLPC for approval if subsurface gas creates problems. Upon approval, the plan shall be implemented.

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SECTION III: STANDARD CONDITIONS

GENERAL REQUIREMENTS

1. **EFFECT OF PERMIT**. The existence of a RCRA permit shall not constitute a defense to a violation of the Environmental Protection Act or Subtitle G, except for development, modification or operation without a permit. Issuance of this permit does not convey property rights or any exclusive privilege. Issuance of this permit does not authorize any injury to persons or property or invasion of other private rights, or infringement of state or local law or regulations. (35 IAC 702.181)

2. **PERMIT ACTIONS.** This permit may be modified, reissued or revoked for cause as specified in 35 IAC 703.270 through 703.273 and Section 702.186. The filing of a request by the Permittee for a permit modification or revocation, or a notification of planned changes or anticipated noncompliance on the part of the Permittee does not stay the applicability or enforceability of any permit condition. (35 IAC 702.146)

3. **SEVERABILITY**. The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby. (35 IAC 700.107)

4. **PERMIT CONDITION CONFLICT**. In case of conflict between a special permit condition and a standard condition, the special condition will prevail. (35 IAC 702.160)

5. **DUTY TO COMPLY**. The Permittee shall comply with all conditions of this permit except for the extent and for the duration such noncompliance is authorized by an emergency permit. Any permit noncompliance constitutes a violation of the Environmental Protection Act and is grounds for enforcement action; permit revocation or modification; or for denial of a permit renewal application. (35 IAC 702.141 and 703.242)

6. **DUTY TO REAPPLY.** If the Permittee wishes to continue an activity allowed by this permit after the expiration date of this permit, the Permittee must apply for a new permit at least 180 days before this permit expires, unless permission for a later date has been granted by the Agency. (35 IAC 702.142 and 703.125)

7. **PERMIT EXPIRATION**. This permit and all conditions herein will remain in effect beyond the permit's expiration date if the Permittee has submitted a timely, complete

application (see 35 IAC 703.181-703.209) and through no fault of the Permittee the Agency has not issued a new permit as set forth in 35 IAC 702.125.

8. **NEED TO HALT OR REDUCE ACTIVITY NOT A DEFENSE**. It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. (35 IAC 702.143)

9. **DUTY TO MITIGATE**. In the event of noncompliance with the permit, the permittee shall take all reasonable steps to minimize releases to the environment, and shall carry out such measures as are reasonable to prevent significant adverse impacts on human health or the environment. (35 IAC 702.144)

10. **PROPER OPERATION AND MAINTENANCE**. The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory, and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit. (35 IAC 702.145)

11. **DUTY TO PROVIDE INFORMATION**. The Permittee shall furnish to the Agency, within a reasonable time, any relevant information that the Agency may request to determine whether cause exists for modifying, revoking and reissuing or terminating this permit, or to determine compliance with this permit. The Permittee shall also furnish to the Agency, upon request, copies of records required to be kept by this permit. (35 IAC 702.148)

12. **INSPECTION AND ENTRY**. The Permittee shall allow an authorized representative of the Agency, upon the presentation of credentials and other documents as may be required by law, to:

    a. Enter at reasonable times upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

    b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

d. Sample or monitor, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the appropriate Act, any substances or parameters at any location. (35 IAC 702.149)

13. MONITORING AND RECORDS. (35 IAC 702.150)

a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The method used to obtain a representative sample of the waste must be the appropriate method from Appendix A of 35 IAC 721. Laboratory methods must be those specified in Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846, latest versions; Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, latest versions; or an equivalent method as specified in the approved Waste Analysis Plan.

b. The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports and records required by this permit, and records of all data used to complete the application for this permit for a period of at least 3 years from the date of the sample, measurement, report or application. These periods may be extended by request of the Agency at any time. The permittee shall maintain records from all groundwater monitoring wells and associated groundwater surface elevations, for the active life of the facility, and for disposal facilities for the post-closure care period as well.

c. Records of monitoring information shall include:

i. The date(s), exact place, and time of sampling or measurements;

ii. The individual(s) who performed the sampling or measurements;

iii. The date(s) analyses were performed;

iv. The individual(s) who performed the analyses;

v. The analytical technique(s) or method(s) used; and

vi. The result(s) of such analyses. (35 IAC 702.150)

14. **REPORTING PLANNED CHANGES**. The permittee shall give notice to the Agency as soon as possible of any planned physical alterations or additions to the permitted facility. For a new HWM facility, the permittee may not commence treatment, storage or disposal of hazardous waste; and for a facility being modified the permittee may not treat, store or dispose of hazardous waste in the modified portion of the facility, until:

a. The permittee has submitted to the Agency by certified mail or hand delivery a letter signed by the permittee and a registered professional engineer stating that the facility has been constructed or modified in compliance with the permit; and

b. 1. The Agency has inspected the modified or newly constructed facility and finds it is in compliance with the condition of the permit; or

2. If, within 15 days of the date of submission of the letter in paragraph (a), the permittee has not received notice from the Agency of its intent to inspect, prior inspection is waived and the permittee may commence treatment, storage or disposal of hazardous waste. (35 IAC 703.244 and 702.152(a))

15. **ANTICIPATED NONCOMPLIANCE**. The Permittee shall give advance notice to the Agency of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements. For a new facility, the permittee shall not treat, store or dispose of hazardous waste; and for a facility being modified; the permittee shall not treat, store or dispose of hazardous waste in the modification portion of the facility, except as provided in Section 703.280, until:

a. The permittee has submitted to the Agency by certified mail or hand delivery a letter signed by the permittee and a registered professional engineer stating that the facility has been constructed or modified in compliance with the permit; and

b. Either:

i. The Agency has inspected the modified or newly constructed facility and finds it is in compliance with the conditions of the permit; or

ii. Within 15 days after the date submission of the letter in section i above, the permittee has not received notice from the Agency of its intent to inspect, the permittee may commence treatment, storage or disposal of hazardous waste.

(35 IAC 702.152(b) and 703.247)

16. **TRANSFER OF PERMITS**. This permit is not transferable to any person except after notice to the Agency. The Agency may require modification of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the appropriate Act. (See Sections 703.260 and 703.270, in some cases modification is mandatory.) (35 IAC 702.152(c))

17. **MONITORING REPORTS**. Monitoring results shall be reported at the intervals specified in the permit. (35 IAC 702.152(d))

18. **COMPLIANCE SCHEDULES**. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than specified in 35 IAC 702.162. (35 IAC 702.152(e))

19. **TWENTY-FOUR HOUR REPORTING.**

    a. The Permittee shall report to the Agency any noncompliance with the permit that may endanger health or the environment. Any such information shall be reported orally within 24 hours from the time the Permittee becomes aware of the following circumstances. This report shall include the following:

        i. Information concerning the release of any hazardous waste that may cause an endangerment to public drinking water supplies.

        ii. Information concerning the release or discharge of any hazardous waste or of a fire or explosion at the HWM facility, which could threaten the environment or human health outside the facility.

    b. The description of the occurrence and its cause shall include:

        i. Name, address, and telephone number of the owner or operator;

        ii. Name, address, and telephone number of the facility;

        iii. Date, time, and type of incident;

        iv. Name and quantity of material(s) involved;

        v. The extent of injuries, if any;

vi. An assessment of actual or potential hazards to the environment and human health outside the facility, where applicable; and

vii. Estimated quantity and disposition of recovered material that resulted from the incident.

c. A written submission shall also be provided within 5 days of the time the Permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance including exact dates and times and if the noncompliance has not been corrected; the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The Agency may waive the five day written notice requirement in favor of a written report within fifteen days. (35 IAC 702.152(f) and 703.245(b))

20. **OTHER NONCOMPLIANCE.** The Permittee shall report all instances of noncompliance not otherwise required to be reported under Standard Conditions 17, 18, and 19, at the time monitoring reports, as required by this permit, are submitted. The reports shall contain the information listed in Standard Condition 19. (35 IAC 702.152(g))

21. **OTHER INFORMATION.** Where the Permittee becomes aware that it failed to submit any relevant facts in the permit application, or submitted incorrect information in a permit application or in any report to the Agency, the Permittee shall promptly submit such facts or information. (35 IAC 702.152(h))

22. **REPORTING REQUIREMENTS.** The following reports required by 35 Ill. Adm. Code 724 shall be submitted in addition to those required by 35 Ill. Adm. Code 702.152 (reporting requirements):

a. Manifest discrepancy report: if a significant discrepancy in a manifest is discovered, the permittee must attempt to reconcile the discrepancy with the waste generator or transporter. If the discrepancy is not resolved within 15 days after receiving the waste, the permittee must immediately submit to the Agency a letter describing the discrepancy and attempts to reconcile it and a copy of the manifest or shipping paper at issue. (35 IAC 724.172(b))

b. Unmanifested waste report: The permittee must submit to the Agency within 15 days of receipt of unmanifested waste an unmanifested waste report on EPA form 8700-13B. (35 IAC 724.176)

c. Annual report: an annual report must be submitted covering facility activities during the previous calendar year. (35 IAC 724.175)

23. **SUBMITTAL OF REPORTS OR OTHER INFORMATION.** All written reports or other written information required to be submitted by the terms of this permit shall be sent to:

Illinois Environmental Protection Agency
Bureau of Land -- #33
Permit Section
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276

24. **SIGNATORY REQUIREMENT.** All permit applications, reports or information submitted to the Agency shall be signed and certified as required by 35 IAC 702.126. (35 IAC 702.151)

25. **CONFIDENTIAL INFORMATION.** Any claim of confidentiality must be asserted in accordance with 35 IAC 702.103 and 35 IAC 161.

26. **DOCUMENTS TO BE MAINTAINED AT FACILITY SITE.** The Permittee shall maintain at the facility, until closure is complete, the following documents and amendments, revisions and modifications to these documents:

a. Waste analysis plan as required by 35 IAC 724.113(b) and this permit.

b. Personnel training documents and records as required by 35 IAC 724.116(d) and this permit.

c. Contingency plan as required by 35 IAC 724.153(a) and this permit.

d. Closure plan as required by 35 IAC 724.212(a) and this permit.

e. Cost estimate for facility closure as required by 35 IAC 724.242(d) and this permit.

f. Operating record as required by 35 IAC 724.173 and this permit.

g. Inspection schedules as required by 35 IAC 724.115(b) and this permit.

27. **WASTE MINIMIZATION.** The Permittee shall certify at least annually that the Permittee has a program in place to reduce the volume and toxicity of hazardous waste that he generates to the degree determined by the Permittee to be economically practicable, and the proposed method of treatment, storage, or disposal is that practicable method currently available to the Permittee which minimizes the present and future threat to human health and the environment, in accordance with 35 IAC 724.173(b)(9).

GENERAL FACILITY STANDARDS

28. **NOTICE OF WASTE FROM A FOREIGN SOURCE.** The permittee who has arranged to receive hazardous waste from a foreign source must notify the Agency in writing at least four weeks in advance of the date the waste is expected at the facility. (35 IAC 724.112(a))

29. **NOTICE OF WASTE FROM OFF-SITE.** The Permittee who receives hazardous waste from an off-site source (except where the Permittee is also the generator), must inform the generator in writing that the permittee has the appropriate permits for, and will accept, the waste the generator is shipping. The Permittee must keep a copy of this written notice as part of the facility operating record. (35 IAC 724.112(b))

30. **GENERAL WASTE ANALYSIS.** The Permittee shall comply with the procedures described in the approved waste analysis plan. (35 IAC 724.113)

31. **SECURITY.** The Permittee shall comply with the security provisions of 35 IAC 724.114(b) and (c).

32. **GENERAL INSPECTION REQUIREMENTS.** The Permittee shall follow the approved inspection schedule. The Permittee shall remedy any deterioration or malfunction discovered by an inspection as required by 35 IAC 724.115(c). Records of inspections shall be kept as required by 35 IAC 724.115(d).

33. **PERSONNEL TRAINING.** The Permittee shall conduct personnel training as required by 35 IAC 724.116 and shall maintain training documents and records as required by 35 IAC 724.116(d) and (e).

34. **GENERAL REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE.** The Permittee shall comply with the requirements of 35 IAC 724.117.

PREPAREDNESS AND PREVENTION

35. **DESIGN AND OPERATION OF FACILITY**. The Permittee shall maintain and operate the facility to minimize the possibility of fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment. (35 IAC 724.131)

36. **REQUIRED EQUIPMENT.** The Permittee shall equip the facility with the equipment set forth in the approved contingency plan, as required by 35 IAC 724.132.

37. **TESTING AND MAINTENANCE OF EQUIPMENT.** The Permittee shall test and maintain the equipment specified in condition 36 as necessary to assure its proper operation in time of emergency. Such testing and maintenance activities are set forth in the approved inspection schedule. (35 IAC 724.133)

38. **ACCESS TO COMMUNICATIONS OR ALARM SYSTEM.** The Permittee shall maintain access to the communications or alarm system as required by 35 IAC 724.134.

39. **REQUIRED AISLE SPACE.** The Permittee shall maintain aisle space as required by 35 IAC 724.135 and National Fire Protection Association (NFPA) requirements.

40. **ARRANGEMENTS WITH STATE AND LOCAL AUTHORITIES AND EMERGENCY RESPONSE CONTRACTORS.** The Permittee shall attempt to make emergency response arrangements with State and local authorities and agreements with State emergency response teams and emergency response contractors and equipment suppliers as required by 35 IAC 724.137. If State or local officials refuse to enter in preparedness and prevention arrangements with the Permittee, the Permittee must document this refusal in the operating record.

CONTINGENCY PLAN

41. **IMPLEMENTATION OF PLAN.** The provisions of the contingency plan must be carried out by the Permittee immediately whenever there is a fire, explosion or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment (35 IAC 724.151(b)). Within 15 days of any incident that requires implementation of the contingency plan, the owner or operator must submit a written report to the Agency as required by 35 IAC 724.156(j).

42. **COPIES OF PLAN.** A copy of the contingency plan, including any revisions, must be maintained at the facility and submitted to all local police and fire departments, hospitals and state and local emergency response teams as required by 35 IAC 724.153.

43. **AMENDMENTS TO PLAN.** The Permittee shall review and immediately amend, if necessary, the contingency plan, as required by 35 IAC 724.154.

44. **EMERGENCY COORDINATOR.** A trained emergency coordinator shall be available at all times in case of an emergency as required by 35 IAC 724.155 and 724.156.

MANIFEST SYSTEM RECORD KEEPING AND REPORTING

45. **MANIFEST SYSTEM.** The Permittee shall comply with the manifest requirements of 35 IAC 724.171, 724.172, 724.176 and 733.

46. **OPERATING RECORD.** The Permittee shall maintain a written operating record at the facility in accordance with 35 IAC 724.173.

47. **ANNUAL REPORT.** The Permittee shall prepare and submit an annual report to the Agency prior to March 1st of each year in accordance with the requirements of 35 IAC 724.175.

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Section IV: REPORTING AND NOTIFICATION REQUIREMENTS

The reporting and notification requirements of each section of the RCRA post-closure permit are summarized below. This summary is provided to highlight the various reporting and notification requirements of this permit.

Condition	Submittal	Due Date
Section I: Corrective Action Program		
C.4	Submit completed data sheets from the installation and development of each new or replacement well	Within 30 days of the date that installation of the well is completed
C.4	Submit well plugging and abandonment certifications	Within 30 days of the date that the well is plugged and abandoned
C.5	Notify the Illinois EPA if any well: has bee damaged, the structural integrity has been compromised, or has become consistently dry or unserviceable. A proposal for a replacement well(s) must be included with this submittal.	Within 30 days of discovery
D.5.a	Provide Illinois EPA with background data	Within 45 days of receipt of the fourth quarter groundwater analytical results
E.1.a.2	Report changes in the pumping rates, if applicable, of the groundwater extraction pumping wells	Annual Report
E.3	Report groundwater flow rate data (GMZ and Observation Wells)	Annual Report
E.4	Report surveyed elevation of stick-up	When a well is installed (with as-built diagrams) and every two years (during the second quarter

		sampling event) or whenever the elevation changes	
E.5	Report elevation (MSL) of the bottom of each groundwater monitoring well	Annual Report	
G.2.c	Submit trend analysis	Annual Report	
G.3	Submit evaluation of effectiveness of the groundwater extraction system to hydraulically capture and withdraw the off-site plume of groundwater contamination	Semi-annually (in accordance with Permit Condition H.2)	
G.3	Submit notification or modification if off-site plume of contamination is not completely captured by the current extraction system design	Within 30 days of the semi-annual evaluation	
H.2	Groundwater monitoring data and statistical calculations	Information Collected During Months of	Results to Illinois EPA by
		April-June	July 15
		October-December	January 15
H.6.a	Submit notification if any concentration limits specified in the Groundwater Protection Standard are being exceeded at any Observation Well	Within 7 days after discovery of exceedance	
H.6.b	Submit application for permit modification to establish Corrective Action Program	Within 180 days or within 90 days if an engineering feasibility study has been previously submitted	
H.7.a	Submit notification to make determination that another source caused the increase or that the increase	Within 7 days of discovery of increase	

	resulted from error in sampling, analysis, or evaluation	
H.7.b	Submit report that demonstrates that a source other that a regulated unit caused the standard to be exceeded or that that apparent noncompliance with the standards resulted from error in sampling, analysis, or evaluation	Within 90 days of discovery of exceedance
H.7.c	Submit an application for a permit modification to make any appropriate changes to the Corrective Action Program, if necessary	Within 90 days of discovery of exceedance
H.8.a	Report concentration of additional constituent(s) detected in the groundwater pursuant to Condition G.2.a(1)	Within 7 days after completion of the analysis
H.9	Submit documentation that rehabilitation activities (well maintenance procedures are completed)	Semi-annually (in accordance with Permit Condition H.2)
I.1	Submit application for permit modification	Within 90 days of determination that the corrective action program no longer satisfies the requirements of 35 Ill. Adm. Code 724, Subpart F

Section II: POST-CLOSURE

C.10.b	Leachate analyses, levels, and amount removed.	June 1 of each year
E.2	Submit to the Illinois EPA's DLPC a survey plat and a record of the type, location, and quantity of hazardous waste disposed within each cell or disposal unit.	Within 60 days after completion of closure and with the closure certification

E.3.a	Record notation on the deed to the facility property regarding hazardous waste management at the site.	Within 60 days after completion of closure and with the closure certification
E.3.b	Certify to the Illinois EPA's DLPC that the notation required in E.3.a has been recorded.	Within 60 days after completion of closure and with the closure certification
E.4	Request permit modification to remove the liner or hazardous wastes.	Prior to removing the liner or wastes
E.5	Certify to the Illinois EPA's DLPC that post-closure care was performed in accordance with the specifications.	Within 60 days after completion of the post-closure care period
F.2	A corrective action plan to the Illinois EPA's DLPC for approval if subsurface gas becomes a a problem.	Within 30 days after discovery of the problem

Section III: STANDARD CONDITIONS

6	Complete application for new permit.	At least 180 days prior to permit expiration
11	Information requested by Illinois EPA and copies of records required to be kept by this permit.	Submittal date to be determined by the Illinois EPA's DLPC
14	Notify Illinois EPA of planned physical alterations or additions.	At least 15 days prior to planned change
15	Notify Illinois EPA of changes which may result in permit noncompliance.	Within 15 days of change

16	Application for permit modification indicating permit is to be transferred.	At least 90 days prior to transfer date
18	Submission of any information required in a compliance schedule.	Within 14 days after each schedule date
19	Report to Illinois EPA any non-compliance which may endanger health or environment. by telephone	Within 24 hours after discovery
	and	
	in writing	5 days after discovery
20	Report all other instances of noncompliance.	March 1 of each year along with Annual Report
40	Implementation of Contingency Plan.	As required
	Notify appropriate state and local agencies with designated response roles.	As required
	Notify appropriate local officials.	Immediately, if emergency coordinator's assessment indicates evacuation of local area is advisable.
	Notify the Illinois EPA's Emergency Response Unit (217/782-3637) or Illinois ESDA (217/782-7860) if emergency coordinator determines there has been a release, fire or explosion which could threaten human health or the environment, outside the facility.	Immediately after determination made

	Notify Illinois EPA and appropriate state and local authorities, in writing that facility is in compliance with 35 IAC 264.156(h).	Prior to resuming operation in affected areas
	Report to Illinois EPA details regarding incident which required implementation of contingency plan.	Within 15 days after event
46	Submit annual report required by 35 IAC 724.175.	March 1 of each year
48	Application for permit modification amending closure plan.	Within 90 days of discovery of need for modification

ATTACHMENT D

A.2	Documentation of arrangements and agreements with local response agencies.	Within 90 days after effective date of permit

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ATTACHMENT A

MONITORING WELL CONSTRUCTION DIAGRAM

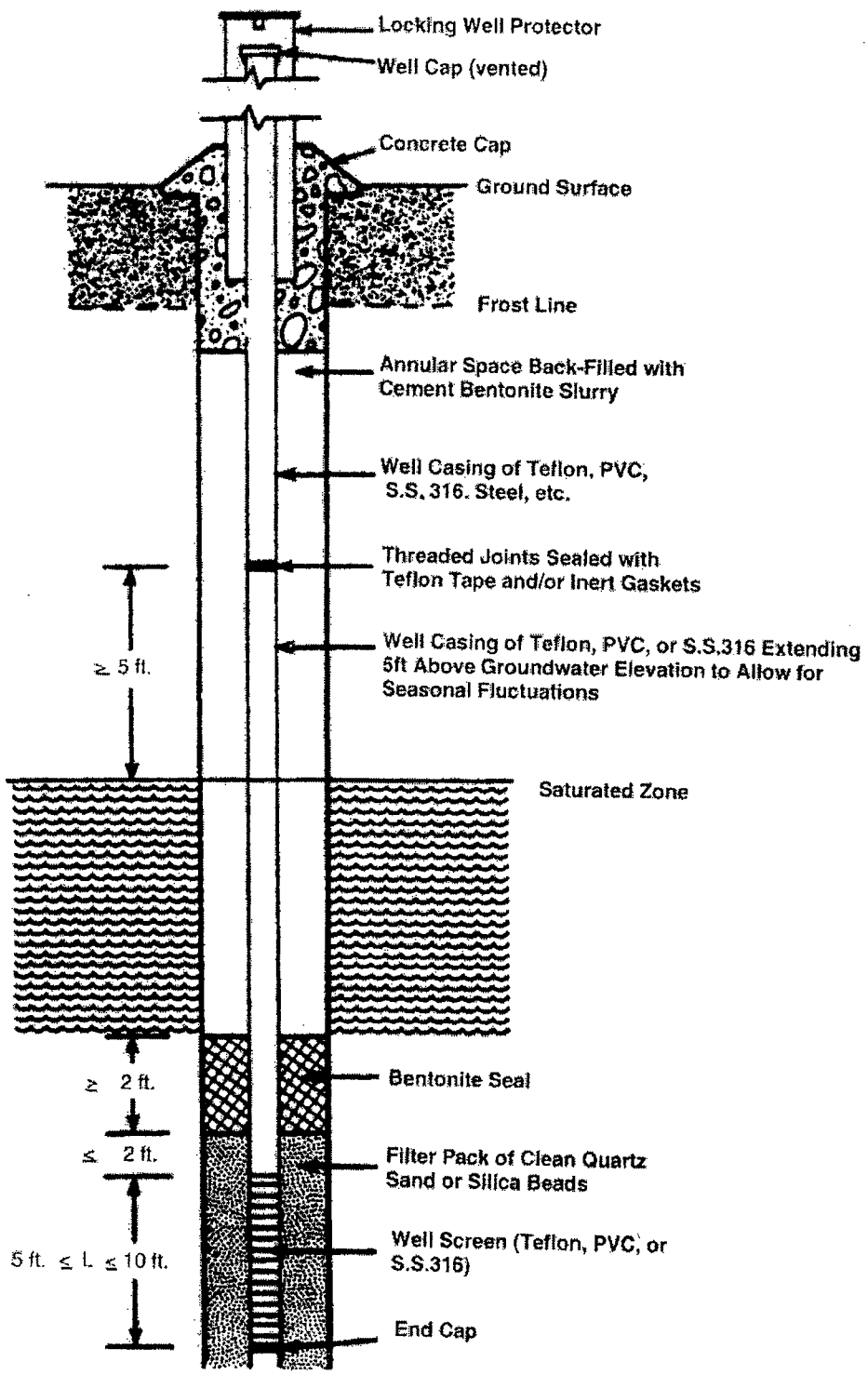
COMPLETION REPORT FOR GROUNDWATER MONITORING WELL, AND

ILLINOIS EPA GROUNDWATER FORMATTING REQUIREMENTS

ILD074411745

State ID # LPC 1970450002

Monitoring Well Diagram



Illinois Environmental Protection Agency **Well Completion Report**

Site Number: _____ County: _____

Site Name: _____ Well #: _____

State Plane Coordinate: X _____ Y _____ (or) Latitude: ____ ____ ____ Longitude: ____ ____ ____ Borehole #: _____

Surveyed by: _____ IL Registration #: _____

Drilling Contractor: _____ Driller: _____

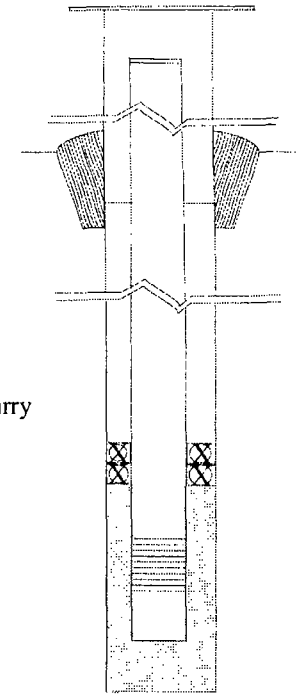
Consulting Firm: _____ Geologist: _____

Drilling Method: _____ Drilling Fluid (Type): _____

Logged By: _____ Date Started: _____ Date Finished: _____

Report Form Completed By: _____ Date: _____

ANNULAR SPACE DETAILS



Type of Surface Seal: _____

Type of Annular Sealant: _____

Installation Method: _____

Setting Time: _____

Type of Bentonite Seal - - Granular, Pellet, Slurry (Choose One)

Installation Method: _____

Setting Time: _____

Type of Sand Pack: _____

Grain Size: _____ (Sieve Size)

Installation Method: _____

Type of Backfill Material: _____ (if applicable)

Installation Method: _____

Elevations (MSL)*	Depths (BGS)	(.01ft.)
_____	_____	Top of Protective Casing
_____	_____	Top of Riser Pipe
_____	_____	Ground Surface
_____	_____	Top of Annular Sealant
_____	_____	Static Water Level (After Completion)
_____	_____	Top of Seal
_____	_____	Top of Sand Pack
_____	_____	Top of Screen
_____	_____	Bottom of Screen
_____	_____	Bottom of Well
_____	_____	Bottom of Borehole

* Referenced to a National Geodetic Datum

WELL CONSTRUCTION MATERIAL

(Choose one type of material for each area)

Protective Casing	SS304, SS316, PTFE, PVC, or Other
Riser Pipe Above W.T.	SS304, SS316, PTFE, PVC, or Other
Riser Pipe Below W.T.	SS304, SS316, PTFE, PVC, or Other
Screen	SS304, SS316, PTFE, PVC, or Other

CASING MEASURMENTS

Diameter of Borehole (inches)	
ID of Riser Pipe (inches)	
Protective Casing Length (feet)	
Riser Pipe Length (feet)	
Bottom of Screen to End Cap (feet)	
Screen Length (1st slot to last slot) (feet)	
Total Length of Casing (feet)	
Screen Slot Size **	

**Hand-Slotted Well Screens are Unacceptable

Illinois Environmental Protection Agency

Field Boring Log

Page ____ of ____

Site ID No. _____ Federal ID No. _____

Site Name: _____

Quadrangle: _____ Sec. _____ T. _____ R. _____

UTM (or State Plane) Coord. N. (X) _____ E. (Y) _____

Latitude: ____ ____ ____ (° ' ") Longitude: ____ ____ ____ (° ' ")

Boring Location: _____

Drilling Equipment: _____

County: _____

Boring No. _____ Monitoring Well No. _____

Surface Elevation: _____ Completion Depth: _____

Auger Depth: _____ Rotary Depth: _____

Date: Start: _____ Finish: _____

SAMPLES										Personnel
										G - D - H - H -
Elev.	Description of Material	Graphic Log	Depth In Feet	Sample No.	Sample Type	Sample Recovery (X)	Penetrometer	N Values (Blow Counts)	OVA or HNU Readings	REMARKS

Formatting Requirements for the 01 Record of the Electronically Submitted Groundwater and Leachate Data (the 01 Record portion of the LPC-160 is included for example purposes)

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF LAND POLLUTION CONTROL
CHEMICAL ANALYSIS FORM

Page 1 of _____

RECORD CODE: L P C S M 0 1 (1–7)

TRANS CODE: A (8)

REPORT DUE DATE ___/___/___ (36 M D Y 41)

FEDERAL ID NUMBER _____

SITE INVENTORY NUMBER _____ (9–18)

MONITOR POINT NUMBER _____ (see Instructions) (19–22)

REGION _____ CO. _____

DATE COLLECTED ___/___/___ (23 M D Y 28)

FACILITY NAME _____

FOR IEPA USE ONLY

LAB _____ (29)

DATE RECEIVED ___/___/___ (42 M D Y 47)

BACKGROUND SAMPLE (X) _____ (54)

TIME COLLECTED (24 Hr. Clock) __ __:__ __ (55 11 M 58)

UNABLE TO COLLECT SAMPLE (see Instructions) _____ (59)

MONITOR POINT SAMPLED BY (see Instructions) _____ (60)

OTHER (SPECIFY) _____

SAMPLE FIELD FILTERED — INORGANICS (X) _____ (61) ORGANICS (X) _____ (62)

SAMPLE APPEARANCE _____ (63–102)

COLLECTOR COMMENTS _____ (103–142)

LAB COMMENTS _____ (150–199)

IL 532 1213
LPC 160 01/90

This Agency is authorized to require this information under Illinois Revised Statutes, 1979, Chapter 111 ½, Section 1004 and 1021. Disclosure of this information is required. Failure to do so may result in a civil penalty up to $25,000 for each day the failure continues a fine up to $1,000.00 and imprisonment up to one year. This form has been approved by the Forms Management Center.

All analytical procedures must be performed in accordance with the methods contained in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods," SW-846, 3rd Edition, September 1986 or equivalent methods approved by the Agency. Proper sample chain of custody control and quality assurance/quality control procedures must be maintained in accordance with the facility sampling and analysis plan.

***Only Keypunch with Data in Column 35 or Columns 38-47**

KEY:

Spaces Numbered	Description	Format
Spaces 1-7	Record Code	LPCSM01
Space 8	Trans Code	A
Spaces 9-18	Site ID	0000000000
Spaces 19-22	Mon Pt ID	G000
Spaces 23-28	Date Collected	000000
Space 29	Lab	
Spaces 30-35	Filler	
Spaces 36-41	Report Due Date	000000
Spaces 42-47	Date Received	000000
Spaces 48-53	Filler 2	
Space 54	Background Sample	
Spaces 55-58	Time Collected	0000
Space 59	Unable to Collect Sample	
Space 60	Monitoring Point Sampled By	
Space 61	Field Filtered – Inorganic	
Space 62	Field Filtered – Organic	
Spaces 63-102	Sample Appearance	
Spaces 103-142	Collector Comments	
Spaces 143-149	Filler 3	
Spaces 150-199	Lab Comments	

Formatting Requirements for the 02 Record of the Electronically Submitted Groundwater and Leachate Data (the 02 Record portion of the LPC-160 is included for example purposes)

RECORD CODE | L | P | C | S | M | 0 | 2 | (1–7) TRANS CODE | A | (8) (COLUMNS 9-29 FROM ABOVE)

	FIELD MEASUREMENTS CONSTITUENT DESCRIPTION AND REQUIRED UNIT OF MEASURE	STORET NUMBER (30–34)	Remarks See Inst. (35)	Replicate (36)	< or > (37)	VALUE (38–47)
Q	TEMP OF WATER (unfiltered °F)	0 0 0 1 1				.
Q	SPEC COND (unfiltered umhos)	0 0 0 9 4				.
Q	pH (unfilted units)	0 0 4 0 0				.
Q	ELEV OF GW SURF (ft ref MSL)	7 1 9 9 3				.
Q	DEPTH OF WATER (ft below LS)	7 2 0 1 9				.
A	BTM WELL ELEV (ft ref MSL)	7 2 0 2 0				.
Q	DEPTH TO WATER FR MEA PT (ft)	7 2 1 0 9				.
						.
						.

IL 532 1213
LPC 160 01/90

This Agency is authorized to require this information under Illinois Revised Statutes, 1979, Chapter 111 ½, Section 1004 and 1021. Disclosure of this information is required. Failure to do so may result in a civil penalty up to $25,000 for each day the failure continues a fine up to $1,000.00 and imprisonment up to one year. This form has been approved by the Forms Management Center.

All analytical procedures must be performed in accordance with the methods contained in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods," SW-846, 3rd Edition, September 1986 or equivalent methods approved by the Agency. Proper sample chain of custody control and quality assurance/quality control procedures must be maintained in accordance with the facility sampling and analysis plan.

***Only Keypunch with Data in Column 35 or Columns 38-47**

KEY:

Spaces Numbered	Description	Format
Spaces 1-7	Record Code	LPCSM02
Space 8	Trans Code	A
Spaces 9-18	Site ID	0000000000
Spaces 19-22	Mon Pt ID	
Spaces 23-28	Date Collected	
Space 29	Lab	
Spaces 30-34	STORET Number	
Space 35	Remarks	
Space 36	Replicate	
Space 37	< or >	
Space 38-47	Value	

ATTACHMENT B

IEPA MONITORING WELL PLUGGING AND ABANDONMENT PROCEDURES

ILD074411745

STATE ID # LPC 1970450002

ILLINOIS EPA MONITOR WELL PLUGGING AND ABANDONMENT PROCEDURES

	Well Construction		Plugging Procedure
I. Unconsolidated Sediment Wells	I-A	...if backfilled with cement grout above bentonite seal and/or sandpack:	1. Cut casing off at desired depth. 2. Mix neat cement slurry (5 gal. water per 94 lb. bag cement). 3. Insert tremi pipe (1" i.d. pvc) into well and extend to bottom. 4. Slowly pump slurry under low pressure through temi pipe. 5. Slowly withdraw tremi pipe - making sure bottom of pipe remains below pure slurry. 6. Continue slow pumping until all formation water and the watery slurry mix is displaced from top of casing.
	I-B	...if backfilled with soft sediments (cuttings) above bentonite seal and/or sandpack:	1. Knock out and remove thin surface concrete plug, if present. 2. Re-auger entire length of well. 3. Remove well casing from re-augured borehole. 4. Mix neat cement slurry (5 gal. water per 94 lb. bag cement). 5. Insert tremi pipe (1" i.d. pvc) into augers and extend to bottom. 6. Slowly pump slurry under low pressure through tremi pipe. 7. Continue slow pumping until all formation water and the water slurry mix is displaced from top of casing. 8. Slowly withdraw tremi pipe - making sure bottom of pipe remains below pure slurry. 9. Pull a flight of augers (5" if in unstable materials and hole collapse is likely or 10" if in competent material and collapse is unlikely). 10. Top off cement slurry after each flight is removed.
	I-C	...if monitor well construciton is unknown:	1. Follow procedures in I-A.
II. Bedrock Wells	II-A	...All bedrock monitor wells:	1. Cut casing off at desired depth. 2. Mix neat cement slurry (5 gal. water per 94 lb. bag cement). 3. Insert tremi-pipe (1" i.d. pvc) into well and extend to bottom. 4. Slowly pump slurry under low pressure through tremi pipe. 5. Slowly withdraw pipe making sure bottom of pipe remains below pure slurry. 6. Continue slow pumping until all formation water and the watery slurry mix is displaced from top of casing.

ATTACHMENT C

Prediction Limit Test

The following statistical procedures must be followed as referenced in Section I (Corrective Action Program).

1) Calculate the background mean (X_b) for each parameter, using the values (X_i) from each background sampling event of upgradient wells as follows:

$$X_b = \frac{X_1 + X_2 \ldots X_n}{n}$$

Where X_i = each background value

n = the total number of background measurements

X_b = background mean

2) Calculate the background variance (S_b^2) and standard deviation (S_b) for each parameter using the values (X_i) from each background sampling event of upgradient wells as follows:

$$S_b^2 = \frac{(X_1 - \bar{X}_b)^2 + (X_2 - \bar{X}_b)^2 \ldots + (X_n - \bar{X}_b)^2}{n-1}$$

and $S_b = (S_b^2)^{1/2}$

3) Calculate the prediction limit using:

$$P = X_b + C(S_b)$$

Where C = Coefficient determined from Table 1, at the number of background measurements (n) and the number of downgradient monitoring wells to be statistically compared to upgradient wells at the facility (K) during a sampling event, such that $K \leq 5$.

P = the prediction limit

4) If the value of any routine parameter for any downgradient well exceeds the prediction limit value (P) for that parameter, the permittee shall conclude that a statistically significant difference exists between the background and routine values for that parameter for that well.

5) When some of the upgradient values are less than the Method Detection Limit (MDL), a value of one half (1/2) the MDL shall be substituted for all background values that are reported as less than the MDL. All other computations shall be calculated as given above.

TABLE 1

FACTORS FOR OBTAINING ONE-SIDED
95% PREDICTION LIMITS FOR k ADDITIONAL
SAMPLES GIVEN A BACKGROUND SAMPLE OF SIZE n

Number of new measurements (k)

n	1	2	3	4	5
4	2.63	3.56	4.18	4.67	5.08
5	2.34	3.04	3.49	3.83	4.10
6	2.18	2.78	3.14	3.42	3.63
7	2.08	2.62	2.94	3.17	3.36
8	2.01	2.51	2.80	3.01	3.18
9	1.96	2.43	2.70	2.90	3.05
10	1.92	2.37	2.63	2.82	2.96
11	1.89	2.33	2.58	2.75	2.89
12	1.87	2.29	2.53	2.70	2.83
13	1.85	2.26	2.49	2.66	2.78
14	1.83	2.24	2.46	2.62	2.74
15	1.82	2.21	2.44	2.59	2.71
16	1.81	2.20	2.41	2.57	2.68
17	1.80	2.18	2.40	2.54	2.66
18	1.79	2.17	2.38	2.53	2.64
19	1.78	2.16	2.36	2.51	2.62
20	1.77	2.14	2.35	2.49	2.60
21	1.77	2.13	2.34	2.48	2.59
22	1.76	2.13	2.33	2.47	2.57
23	1.75	2.12	2.32	2.46	2.56
24	1.75	2.11	2.31	2.45	2.55
25	1.74	2.10	2.30	2.44	2.54
26	1.74	2.10	2.29	2.43	2.53
27	1.74	2.09	2.29	2.42	2.52
28	1.73	2.09	2.28	2.42	2.52
29	1.73	2.08	2.28	2.41	2.51
30	1.73	2.08	2.27	2.40	2.50
31	1.72	2.07	2.27	2.40	2.50
32	1.72	2.07	2.26	2.39	2.49
33	1.72	2.07	2.26	2.39	2.49

TABLE 1
(Continued)

34	1.72	2.06	2.25	2.38	2.48
35	1.71	2.06	2.25	2.38	2.48
36	1.71	2.06	2.25	2.37	2.47
37	1.71	2.06	2.24	2.37	2.47
38	1.71	2.05	2.24	2.37	2.46
39	1.71	2.05	2.24	2.36	2.46
40	1.71	2.05	2.23	2.36	2.46
41	1.70	2.05	2.23	2.36	2.45
42	1.70	2.04	2.23	2.35	2.45
43	1.70	2.04	2.23	2.35	2.45
44	1.70	2.04	2.22	2.35	2.44
45	1.70	2.04	2.22	2.35	2.44
46	1.70	2.04	2.22	2.34	2.44
47	1.70	2.03	2.22	2.34	2.44
48	1.70	2.03	2.22	2.34	2.43
49	1.69	2.03	2.21	2.34	2.43
50	1.69	2.03	2.21	2.34	2.43
60	1.68	2.02	2.20	2.32	2.41
70	1.68	2.01	2.19	2.31	2.40
80	1.67	2.00	2.18	2.30	2.39
90	1.67	2.00	2.17	2.29	2.38
100	1.67	1.99	2.17	2.29	2.38

$$\text{Factor} = t(n-1,1-a/k)\,(1+1/n)^{1/2}$$

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ATTACHMENT D

ADDITIONAL SPECIAL CONDITIONS

ILD074411745

STATE ID # LPC 1970450002

Additional Special Conditions

A. Contingency Plan

1. The Permittee shall respond to any emergency situation (fire, explosion or release of hazardous waste/hazardous constituents) in accordance with the contingency plan in the approved permit application, subject to the following modifications:

   a. The emergency coordinator shall be immediately notified of any spill or release of hazardous waste or hazardous constituent, any fire, or any other emergency situation which occurs at the facility. This notification shall be made by the person observing the release, a co-worker or supervisor, or a security officer.

   b. The emergency coordinator shall notify the appropriate local and state emergency response teams as necessary when their help is needed or when there is danger to the surrounding area during an imminent or actual emergency.

   c. During an emergency, the emergency coordinator shall take all reasonable measures necessary to ensure fires, explosions, or releases do not occur, recur, or spread. These measures shall include stopping processes, stopping operation, collecting and containing waste, and removing and isolating containers.

   d. The Permittee shall not handle incompatible waste in an area where there has been a spill or release of waste until the waste has been removed from the affected area in accordance with the approved contingency plan.

   e. All wastewater generated during decontamination of the equipment used in responding to an emergency shall be managed as a hazardous waste.

2. Within sixty (60) days of the effective date of this permit, the Permittee shall:

   a. Make arrangements to familiarize police, fire departments and emergency response teams with the layout of the facility (including a tour of the facility), properties of the hazardous waste handled at the facility and associated hazards, places where facility personnel would normally be working, entrances to and roads inside the facility and possible evacuation routes. All aspects of the approved contingency plan shall also be thoroughly discussed during this time to familiarize these entities with the type of procedures to be employed by the Permittee in the event of an emergency.

   b. Make agreements in writing with local police and fire departments to:

1. Designate primary emergency authority to a specific police department and specific fire department;

2. Describe support which the other local police and fire departments will provide the primary emergency authorities.

c. Make agreements in writing with state emergency response teams and emergency response contractors to describe what kind of response these entities will provide in the event of an emergency.

d. Make arrangements to familiarize all local hospitals with the properties of hazardous waste handled at the facility and the types of injuries or illnesses which could result from fire, explosions or releases at the facility.

Documentation of these arrangements and agreements, including minutes and summaries of meetings and telephone conversations shall be submitted to the Illinois EPA's DLPC for approval within ninety (90) days of the effective date of this permit.

3. The Permittee shall contact the local police and fire departments, the local hospitals, and the concerned emergency response teams annually to:

a. Review the agreements made with each entity,

b. Review and discuss the information described in Condition A.2.a. above.

c. Discuss any changes made to the facility or contingency plan.

Copies of all communications made during the annual review, including minutes and summaries of the meetings and telephone conversations shall be incorporated into the operating record for this facility.

B. Personnel Training

1. Employees shall not work unsupervised until they have completed the training program contained in the approved permit application.

C. Reporting

1. All certifications, logs or reports which are required to be submitted to the Illinois EPA by the Permittee should be mailed to the following address:

   Illinois Environmental Protection Agency
   Permit Section
   Bureau of Land -- #33
   1021 North Grand Avenue East
   P.O. Box 19276
   Springfield, Illinois 62794-9276

2. When the Permittee is required, by a condition of this permit, to submit material for review and determination by the Illinois EPA's DLPC. The Illinois EPA review of the material will be subject to permit appeal provisions contained in Section 39(a) and 40(a) of the Environmental Protection Act.

D. 39i Certification

1. The permittee shall submit a 39(i) certification and supporting documentation within 30 days after the effective date of permit modification number 1 and thereafter within 30 days of any of the following events:

   a. the owner or operator or officer of the owner, or operator, or any employee who has control over operating decisions regarding the facility has violated federal, State, or local laws, regulations, standards, or ordinances in the operation of waste management facilities or sites; or

   b. the owner or operator or officer of the owner, or operator, or any employee who has control over operating decisions regarding the facility has been convicted in this or another State of any crime which is a felony under the laws of this State, or conviction of a felony in a federal court; or

   c. the owner or operator or officer of the owner, or operator, or any employee who has control over operating decisions regarding the facility has committed an act of gross carelessness or incompetence in handling, storing, processing, transporting or disposing of waste; or

   d. a new person is associated with the owner or operator who can sign the application or who has control over operating decisions regarding the facility, such as a corporate officer or a delegated employee.

The certification shall describe the violation(s), convictions, carelessness or incompetence as outlined in 1, 2, or 3 above and must include the date that a new person as described in 4 above began employment with the applicant.

The 39i certification and supporting documentation shall be submitted to the address specified below:

Illinois Environmental Protection Agency
Bureau of Land #33
39(i) Certification
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276

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ATTACHMENT E

POST CLOSURE INSPECTION SCHEDULE

ILD074411745

STATE ID # LPC 1970450002

Post-Closure Inspections

Inspection Schedule

Post-closure inspections will be conducted quarterly during the post-closure period. Additional inspections will be performed following precipitation events in which two inches or more of precipitation are received at the site during a 24-hour period. If such precipitation events occur within one month of one of the scheduled quarterly inspections, the precipitation event inspection will be substituted for the regular quarterly inspection. Findings made during each inspection will be recorded on the post-closure inspection log, included as Figure 10 of the approved permit application or, on a similar log. Copies of all inspection logs will be kept at the landfill. Documentation of all repairs performed or replacements required to properly maintain the site will be kept with the inspection logs. General post-closure inspection procedures will include the following:

1. Visually inspect the perimeter fence and all gates. Check for fence integrity and note any areas of damage. Note the working condition of each gate, and check to ensure that all locks and other security systems are in place and functioning.

2. Visually inspect the landfill cover and surrounding areas. Note any evidence of cover erosion, settling, or negative stress. Also note any unusual conditions such as odors, ponded water, or bubbling. Visually inspect the run-on/run-off control berms and ditches. Mark any areas requiring further inspection or repairs to the District Engineer so arrangements can be made to efficiently effect all necessary repairs.

3. Visually inspect the gas risers, flares, and venting trenches. Note any damage, malfunction, and/or clogging. Check liquid level in each riser and make arrangements for condensate removal.

4. Visually inspect each leachate collection riser and note any damage. Check and record the liquid level in each withdrawal riser for the co-disposal hill and each drum trench. If the liquid level is found to be above the maximum acceptable level (Section II, C.11.b) make arrangements for leachate removal.

5. Inspect each groundwater well cover for damage. Check the well cap and well cover lock to ensure they are functioning and have not been tampered with. Note area around wells for erosion, settling or negative stress. The monitoring wells are also utilized as permanent benchmarks. Visually inspect each benchmark. Report any missing benchmarks, and note any damage to the benchmarks.

6. Visually inspect any applicable safety and emergency equipment. Report missing and/or damaged equipment.

7. Visually inspect the groundwater remediation system each time water level measurements are obtained.

8. Inspect the components of the groundwater treatment process each working day of operation.

9. Inspect the leachate collection tanks and associated secondary containment. Check for any accumulation of standing water (from precipitation) and arrange for removal. Check for evidence of leakage. Investigate all breaches within 24 hours of occurrence and correct the problem as soon as practicable. These inspections will cover each working day whenever the portable tanks are being used.

Arrangements will also be made to repair or replace any items in order to maintain the site at a condition equal to that in the application.

Post-Closure Maintenance

Maintenance activities will respond to the needs determined from the inspections. The following items will be repaired to original conditions described in the original Post-Closure Permit Application: slopes damaged by erosion; areas of settlement, subsidence and displacement; run-on and run-off control structures; and the leachate collection and removal system. Wells will be repaired or replaced. The vegetative cover on the final cover will be: (1) mowed annually, (2) fertilized with 60 pounds of nitrogen per acre in the spring of each year (or such other amounts as indicated by soil testing), and (3) fertilized with 60 pounds of nitrogen, 150 pounds of phosphate and 80 pounds of potassium (or such other amounts as indicated by soil testing) in the late summer or early fall of each year. Any item requiring repair or maintenance will be served or replaced to provide performance equal to a new item.

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ATTACHMENT F

APPROVED PERMIT APPLICATION IDENTIFICATION

ILD074411745

STATE ID # LPC 1970450002

APPROVED PERMIT APPLICATION IDENTIFICATION

1. RCRA Part B, Post-Closure Permit Application, Laraway Recycling and Disposal Facility. Received by Illinois EPA on August 26, 1988.

2. RCRA Part B, Post-Closure Permit Application, Laraway Recycling and Disposal Facility. Revisions to the original submittal. Received by Illinois EPA on February 2, 1989. This submittal made revisions in all previously submitted sections and added Appendix 16 through Appendix 27 to the application.

3. RCRA Part B, Post-Closure Permit Application, Laraway Recycling and Disposal Facility. Revision to above mentioned submittals. This revision included a revised table of content for the complete application and a revised table of content for Section 7.

4. RCRA Part B, Post-Closure Permit Modification request, Laraway Recycling and Disposal Facility, dated April 12, 1991 and additional information submitted July 1, 1991. This modification request incorporated operating procedures for the new leachate collection system and changed the groundwater monitoring chemical analysis forms.

5. RCRA Part B, Post-Closure Permit Modification request, Laraway Recycling and Disposal Facility, dated October 5, 1991. Through this modification request, WMI sought changes to the statistical comparison procedures for dissolved iron in the detection monitoring program.

6. RCRA Part B, Post-Closure Permit Modification request, Laraway Recycling and Disposal Facility, dated September 25, 1991. This modification request incorporated informational changes in the Contingency Plan and Training Plan, and satisfied Condition A.2 of this permit.

7. RCRA Part B, Post-Closure Permit Modification request, Laraway Recycling and Disposal Facility, dated July 31, 1992 and additional information submitted October 9, 1992. This modification request incorporated leachate removal and level monitoring procedures. A request to reduce the number of parameters included in annual leachate analysis was denied.

8. RCRA Post-closure permit modification request and supporting information as follows:

    a. Addendum 1 to Document a above submitted by Patrick Ries of ATEC Associates dated November 6, 1992.

b. Addendum 2 to Document a above submitted by Patrick Ries of ATEC Associates dated January 31, 1993.

c. Temporary Authorization from Illinois EPA dated October 21, 1993.

d. Addendum 3 to Document a above dated June 30, 1994. This addendum replaced Document a.

e. Revision to Document f above dated January 5, 1995.

f. Addendum 3A dated March 22, 1995.

g. Revisions to Addendum 3A dated July 5, 1995.

h. Letter dated October 2, 1997 requesting temporary authorization for construction and operation of a soil gas vent and a force main.

i. Letter dated April 7, 1998 requesting temporary authorization to construct and operate a leachate extraction and collection system for the Drum Trenches.

j. Supplemental information dated January 26, 1999.

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ATTACHMENT G

GROUNDWATER REPORTING FORMS

ILD074411745

STATE ID # LPC 1970450002

B-1-3

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 – (217) 782-3397
JAMES R. THOMPSON CENTER, 100 WEST RANDOLPH, SUITE 11-300, CHICAGO, IL 60601 – (312) 814-6026

ROD R. BLAGOJEVICH, GOVERNOR DOUGLAS P. SCOTT, DIRECTOR

217/524-3300

September 5, 2008

Certified Mail
7007 2560 0003 2093 7911

Dennis M Wilt
Waste Management
Midwest Group
720 E. Butterfield Rd.
Lombard, Illinois 60148

Re: 1970450002 -- Will County
Laraway Recycling and Disposal Facility
ILD07441745 074 411 745
Log No. B-141-M-53
RCRA Permit File
Permit Draft

Dear Mr. Wilt:

This letter provides the Illinois EPA response to the above referenced facility's Class 3 Permit Modification Request dated March 17, 2008. It was originally issued to the facility on August 22, 2008 but was returned to the Illinois EPA as undeliverable due to an incorrect mailing address. The response includes a Draft Revised RCRA Part B Post-Closure Permit.

The required comment period began with an August 28, 2008 public notice and is scheduled to continue through October 14, 2008. Due to the delayed delivery of the enclosed response, the facility may request an extension of the comment period if it so chooses. The Illinois EPA apologizes for any inconvenience that it may have caused.

If you have any questions concerning the groundwater portions of this draft permit, please contact Scott Kaufman at 217/785-6869. If you have questions regarding any other aspects of the Permit, please contact Mark Crites at 217/524-3269.

Sincerely,

Stephen F Nightingale by TJD

Stephen F. Nightingale, P.E.
Manager, Permit Section
Bureau of Land

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DSK TJD

Attachment: August 22, 2008 Illinois EPA response

cc: USEPA Region V, Dale Meyer – w/o Attachment
(Laraway Repository) – w/o Attachment

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 – (217) 782-3397
JAMES R. THOMPSON CENTER, 100 WEST RANDOLPH, SUITE 11-300, CHICAGO, IL 60601 – (312) 814-6026

ROD R. BLAGOJEVICH, GOVERNOR DOUGLAS P. SCOTT, DIRECTOR

217/524-3300

August 22, 2008

Certified Mail
7007 2560 0003 2093 7522

Dennis M Wilt
Laraway Recycling and Disposal Facility
21101 W. Laraway Rd.
Elwood, Illinois 60421

Re: 1970450002 -- Will County
Laraway Recycling and Disposal Facility
ILD07441745
Log No. B-141-M-53
RCRA Permit File
Permit Draft

Dear Mr. Wilt:

This is in response to a document entitled, "Class 3 Permit Modification", dated March 17, 2008 and received by the Illinois EPA on March 18, 2008. The subject document requested revisions to Section I of the facility's RCRA Part B Post-Closure Permit (Permit) which requires corrective action for releases to groundwater at the facility. The subject submittal was reviewed as a Class 3 permit modification request pursuant to 35 Ill. Adm. Code 703.283.

Upon review of the subject submittal, the Illinois EPA has determined that a number of the modification requests can be approved and that the corresponding conditions of the Permit can be revised accordingly. A summary of revisions to the Permit are included as Attachment A to this letter. However, the Illinois EPA has determined that a number of modification requests in the subject submittal cannot be approved and are discussed as follows:

1. Condition I.C.1, Table 1:

   a. The proposal to revise footnote "(1)" and add that footnote to the Table 1 GMZ monitoring wells G124, G126, A128, G130, G132, R134, R139, G136, G137, G142, and G161 is a proposal to discontinue groundwater quality monitoring at those wells that cannot be approved. The proposal reduces the number of GMZ wells collecting groundwater quality data by nearly half and increases the spacing of monitoring wells collecting groundwater quality data at the point of compliance from approximately 300 ft to approximately 600 ft. The Illinois EPA does not concur that this is appropriate given the hydrogeologic conditions at the site and the significant changes to the groundwater extraction system that have been requested and approved as discussed below.

b. The proposal to remove monitoring well R144 from Table 1 cannot be approved. Arsenic has been consistently detected in well R144, and arsenic has not been approved for deletion from the groundwater constituents monitoring lists in Condition I.D (see comments to Condition I.D.1 below). Therefore, continued monitoring of that well is required.

2. Condition I.C.1, Table 2:

a. The proposal to discontinue groundwater quality monitoring at wells G53D, G53S, and R122 cannot be approved due to their locations downgradient of Area 2 and proximity to an area of contamination addressed by extraction well EW-8, which is approved for shutdown.

b. The proposal to discontinue groundwater quality monitoring at Well G145 cannot be approved due to observed arsenic exceedences in that well.

3. Condition I.D.1, List D1:

a. The proposal to discontinue monitoring of arsenic in groundwater was denied for the reasons discussed in Condition 3.c of the December 5, 2007 Illinois EPA letter (Log No. B-141-M-48, 50 and 51) and Condition 1 of the December 6, 2007 Illinois EPA letter (Log No. B-141), and is once again denied herein. The facility must continue to monitor for arsenic in groundwater in all wells where groundwater quality monitoring is required, and must address all exceedences of the concentration limit for arsenic in a manner that meets the requirements of the Permit.

4. Condition I.D.1, List D2:

a. The proposal to discontinue monitoring of arsenic in groundwater has been denied. See Comment to Permit Condition I.D.1, List D1 above.

b. The Illinois EPA has determined that it cannot approve the proposal to remove the PQLs from List D3. The listed PQLs provide important information for reporting requirements and statistical evaluations that must remain in the Permit.

c. The Illinois has determined that it cannot approve the proposal to remove barium, chromium, lead, and 1,2-dichloropropane from List D3 due to the listing of required PQLs for those parameters.

5. Condition I.G.2.a:

   a. The Illinois EPA has determined that it cannot approve the request to modify Condition I.G.2.a to exclude iron and arsenic due to the following:

      i. Condition 2 of the September 5, 2002 Illinois EPA letter (Log No. B-141-M-23) approved the removal of iron from List D1, but required continued annual evaluation or iron via List 3. Recent annual reports indicate continued increasing trends for iron in groundwater and the Illinois EPA believes that it should continue to be monitored.

      ii. The proposal to discontinue monitoring of arsenic in groundwater was denied for the reasons discussed in Condition 3.c of the December 5, 2007 Illinois EPA letter (Log No. B-141-M-48, 50 and 51) and Condition 1 of the December 6, 2007 Illinois EPA letter (Log No. B-141), and is once again denied herein. The facility must continue to monitor for arsenic in groundwater in all wells where groundwater quality monitoring is required, and must address all exceedences of the concentration limit for arsenic in a manner that meets the requirements of the Permit.

6. Condition I.G.2.b:

   a. The proposal to revise Condition I.G.2.b to refer to Conditions I.H.7 and/or I.H.8 cannot be approved. The current reference to Conditions I.H.6 and/or I.H.7 are correct.

Attached is a draft Class 3 modification to the Laraway Recycling and Disposal Facility (Laraway) RCRA Part B Permit and Fact Sheet for the above-referenced facility. The draft Class 3 modification is based on the administrative record contained in the Illinois EPA's files. The contents of the administrative record are described in 35 Ill. Adm. Code 705.144.

Under the provisions of Title 35 Ill. Adm. Code 705.141(d), the draft Class 3 modification and administrative record must be publicly noticed and made available for public comment. Copies of the draft decision, fact sheet and application are available for review at the following location:

Manhattan Public Library District
240 Whitson St.
Manhattan, IL 60442

During the comment period, the applicant or any interested party may submit comments to the Illinois EPA on the draft Class 3 modification. At the close of the comment period, the Illinois EPA will prepare a response to significant comments. Comments on the draft Class 3 modification may be submitted to:

Illinois Environmental Protection Agency
Government and Community Affairs Section, Director's Office
Attn: Mara McGinnis
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9296

Illinois EPA will issue a final permit after the close of the public comment period unless the Illinois EPA decides to reverse the tentative decision. The appeal process and limitations are addressed in 35 Ill. Adm. Code 705.212.

If you have any questions concerning the groundwater portions of this draft permit, please contact Scott Kaufman at 217/785-6869. If you have questions regarding any other aspects of this draft permit, please contact Mark Crites at 217/524-3269.

Sincerely,

Stephen F. Nightingale, P.E.
Manager, Permit Section
Bureau of Land

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TBM DSK MLC

Attachments: Attachment A - Changes to the RCRA Part B Permit Included in This Class 3 Modification
Fact Sheet
Draft Class 3 Modification

cc: USEPA Region V, Dale Meyer – w/Attachments
(Laraway Repository) – w/Attachments

ATTACHMENT A

Changes to the RCRA Part B Permit Included in This Class 3 Modification

B-141-M-53

1. Condition I.C.1, Table 1 GMZ Wells:

   a. The proposal to discontinue groundwater extraction at wells EW-2, EW-3, EW-5, EW-7, and EW-8 has been approved. Footnote "(2)" of Condition I.C.1, Table 1 has been revised to read:

      "(2) Extraction well currently off-line. The well must be maintained in accordance with the requirements of Condition I.C.7 in the event that additional hydraulic control becomes necessary."

   b. The proposal to remove extraction well EW-9 has been approved under the condition that the well is properly abandoned in accordance with Condition I.C.4 of the Permit. Condition I.C.1 of the Permit has been revised to include footnote "(3)" which will read:

      "(3) Extraction well approved for abandonment."

   c. The proposal to remove yet-to-be installed extraction wells EW-10, EW-11 and EW-12 has been approved. These extraction wells have been deleted from Condition I.C.1 and footnote "r*" has been deleted.

2. Condition I.C.1, Table 2 Observation System Wells:

   a. The proposal to discontinue groundwater quality monitoring at Wells R114, G147 and G149 has been approved due to their upgradient locations. To avoid confusion with Table 1, the footnote "**" has been added which reads as follows:

      "** -- represents monitoring well used only for groundwater elevation measurements."

   b. The proposal to add monitoring wells G105, G109, G167, G168, and G169 to the Table 2 Observation System wells has been approved. Condition I.C.1 has been revised accordingly.

   c. The proposal to remove well G160 from Table 2 has been approved. Condition I.C.1 has been revised accordingly. Well G160 must be properly abandoned in accordance with the requirements of Condition I.C.4 of the Permit.

3. Condition 1.D.1, List D1

   a. The proposal to discontinue monitoring of TOC has been approved. List D1 has been revised accordingly.

   b. The proposal to change the concentration limit for 1,2-dichloropropane to the Class I GQS of 5 ug/L has been approved. List D1 has been revised accordingly.

4. Condition 1.D.1, List D2

   a. The proposal to discontinue monitoring of TOC has been approved. List D2 has been revised accordingly.

   b. The proposal to change the concentration limit for 1,2-dichloropropane to the Class I GQS of 5 ug/L has been approved. List D2 has been revised accordingly.

5. Condition 1.D.1, List D4 - The title of List D4 has been revised to indicate semi-annual sampling.

6. Condition I.E.3 - It has been revised to read:

   "... at least annually from the monitoring wells listed...".

7. Condition I.E.4 - It has been revised to read:

   "...and every two years (during the second quarter), or...".

8. Condition I.F.3 - It has been revised to read:

   "Samples shall be analyzed according to the procedures specified in the approved Permit Application or as otherwise approved by the Illinois EPA."

9. Condition I.G.1 - It has been revised to read:

   "...during the fourth quarter sampling events identified...".

10. Condition I.H.5 - The proposal to include well maintenance reports required by Condition I.H.9 in semi-annual Corrective Action Reports has been approved. Condition I.H.5 will be revised to include I.H.5.c which will read:

    "c. Groundwater extraction system maintenance information required by Condition I.H.9 below."

11. Attachment D, Additional Special Conditions, Condition D.1 has been added to address new requirements for prior conduct certification pursuant to 39i of the Act.

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 – (217) 782-3397
JAMES R. THOMPSON CENTER, 100 WEST RANDOLPH, SUITE 11-300, CHICAGO, IL 60601 – (312) 814-6026

ROD R. BLAGOJEVICH, GOVERNOR DOUGLAS P. SCOTT, DIRECTOR

FACT SHEET
RCRA HAZARDOUS WASTE PERMIT RENEWAL
Waste Management of Illinois, Incorporated
Laraway Recycling and Disposal Facility
Elwood, Illinois
RCRA Log No. B-141-M-53

This fact sheet has been prepared pursuant to the requirements of Title 35 Illinois Administrative Code (35 IAC) Section 705.143. The fact sheet is intended to be a brief summary of the principal facts and significant factual, legal, methodological, and policy questions considered in preparing this draft RCRA post-closure Class 3 permit modification . This draft Class 3 permit modification will require Laraway Recycling and Disposal Facility to make specific changes to its Groundwater Corrective Action Program. The Permittee will continue to provide post-closure care for two hazardous waste landfill units identified by the permittee as Area 1 and Area 2 as required by the terms of this permit. Pursuant to 35 IAC 705.143(a), this fact sheet is sent to the applicant and to any other person who requests it.

I. INTRODUCTION

The Laraway Recycling and Disposal Facility has requested modifications to the groundwater Corrective Action Program required by Section I of the Permit. The request has been made as a Class 3 permit modification request pursuant to 35 Ill. Adm. Code 703.283.

The draft Class III permit modification for Laraway Recycling and Disposal Facility contains all of the applicable standard conditions required by 35 IAC Parts 702, 703, and 724; and the applicable conditions of 35 IAC Part 724 for post-closure care of the Area 1 and Area 2 landfill units. Laraway Recycling and Disposal Facility has been providing post-closure care for these units in accordance with the post-closure permit issued November 3, 1989. Other than the changes to Section I of the permit, the facility and its post-closure activities will continue under the existing permit.

II. DESCRIPTION OF FACILITY

A. General

The Laraway Recycling and Disposal Facility is owned and operated by Waste Management of Illinois, Inc. It was a commercial facility involved in storage, treatment and disposal of solid and hazardous waste. At the present time the facility is permitted to receive only non-hazardous waste in separate permitted landfills on-site. Nearly all of the hazardous wastes landfilled at the facility were generated by off-site industries.

The total property encompasses approximately 157 acres, of which 110 acres were permitted for waste management in 1972 by Illinois EPA. Of that 110 acres, Landfill Areas 1 and 2 occupy about 55 acres of what was previously permitted for waste disposal. Non-hazardous waste disposal activities are governed by a separate state permit.

The purpose of the RCRA post-closure permit is to require that all of the hazardous waste management units where hazardous waste was left in place at closure receive post-closure care for at least thirty years after closure. The post-closure care period began on September 10, 1992. Groundwater monitoring must continue through the post-closure care period. Inspections during this post-closure care period must identify any maintenance needed, including, but not limited to, maintaining the integrity of the final cover system and vegetation. A written record of the post-closure inspections and maintenance activities performed must be kept at the facility.

B. Site Description

Laraway Recycling and Disposal Facility is located within the West 1/2 of the Northeast 1/4 and East 1/2 of the Northwest 1/4 of Section 31, Township 35 North, Range 10 East of the Third Principal Meridian, in Will County, Illinois. Laraway Recycling and Disposal Facility is located approximately 2 miles southwest of Joliet, Illinois. Laraway Recycling and Disposal Facility's mailing address is: Laraway Recycling and Disposal Facility, 21101 West Laraway Road, Elwood, Illinois 60421.

C. Groundwater Corrective Action Program

The issues addressed in the subject Permit Modification Request are in regard to the facility's Groundwater Corrective Action Program. The Groundwater Corrective Action Program is comprised of a groundwater recovery and monitoring system for the areas that are contaminated, and a groundwater monitoring system for the areas that are not contaminated. The Groundwater Corrective Action Program is designed to remove groundwater contamination and ensure compliance with the Groundwater Protection Standards.

A release to the groundwater occurred in 1989. Since that time, the facility has installed groundwater monitoring wells to sample and analyze the constituents in groundwater on a quarterly basis. The facility has also installed groundwater extraction wells, filtration, and air stripping equipment, to remove the contamination from the groundwater. The groundwater extraction wells (also known as groundwater recovery wells) are pumped to maintain an inward hydraulic gradient (i.e., keeping groundwater from flowing off-site) so as to prevent off-site contamination of surrounding properties. This corrective action process will continue until the facility has met the applicable Groundwater Protection

Standards. Permit Section I is specific to the Groundwater Corrective Action Program and implements the regulatory requirements of Title 35 Ill. Adm. Code 724, Subpart F.

III. REVISIONS TO THE PERMIT

Based on information provided in the subject submittal and current groundwater conditions at the facility, the proposed revisions to the Groundwater Corrective Action Program would allow Laraway to:

- Discontinue groundwater withdrawal at five of nine groundwater extraction wells;
- Abandon a sixth extraction well to make way for an expansion of the nonhazardous solid waste portion of the facility;
- Remove three yet-to-be installed extraction wells from Condition I.C.1, Table 1 of the permit;
- Discontinue groundwater quality monitoring at 3 of 19 monitoring wells requested;
- Add five new wells to the monitoring well network;
- Abandon 1 monitoring well;
- Revise the concentration limit for 1,2-dichloropropane based on the appropriate Groundwater Quality Standard;
- Add language to require groundwater extraction maintenance reports with semi-annual groundwater reports;
- Removal of total organic carbon (TOC) from the list of groundwater monitoring parameters; and
- Correction of typographical errors and minor revisions of Permit language that do not affect permit requirements;

The Illinois EPA has determined that some portions of the Permit Modification Request cannot be approved. They are as follows :

- Discontinue groundwater quality monitoring at 16 of 19 monitoring wells requested;
- Removal of arsenic from the semi-annual list of groundwater monitoring parameters;
- Removal of listed practical quantitation limits (PQLs) from the List D3 monitoring parameters;
- Request to exclude iron and arsenic from the requirements of Condition I.G.2.a
- Request to revise Condition I.G.2.b to refer to Conditions I.H.7 and I.H.8.

The Illinois EPA also added Condition D.1 to Attachment D of the Permit. This new condition addresses new requirements for prior conduct certification pursuant to Section 39i of Illinois' Environmental Protection Act (Act).

IV. PROCEDURES FOR REACHING A FINAL DECISION

Pursuant to 35 Illinois Adm. Code 705.162(a)(2), the public is given forty-five (45) days to review the application and comment on the draft Permit conditions prior to final action by the Illinois EPA. The comment period will begin on August 28, 2008, and will end on October 14, 2008.

When the Illinois EPA makes its final Class 3 permit modification decision, notice will be given to the applicant and to each person who has submitted written comments or requested notice of the final Permit decision. The Permit will become effective thirty-five (35) days after service of notice of the decision or at a later date if stated in the permit unless the permit decision is appealed.

Copies of the Class 3 permit modification application, draft Class 3 permit modification and this technical fact sheet are available for review at:

Manhattan Public Library District
240 Whitson St.
Manhattan, IL 60442

The Illinois EPA's Administrative Record for this Laraway Recycling and Disposal Facility Class 3 permit modification is open for public inspection by appointment only, at the Illinois EPA Springfield headquarters from 8:30 a.m. to 5:00 p.m., Monday through Friday. The administrative record contains the Class 3 permit modification, draft Class 3 permit modification, fact sheet and other supporting documents and correspondence submitted to the Illinois EPA. Inspections of the administrative record must be scheduled in advance by contacting Mara McGinnis at the address listed below.

For further information regarding the permit process or to submit written comments on the draft permit, please contact:

Ms. Mara McGinnis
Office of Community Relations (#5)
Illinois Environmental Protection Agency
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276
217/524-3288

In response to requests received during the comment period or at the discretion of the Illinois EPA, a public hearing may be held to clarify one or more issues concerning the Permit application. A request for a public hearing must be in writing and shall state the nature of the issues proposed to be raised in the hearing. Please mail hearing requests to Ms. McGinnis at the address above. Public notice will be issued forty-five (45) days before any public hearing.

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

DRAFT

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 – (217) 782-3397
JAMES R. THOMPSON CENTER, 100 WEST RANDOLPH, SUITE 11-300, CHICAGO, IL 60601 – (312) 814-6026
ROD R. BLAGOJEVICH, GOVERNOR DOUGLAS P. SCOTT, DIRECTOR

RCRA Post-Closure Permit Log B-141

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

RCRA POST-CLOSURE PERMIT

1970450002 -- Will County
ILD074411745
Waste Management of Illinois, Inc.
Laraway Recycling & Disp Fac
RCRA -- Post-Closure Permit - Administrative Record

Issue Date: September 29, 1989
Effective Date: November 3, 1989
Expiration Date: November 3, 1999
Modification Date:

Waste Management of Illinois, Inc.
William R. Schubert, Vice President
720 Butterfield Road
Lombard, Illinois 60148

Waste Management of Illinois, Inc.
Laraway Recycling and Disposal Facility
Attn: Scott Combis
21101 West Laraway Road
Elwood, Illinois 60424

This RCRA permit modification is hereby granted pursuant to the Illinois Environmental Protection Act, and Title 35 Illinois Administrative Code (Title 35 Ill. Adm. Code) parts 702, 703, 705, and 720 through 729 to Waste Management of Illinois, Inc. (WMI) for post-closure care of a waste management facility which was previously involved in the treatment and disposal of hazardous waste. WMI's Laraway Recycling and Disposal Facility is located within the W 1/2 of the NE 1/4 and E 1/2 of the NW 1/4, Section 31, Township 35 North, Range 10 East of the 3rd Principal Meridian, Will County, Illinois. When final, this permit will supercede all previous permits.

This permit modification consists of the conditions contained herein (including those in any attachments and appendices) and applicable regulations contained in the Illinois Environmental Protection Act and Title 35 Ill. Adm. Code Parts 702, 703, 705 and 720 through 729 in effect on the effective date of this permit. The Environmental Protection Act (Ill. Rev. Stat., Chapter 111 1/2, Section 1039) grants the Illinois Environmental Protection Agency the authority to impose conditions on permits which are issued.

If you have any questions regarding this permit, please contact Mark L. Crites at 217/524-3300.

Sincerely,

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Stephen F. Nightingale, P.E.
Manager, Permit Section
Bureau of Land

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RCRA POST-CLOSURE PERMIT

ISSUED TO

LARAWAY RECYCLING AND DISPOSAL FACILITY

ELWOOD, ILLINOIS

STATE ID # LPC 1970450002

ILD074411745

Part B PERMIT LOG NO. 141

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RCRA POST-CLOSURE PERMIT

LARAWAY RECYCLING AND DISPOSAL FACILITY

ELWOOD, ILLINOIS

STATE ID # LPC 1970450002

ILD074411745

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LIST OF ATTACHMENTS
State ID # LPC 1970450002
ILD074411745

Attachment A -- Monitoring Well Construction Diagram,
Completion Report for Groundwater Monitoring Well,
and Illinois EPA Groundwater Formatting Requirements

Attachment B -- IEPA Monitoring Well Plugging Procedures

Attachment C -- Prediction Limit Test

Attachment D -- Additional Special Conditions

Attachment E -- Post-Closure Inspection
Schedule

Attachment F -- Approved Permit Application
Identification

Attachment G -- Groundwater Reporting Forms

Attachment H -- Statistical Procedures Flow Chart

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GENERAL FACILITY DESCRIPTION
LARAWAY RECYCLING AND DISPOSAL FACILITY
Elwood, Illinois
ILD074411745

I. General

The Laraway Recycling and Disposal Facility is owned and operated by Waste Management of Illinois, Inc. (WMI). It was a commercial facility involved in storage, treatment and disposal of solid and hazardous waste. At the present time the facility is only permitted to receive municipal incinerator ash, non-hazardous special waste, construction debris, and non-putrescible waste into permitted solid waste landfill units at the facility. Nearly all of the hazardous wastes handled at the facility were generated off-site by various industries.

The total property encompasses approximately 157 acres. Of the total, 110 acres were permitted for waste management in 1972 by the Illinois EPA's Division of Land Pollution Control (DLPC). Of that 110 acres, Landfill Areas 1 and 2 occupy about 55 acres of what was previously permitted for solid and hazardous waste disposal.

The purpose of this RCRA Post-Closure Permit is to require that all of the hazardous waste management units where hazardous waste is left in place at closure receive post-closure care for at least thirty (30) years after the date their closure certifications are approved by the Illinois EPA's DLPC or the date this Post-Closure Permit becomes effective, whichever is later. Groundwater monitoring must continue through the post-closure care period. Inspections during this post-closure care period must identify any maintenance needed, including, but not limited to, maintaining the integrity of the final cover system and vegetation. A written record of the post-closure inspections and maintenance activities performed must be kept at the facility.

II. Site Description

The Laraway Recycling and Disposal Facility is located within the W 1/2 of the NE 1/4 and E 1/2 of the NW 1/4, Section 31, Township 35 North, Range 10 East of the 3rd Principal Meridian, Will County, Illinois. The Laraway Recycling Disposal Facility is located approximately 2 miles southwest of Joliet, Illinois. The Laraway Recycling and Disposal Facility's mail address is, Laraway Recycling and Disposal Facility, 21101 West Laraway Road, Elwood, Illinois 60421. A portion of the USGS Topograph Map, NW 1/4 Wilmington 15' Quadrangle is included as Figure 5 of the Approved Permit Application to show the exact location of the Laraway Recycling and Disposal Facility.

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LIST OF PLANS AND DOCUMENTS CONTAINED IN THE APPROVED PERMIT APPLICATION

Under Illinois solid and hazardous waste requirements, the Permittee has prepared the following formal plans and documents covering various facets of the design, operation, and monitoring of hazardous waste management units. The location of each plan or document in the Approved Permit Application is included.

Plan or Document	Location in the Approved Permit Application
1. Contingency Plan	Section 7.0*
2. Training Program	Section 6.6*
3. Groundwater Sampling and Analysis Procedures	Section 5
4. Groundwater Monitoring System	Section 5
5. Post-Closure Plan	Section 6

*The Contingency Plan and Training Plan were modified by a permit modification request identified in Item 6 of Attachment F.

All of the above referenced documents were also modified by a permit modification request identified in Item 8 of Attachment F.

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SECTION I
CORRECTIVE ACTION PROGRAM

A. SUMMARY

Hazardous constituents released from Laraway Recycling and Disposal Facility have been detected in groundwater within the upper Silurian Dolomite. The contamination is located at the closed RCRA codisposal landfill designated as "Area 1" and extends beyond the Point of Compliance. As a result, the Corrective Action Program detailed in this section must be implemented to remove the groundwater contamination and ensure compliance with the Groundwater Protection Standards. The Corrective Action Program is designed to meet the requirements of 35 Ill. Adm. Code 724.200 and includes conditions pursuant to Section 39(d) of the Environmental Protection Act to achieve compliance with additional State administrative rules.

The Corrective Action Program is comprised of a groundwater recovery and monitoring system for the areas which are contaminated (hereafter this contaminated area is referred to as the "Groundwater Management Zone") and a groundwater monitoring system for the areas which are not contaminated (hereafter this area is referred to as the "Observation Monitoring Zone"). The Program includes:

1. Establishment of a 35 Ill. Adm. Code 620.250 Groundwater Management Zone (GMZ). A GMZ is a three-dimensional region containing groundwater being managed to mitigate impairment caused by the release of contaminants from a site that is subject to corrective action or for which the owner/operator undertakes an adequate corrective action in a timely and appropriate manner and provides written confirmation to the Illinois EPA;

2. Extraction of contaminants dissolved in the groundwater through the pumping of well(s) located within the GMZ. This extraction is also designed to maintain hydraulic control of the flow of groundwater within the GMZ. The hydraulic control should prevent further off-site migration of contaminants from the boundaries of the facility and draw groundwater containing dissolved organic and inorganic contaminants, which had previously migrated off-site, back to the facility boundary.

3. Monitoring to ensure the effectiveness of the groundwater recovery system within the GMZ. This monitoring will involve: (a) evaluating the zone of influence of the groundwater recovery system and (b) groundwater sampling and analysis to monitor the reduction of contaminant concentrations.

4. Monitoring in the area designated as the Observation Monitoring Zone. This monitoring will determine if groundwater located outside the GMZ is in compliance with the Groundwater Protection Standard and will identify additional hazardous constituents which may be present in the uppermost aquifer.

B. IMPLEMENTATION

1. The Permittee shall implement the corrective action program established in this Permit upon the effective date of this Permit modification. On that date, the corrective action and groundwater monitoring requirements set forth in this Permit shall supersede those established in the previous Post-Closure Part B Permit for Laraway Recycling and Disposal Facility.

2. The compliance period when the groundwater protection standard applies is the number of years equal to the active life of the waste management area (including any waste management activity prior to permitting and the closure period). The compliance period at the Laraway Recycling and Disposal Facility has been defined as thirty (30) years following the issuance of the November 3, 1989 Post-Closure permit.

3. The corrective action program shall continue during the compliance period until the Permittee demonstrates the groundwater protection standard has not been exceeded for four (4) consecutive quarters. However, if the owner or operator is engaged in a corrective action at the end of the defined compliance period, the compliance period is extended until the owner/operator can demonstrate that the groundwater protection standard has not been exceeded for three (3) consecutive years.

4. The uppermost aquifer is defined as a composite zone consisting of outwash sand and gravel deposits, where present and the underlying weathered, fractured, and/or jointed Silurian Dolomite.

5. The point of compliance is specified as the vertical plane hydraulically down-gradient of the waste management unit that is delineated at the ground surface by an imaginary line that connects the monitoring points identified below, in Condition C as point of compliance wells. The point of compliance extends down into the uppermost aquifer underlying the regulated unit.

C. WELL LOCATIONS AND CONSTRUCTION

1. The wells/piezometers, as identified in the tables below, shall be maintained as part of the Corrective Action Program.

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TABLE 1. Groundwater Management Zone -- wells within the GMZ. The geographic location of each well is shown in Figure 5-2 of the application for permit modification.

IEPA Well No.	Well Depth (ft. bgs.)	Boring Depth (ft. bgs)	Ground Surface Elevation (ft. MSL)	Top of Casing Elevation (ft MSL)	Well Screen Interval (ft. MSL)	Screen Length (ft.)
m G123	51.4	53.0	619.73	622.68	587.53--568.33	19.2
m G124	45.6	47.0	618.36	620.86	587.16--572.76	14.4
m G125	50.5	52.0	618.94	621.79	587.24--568.44	19.12
m G126	50.6	52.0	619.12	622.07	587.62--568.52	19.1
m G127	54.2	56.0	620.01	623.26	585.01--565.81	19.2
m A128	51.0	57.0	622.35	625.60	581.35--571.35	10.0
m R29S	45.5	46.0	623.24	625.44	582.74--577.74	5.0
m R29D	55.5	58.0	622.91	624.61	572.41--567.41	5.0
m G130	61.0	61.0	624.52	627.37	583.83--564.62	19.2
m G131	63.6	65.0	624.41	627.01	579.87--560.81	19.1
mG132	60.7	62.0	620.76	623.26	579.26--560.06	19.2
m G133	60.0	61.5	622.11	625.01	581.81--562.11	19.7
m R134	50.0	50.5	623.30	625.05	583.30--573.30	10.0
m R139	36.6	38.0	620.83	622.93	589.23--584.23	5.0
m G135	60.8	61.5	622.11	625.16	580.41--561.31	19.15
m G136	61.0	62.0	621.96	624.93	584.96--560.96	24.0
m G137	58.1	61.0	621.23	623.88	587.13--563.13	24.0
m G138	59.0	62.0	621.63	624.63	587.43--562.63	24.8
m G161	41.0	42.0	621.49	623.60	585.49--580.49	5.0
m G142	49.8	50.0	618.57	621.77	588.07--568.77	19.3
m R144	40.0	40.5	618.07	621.67	588.07--578.07	10.0
m R4D2	59.0	59.0	620.16	620.56	567.16--561.66	5.5
m R40S	38.5	39.5	619.0	621.76	585.71--580.51	5.2
r EW-1(1)	N/A	N/A	N/A	N/A	N/A	20.0
r EW-2(2)	54.5	54.5	620.06	620.56	586.66--567.77	19.0
r EW-3(2)	65.5	65.5	623.18	623.68	579.18--559.18	20.0
r EW-4	66.5	66.5	624.36	624.86	579.36--559.36	20.0
r EW-5(2)	57.5	57.5	620.87	621.37	584.87--564.87	20.0
r EW-6	63.5	63.5	623.96	624.46	581.96--561.96	20.0
r EW-7(2)	58.5	58.5	621.77	622.21	584.71--564.71	20.0
r EW-8(2)	57.5	57.5	622.14	622.64	586.14--566.14	20.0
r EW-9(3)	50.5	50.5	613.77	614.27	584.77--564.77	20.0

(1) EW-1 is installed but is not being used at present time. If field conditions dictate, EW-1 may be redeveloped to correct silting problems or it may be replaced. Conversely, EW-1 may not be needed at all.
(2) Extraction well currently off-line. The well must be maintained in accordance with the requirements of Condition I.C.7 in the event that additional hydraulic control becomes necessary.
(3) Extraction well approval for abandonment.
m -- represents point of compliance monitoring well
r -- represents groundwater recovery well

TABLE 2. Observation System -- wells outside the Groundwater Recovery Zone. The geographic location of each well is shown in Figure 5-2 of the application for permit modification.

IEPA Well No.	Well Depth (ft. bgs.)	Boring Depth (ft. bgs)	Ground Surface Elevation (ft. MSL)	Top of Casing Elevation (ft MSL)	Well Screen Interval (ft. MSL)	Screen Length (ft.)
m R122	44.0	45.0	620.52	623.07	586.52--576.52	10.0
m R143	41.0	40.0	N/A	N/A	592.57--577.57	15.0
m G53S	39.0	39.0	624.79	627.84	591.29--585.79	5.5
m G53D	49.5	64.0	624.73	627.88	570.73--565.23	5.5
*R112	49.0	50.0	613.03	615.97	574.07--564.07	10.0
**R114	43.5	43.5	624.65	627.25	591.65--581.15	10.5
m G145	61.0	63.0	618.50	621.32	587.17--557.57	29.6
m G146	53.5	57.0	618.04	620.79	583.74--564.54	19.2
** G147	54.1	57.0	617.38	620.38	584.37--565.27	19.1
m G148	50.4	51.0	618.08	620.77	581.89--567.59	14.3
** R149	37.2	39.0	622.74	625.36	590.64--585.64	5.0
G105	50.2	50.5	622.84	625.65	577.84—572.84	5.0
G109	48.0	48.0	617.57	619.99	574.79—569.79	5.0
G167	39.0	39.5	605.30	607.80	576.30—566.72	9.58
G168	46.0	47.0	611.74	614.28	575.74—566.17	9.58
G169	55.5	56.0	618.61	621.39	573.11—563.53	9.58

* -- represents background monitoring well
** -- represents monitoring well used only for groundwater elevation measurements
m -- represents point of compliance monitoring well

2. Written approval from the Illinois EPA must be obtained prior to changes being made to the facility's Groundwater Recovery System. The Permittee shall submit a proposal

for the installation and addition, or for the removal, of any Groundwater Recovery System well, located within the GMZ as it is currently defined in Condition C.1 (Table 1) above. This proposal shall be in the form of a Class I* Permit Modification Request.

3. This permit may be modified by the Permittee or the Illinois EPA in accordance with 35 Ill. Adm. Code 705.128 if information becomes available that the current well spacing is not adequate to detect contamination from the hazardous waste management areas to the uppermost aquifer.

4. Construction of each new or replacement monitoring well/piezometer shall be in accordance with the "Cross-Section of Typical Monitoring Well" diagram contained in Attachment A to this Permit, or details and diagrams approved by the Illinois EPA's Division of Land Pollution Control (DLPC). Each new monitoring well/piezometer to be installed shall be continuously sampled and logged on an Illinois EPA approved boring log and well completion report. A copy of a log and report are included as Attachment A to this Permit.

   The Permittee shall submit the appropriate completed data sheets from the installation and development of each new or replacement well to the Illinois EPA at the address below within thirty (30) days of the date that installation of the well is completed. In addition, the Permittee shall submit certification that plugging and abandonment of a well was carried out in accordance with the approved procedures to the Illinois EPA at the address below within thirty (30) days of the date that the well is plugged and abandoned. All information shall be submitted to the appropriate Agencies.

   (NOTE: Monitoring well/piezometer construction shall comply with the minimum standards set forth in 77 Ill. Adm. Code Part 920 regulations).

   Illinois Environmental Protection Agency
   Bureau of Land -- #33
   Permit Section
   1021 North Grand Avenue East
   P.O. Box 19276
   Springfield, Illinois 62794-9276

5. The Permittee shall notify the Illinois EPA within thirty (30) days in writing if any of the wells identified in Condition C.1 are damaged, the structural integrity has been compromised, or if as a result of poor construction and/or development, have become consistently dry or unserviceable. A proposal for the replacement of the subject well(s) shall accompany this notification. The proposal shall also request written approval

from the Illinois EPA regarding the replacement well installation procedures, location (within ten (10) feet of the existing well) and construction. The well shall not be plugged until the new well is on-line and monitoring data has been obtained and verified, unless the well is extremely damaged and would create a potential route for groundwater contamination. Prior to replacing the subject well(s), the Permittee shall obtain written approval from the Illinois EPA regarding the proposed installation procedures and construction.

This new (replacement) well shall monitor the same zone as the existing well and be constructed in accordance with the current IEPA groundwater monitoring well construction standards at the time that the wells are replaced. A replacement well which is more than ten (10) feet from the existing well and which does not monitor the same geologic zone shall be approved by the Illinois EPA and designated as a new well.

6. Each well/piezometer number shall be clearly identified on the protective casing and shall be equipped with protective caps and locks. Monitoring wells/piezometers located in high traffic areas shall be protected with bumper guards.

7. Each well/piezometer not utilized in the approved groundwater monitoring system, but retained by the facility, shall be constructed and maintained in accordance with 77 Ill. Adm. Code 920 regulations.

D. <u>GROUNDWATER PROTECTION STANDARD, WASTE CONSTITUENTS and FIELD PARAMETERS</u>

1. The concentration limits listed for the following hazardous and non-hazardous constituents comprise the Groundwater Protection Standard at the point of compliance, hereafter referred to as List D1.

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LIST D1 (Groundwater – Semi-annually)

ORGANICS (Total Conc.)	STORET	Concentration Limit (ug/l, except as noted)
Chloroethane	34311	ND
Chloromethane	34418	ND
Dichlorodifluoromethane	34668	1400
1,1-Dichloroethane	34496	700
1,2-Dichloroethane	34531	5 (2)
1,1-Dichloroethylene	34501	7 (3)
cis-1,2-Dichloroethylene	77093	70 (3)
trans-1,2-Dichloroethylene	34546	100 (3)
1,2-Dichloropropane	34541	5
p-Dioxane	81582	5 (1)
Tetrachloroethylene	34475	5 (2)
Trichloroethylene	39180	5 (2)
1,1,1-Trichloroethane	34506	200 (3)
1,1,2-Trichloroethane	34511	5 (3)
Trichlorofluoromethane	34488	2100
Vinyl Chloride	39175	2 (2)
Chloride	00940	200.0 mg/L
Inorganics		
Arsenic	01002	50.0
Barium	01007	1000.0
Chromium	01034	70.
Lead	01051	7.5

NOTE: (1) P-Dioxane is regarded as a carcinogen. Therefore 35 Ill. Adm. Code 620, Subpart F procedures direct that the groundwater concentration limit be set at its level of detection. The Illinois EPA has determined that a PQL of 5 ug/L for p-dioxane is reliably achievable using appropriate SW-846 methods.

(2) In addition to meeting the individual Concentration Limits in the tables above, the following equation must be satisfied in order to protect against liver tumors.

$$\frac{[\text{1,2-dichloroethane}]}{0.005\ \text{mg/l}} + \frac{[\text{tetrachloroethylene}]}{0.005\ \text{mg/l}} + \frac{[\text{trichloroethylene}]}{0.005\ \text{mgl}} + \frac{[\text{vinyl chloride}]}{0.002\ \text{mg/l}} \leq 1.0$$

(3) In addition to meeting the individual Class in groundwater recommendations indicated in the tables above, the following equation must be satisfied in order to protect against liver toxicity.

$$\frac{[\text{cis-1,2-dichloroethylene}]}{0.07\ \text{mg/l}} + \frac{[\text{trans-1,2-dichloroethylene}]}{0.1\ \text{mg/l}} + \frac{[\text{1,1-dichloroethylene}]}{0.007\ \text{mg/l}} + \frac{[\text{1,1,1-trichlorothane}]}{0.2\ \text{mg/l}} + \frac{[\text{1,1,2-trichloroethane}]}{0.005\ \text{mg/l}} \leq 1.0$$

ND: Not Determined. Insufficient data were available upon which to base a concentration limit. If the chemical(s) is/are still detected after all other concentration limits have been achieved, then the Illinois EPA will establish appropriate concentration limits at that time.

2. The following hazardous constituents comprise the routine monitoring list for the Groundwater Recovery System identified below in Subsection E., hereafter this list is referred to as List D2:

LIST D2 (Groundwater – Semi-annually)

Hazardous Constituent	STORET	Concentration Limit (ug/l)
ORGANICS		
Chloroethane	34311	ND
Chloromethane	34418	ND
trans 1,2-Dichloroethylene	34546	100
Dichlorodifloromethane	34668	1400
1,2-Dichloropropane	34541	5
p-Dioxane	81582	5 (see (1) above)
Trichlorofluoromethane	34488	2100

Inorganics

Arsenic	01002	50.0
Barium	01007	1000.0
Chromium	01034	70.0
Lead	01051	7.5

3. The following parameters comprise the annual waste constituent list, hereafter referred to as List D3.

LIST D3 (Groundwater - Annual)

Hazardous Constituent	STORET	PQL (ug/L)
1,2-Dichloropropane	34541	0.5
Toluene	34010	5.0
Benzene	34030	2.0
Chlorobenzene	34301	2.0
Methylene Chloride	34423	5.0
Methyl ethyl ketone	81595	10.0
Ethyl benzene	78113	2.0
Xylene	81551	5.0
Acetone	81552	100.0
Isobutanol	77033	50.0
ortho-Dichlorobenzene	34536	10.0
Carbon disulfide	77041	5.0
Pyridine	77045	5.0
Hexachloropropene	70304	10.0
Hexachlorophene	73575	50.0
Kepone	81281	20.0
Cadmium	01027	1.0
Chromium	01034	70.0
Lead	01051	7.5
Arsenic	01002	20.0
Barium	01007	20.0
Mercury	71900	2.0
Iron	01045	1000.0

4. The following parameters comprise the field parameter list, hereafter referred to as List D4:

LIST D4 (Groundwater – Semi-annually)

Field Parameter	STORET	Units
Specific Conductance at 25^0C	00094	umhos/cm
pH	00400	standard
Temperature of Water Sample	00011	^{0}F
Depth to Water (below land surface)	72019	Feet
Depth to Water (below measuring point)	72109	Feet
Elevation of Casing Measuring Point (M.S.L.)	72110	Feet
Elevation of Groundwater Surface (M.S.L.)	71993	Feet
Elevation of Well Bottom (M.S.L.)	72020	Feet

5. Pursuant to 35 Ill. Adm. Code 724.194(a), the appropriate concentration limits that comprise the Groundwater Protection Standard are either: (1) background concentration; (2) 35 Ill. Adm. Code 724.194 Table 1; or (3) an alternate concentration limit such as an appropriate 35 Ill. Adm. Code 620 Groundwater Quality Standard or submit the information required by 35 Ill. Adm. Code 724.194 paragraph (b). Total (unfiltered) values shall be used for comparison to the 35 Ill. Adm. Code 620 Groundwater Quality Standards. The following procedures may be used to change the established concentration limits (see List D1 above) or to propose a concentration limit when a constituent that is not currently part of the Groundwater Protection Standard (see List D1 above) is detected:

   a. To establish background of a constituent for the purpose of establishing the concentration limit, the following procedures shall be followed:

      Background shall be established on data obtained from the quarterly sampling of each upgradient well for one (1) year. Background shall be proposed to the Illinois EPA for approval within forty-five (45) days of receipt of the fourth quarter analytical results. For those monitoring parameters or constituents not detected above the practical quantitation limit (PQL) during background gathering, the background value shall be established as either the lowest PQL contained in 35 Ill. Adm. Code 724 Appendix I or the appropriate 35 Ill. Adm. Code 620 Groundwater Quality Standard, whichever is lower.

   b. Alternate concentration limits may be established where the Permittee can determine a constituent will not pose a substantial hazard to human health or the environment in accordance with 35 Ill. Adm. Code 724.194 (b).

(1) If the hazardous constituent has a standard listed in 35 Ill. Adm. Code 620, the facility may also need to apply for an adjusted standard as outlined in Section 28.1 of the Environmental Protection Act as part of the alternate concentration limit demonstration.

(2) If the hazardous constituent does not have a 35 Ill. Adm. Code 620 standard, the alternate quality standard proposed by the Permittee must be approved by the Agency.

E. REMEDIATION AND GROUNDWATER MONITORING

1. Groundwater Management Zone (GMZ)

a. The wells identified in Condition C.1 Table 1 are the wells that make up the GMZ. The Permittee shall implement, at these wells, the corrective measures detailed in Section 11 and Section 5 of the June 30, 1994 Addendum 3; and July 5, 1995 Addendum 3A to Section 11, with the following conditions:

1) Groundwater extraction from the pumping wells shall be maintained to ensure that groundwater flow is adequately controlled in the aquifer(s).

2) Changes in the pumping rate should be explained in the annual report. Extended periods of "downtime" greater than monthly shall be reported to the Illinois EPA.

3) Hydraulic head measurements shall be made semi-annually during the compliance period. This data shall be used to evaluate the long-term seasonal trends of water-table surfaces when subjected to the pumping stress of the gradient and source control systems, and to determine the size of the resulting capture zone.

4) Flow rate data shall be recorded on a weekly basis. The flow rate shall be calculated from the cumulative discharge data of each well as measured by its cumulative flowmeter. The semi-annual report shall present the weekly flowmeter data for the semi-annual period, and the flow rate calculated from this data. Flow rate data shall be calculated as the average volume pumped in gallons per minute for each well during each weekly measurement period, as well as the average flow rate for the semi-annual reporting period.

b. Upon initiation of the groundwater recovery system (detailed in a. above) and when hydraulic control of the groundwater contaminated areas is achieved, a 3-

dimensional region containing groundwater within the uppermost aquifer is established as a GMZ pursuant to 35 Ill. Adm. Code 620.250. The geographic location of the GMZ is from the wells listed in Condition C.1. Table 1 perpendicular to the nearest facility boundary.

The GMZ shall apply to the constituents comprising the Groundwater Protection Standard listed in Item D above. The GMZ shall remain in place as long as corrective actions are being conducted in a timely and appropriate manner. The GMZ shall expire upon the groundwater meeting the Groundwater Protection Standard. The Illinois EPA shall review the on-going adequacy of controls and continued management at the facility if constituents, as specified in 35 Ill. Adm. Code 620.450(a)(4)(B), remain in groundwater following completion of the corrective action.

c. The Permittee shall demonstrate the effectiveness of the groundwater recovery system by monitoring groundwater from wells identified in Condition C.1. Table 1. The effectiveness shall be evaluated semi-annually in accordance with the procedures outlined in Section 5 of the June 30, 1994 Addendum 3 and the following conditions:

(1) Monitoring wells listed in Condition C.1. Table 1 shall be sampled according to the schedule as noted on the table.

(2) Samples collected during the fourth quarter of each year shall be analyzed for List D2 and List D4 identified in Condition D above.

(3) Samples collected during the second quarter of each year shall be analyzed for Lists D1, D3, and D4. The detection limits utilized in this analysis shall at a minimum shall meet the concentration limit specified in List D1; and, analysis for the List D3 waste constituents shall, at a minimum, meet the PQLs listed in 35 Ill. Adm. Code 724 Appendix I or 35 Ill. Adm. Code 620, which ever is lowest.

(4) The hydraulic effects of the extraction system must be determined semi-annually at each well listed in Condition C.1 Table. To evaluate the hydraulic effects, scaled potentiometric maps with the zone of influence and capture created by the extraction system shall be developed. The pumping rate shall also be identified on the potentiometric maps.

(5) Sampling and analytical procedures utilized in the Groundwater Recovery System shall be in accordance with Condition F below.

2. Observation Monitoring Zone

   a. The Permittee shall determine whether the Groundwater Protection Standard has been exceeded and whether groundwater has been degraded below established background values within the observation (non-contaminated) wells. The wells identified in Condition C.1. Table 2, shall be used for this evaluation. These wells shall be evaluated on a semi-annual basis during the compliance period.

   b. Samples collected during the fourth quarter of each year shall be analyzed for List D1 and List D4 identified in Condition D above.

   c. Samples collected during the second quarter of each year shall be analyzed for Lists D1, D3 and D4. The detection limits utilized in this analysis shall at a minimum shall meet the concentration limit specified in List D1; and, analysis for the List D3 waste constituents shall, at a minimum, meet the PQLs listed in 35 Ill. Adm. Code 724 Appendix I or 35 Ill. Adm. Code 620, which ever is lowest.

   d. Sampling and analytical procedures shall be in accordance with Condition F below.

3. The Permittee shall determine the groundwater flow rate and direction in the uppermost aquifer at least annually from the monitoring wells listed in Condition C, Tables 1 and 2. The groundwater flow rate should be reported as a minimum and maximum range.

4. The Permittee shall determine the surveyed elevation of stick-up, referenced to MSL, when a well is installed (with as-built diagrams) and every two years (during the second quarter), or whenever the elevation changes, beginning with the first groundwater sampling event required by this permit.

5. Elevation, as referenced to MSL, of the bottom of each monitoring well (STORET 72020), is to be determined at least annually at wells that are not equipped with dedicated pump systems. The mandatory measurement shall be taken during the second quarter sampling event in Condition H. For wells containing dedicated pump systems, the mandatory measurement shall be taken in accordance with Condition H.10 below.

F. SAMPLING AND ANALYSIS PROCEDURES

The Permittee shall use the following techniques and procedures when obtaining and analyzing samples from the groundwater monitoring wells described in Condition C.1 above:

1. Samples shall be collected by the techniques described in the Approved Permit Application.

2. Samples shall be preserved, shipped, and handled in accordance with the procedures specified in the Approved Permit Application.

3. Samples shall be analyzed according to the procedures specified in the Approved Permit Application or as otherwise approved by the Illinois EPA.

4. Samples shall be tracked and controlled using the chain of custody procedures specified in the Approved Permit Application.

G. STATISTICAL PROCEDURES

1. The Permittee shall evaluate the quality of groundwater samples acquired during the fourth quarter sampling events identified above in Condition E.

   a. GMZ wells (see subsection E.1.c.(2)) shall be evaluated according to the following procedures:

      Data from the Monitoring System shall be evaluated following the procedures in Section 5.4.3.7 of the June 1994, Addendum 3 Permit Modification submitted.

   b. Observation Monitoring Zone wells (see subsection E.2.b) shall be evaluated according to the following procedures:

      (1) The concentration of each hazardous constituent which comprise the Groundwater Protection Standard (List D1) shall be compared to their respective Concentration Limit. If a parameter exceeds its Concentration Limit specified in Condition D above, the Permittee shall follow the procedures specified in Conditions H.6 and/or H.7 below.

      (2) Constituents detected below the PQL shall be determined to be showing no change and no action is necessary.

2. The Permittee shall evaluate the results of the annual analyses required by Condition E.1.c.(3) and E.2.c. by:

   a. Comparing the list of substances found in samples to the list of hazardous constituents contained in List D3. If a given constituent, is found above the PQL in the sample, collected from a well, the Permittee may resample within thirty (30) days. This sample shall be analyzed for the constituent(s) detected above the PQL in the initial sample.

      (1) If the constituent(s) of concern is (are) again detected above the PQL or the Permittee does not resample, the Permittee shall conclude that the constituent(s) of concern is (are) in the groundwater and follow the procedures in Conditions H.6 and/or H.7 below.

      (2) If the constituent of concern are not detected in the resample, the Permittee will not be required at that time to continue sampling for the particular constituent(s).

   b. Comparing the concentration of the samples from the Observation Monitoring Zone wells to the concentration limits of the Groundwater Protection Standard identified in Condition D, List D1. If this comparison indicates a constituent exceeds its Concentration Limit, the Permittee shall follow the procedures specified in Conditions H.6 and/or H.7 below.

   c. Determining the concentration trend at each well to identify areas that may have increasing contamination and to evaluate the effectiveness of the extraction system for reducing the concentration of contaminants within the Groundwater Recovery Zone.

      (1) Observation Monitoring Zone Wells shall be evaluated as follows:

         i. Constituents detected below the PQL shall be determined to be showing no change and no action is necessary.

         ii. Constituents detected above the PQL shall be plotted on graphs which show historical concentration versus time. Plots indicating a trend that has a positive or greater than 1.0 slope shall be reported, as part of Condition H.5 below, as a potential area of increasing contamination. In addition, the report shall contain an evaluation on whether the corrective actions are operating effectively and whether adjustments or

additional remedial actions are necessary based on the concentration trend.

(2) Groundwater Recovery Zone Wells shall be evaluated as follows:

Constituents detected above the PQL shall be compared to the historical data for each well and submitted as part of Condition H.5 below. The comparison shall include graphs which show the concentration versus time. The information shall be used to evaluate whether all constituents comprising the groundwater protection standard are being adequately remediated. This evaluation shall include an assessment of the current corrective actions and whether adjustments or additional remedial actions are necessary.

3. The Permittee shall evaluate the effectiveness of the groundwater extraction system to hydraulically capture and withdraw the off-site plume of groundwater contamination. The information required by Condition E.1.a and the July 6, 1994 addendum to the December 12, 1992 application shall be used for this evaluation. This evaluation shall be conducted semi-annually. If the evaluation indicates the off-site plume of contamination is not completely captured by the current extraction system design and present pumping rate status conditions, the Permittee shall submit within thirty (30) days of the semi-annual evaluation proper notification or modification (see conditions E.1.a.(2) and E.1.a.(3)) to achieve capture of the groundwater contamination.

H. REPORTING AND RECORDKEEPING

1. The Permittee shall enter all monitoring, testing and analytical data obtained in accordance with Conditions D, E, F and G into the operating record.

2. Samples collected to meet the requirements of the Groundwater Monitoring Program described in Conditions D, E, F and G shall be collected during the second and fourth quarters of each calendar year, as identified in the table below. The results of the groundwater quality analyses conducted on the samples shall be submitted in accordance with this schedule.

Sampling event of calendar year	Samples to be collected in the months of	Results submitted to Illinois EPA by the following
Second Quarter	April-May	July 15
Fourth Quarter	October-Nov.	January 15

The Permittee shall report all information to the Illinois EPA in a form which can be easily reviewed. The report must present data in tabular form, and must include drawings and text (as necessary) which accurately describe and support all conclusions.

3. The Permittee shall submit a completed "RCRA Facility Groundwater, Leachate and Gas Reporting Form" (LPC 592) as a cover sheet for any notices or reports required by the facility's Permit for identification purposes. Only one copy of the LPC 592 must accompany your submittal. However, the Permittee must submit one (1) original and (excluding the groundwater and leachate monitoring results submitted in an electronic format) a minimum of two (2) copies of each notice or report you submit to the Illinois EPA. The form is not to be used for Permit modification requests.

4. Information required by Conditions E.1.a.3, E.4, E.5, and H.2 must be submitted in an electronic format. The information is to be submitted, as fixed-width text files formatted as found in Attachment A, in accordance with the schedule found in Condition H.2. Additional guidance regarding the submittal of the information in an electronic format can be found at www.epa.state.il.us/land/regulatory-programs/permits-and-management/index.html.

5. The Permittee shall submit a written report to the Illinois EPA semi-annually which discusses the effectiveness of the Corrective Action Program and place it in the operating record for the facility. At a minimum, the report must:

   a. Address the information requirements in Conditions D, E, and F and G, and contain the information specified in Section 5.4.3.9 of the June 30, 1994 Addendum.

   b. Evaluate the effectiveness of the hydraulic control and contaminant removal from the GMZ, including the information required by Condition E.

   c. Groundwater extraction system maintenance information required by Condition I.H.9 below.

6. If the Permittee determines pursuant to Condition G.1.b above that any Concentration Limits specified in the Groundwater Protection Standard are being exceeded at any monitoring well within the Observation Monitoring Zone, the Permittee shall:

a. Notify the Illinois EPA of this finding in writing within seven (7) days. The notification must indicate what Concentrations Limits have been exceeded.

b. Submit to the Illinois EPA an application for a permit modification to establish a Corrective Action Program meeting the requirements of 35 Ill. Adm. Code 724.200 within 180 days or within ninety (90) days if an engineering feasibility study has previously submitted to the Illinois EPA. The application must at a minimum included the following information:

1. A detailed description of corrective actions that will achieve compliance with the Groundwater Protection Standard.

2. A plan for a groundwater monitoring program that will demonstrate the effectiveness of the corrective action. Such a groundwater monitoring program may be based on a compliance monitoring program.

7. If the Permittee determines, pursuant to Condition G.1.b or G.2.b that the groundwater Concentration Limits in Condition D are being exceeded at any monitoring well in the Observation Monitoring Zone, the Permittee may demonstrate that a source other than a regulated unit caused the contamination or that the detection is an artifact caused by an error in sampling, analysis or statistical evaluation, or natural variation in groundwater. In making a demonstration under this condition, the Permittee shall:

a. Notify the Illinois EPA in writing within seven (7) days that it intends to make a demonstration under this condition;

b. Within ninety (90) days, submit a report to the Illinois EPA which demonstrates that a source other than a regulated unit caused the standard to be exceeded or that the apparent noncompliance with the standards resulted from error in sampling, analysis or evaluation;

c. Within ninety (90) days, submit to the Illinois EPA an application for a permit modification to make any appropriate changes to the Corrective Action Program at the facility, and;

d. Continue to monitor in accordance with Condition .E.

8. If the Permittee determines that additional constituents not currently part of the Groundwater Protection Standard are present in the groundwater pursuant to Condition G.2.a.(1) above, the Permittee shall:

a. Report the concentration of these additional constituents detected in the groundwater to the Illinois EPA within seven (7) days after completion of the analyses, and;

b. Add the additional constituents to the monitoring list of the Groundwater Protection Standard, Lists D1 and D2 and establish the concentration limit for each additional constituent following procedures in Condition D.5 above.

9. In accordance with RCRA Permit, Log No. B-141-M-35, the Permittee shall submit to the Illinois EPA documentation associated with the Groundwater Extraction System maintenance procedures. The documentation must be submitted in semi-annual groundwater reports in accordance with the schedule found in Condition H.2 of the Permit. The documentation must include, at a minimum, the following:

a. A brief description of the qualifications of personnel performing the maintenance procedures;

b. Dates of inspection and/or service, identification of wells or specific well system components inspected and/or serviced, average time servicing the system (including re-circulation times and down-times) and future maintenance frequency and schedules;

c. Problems observed, such as excessive biofouling and/or scaling, structural damage to wells or well system components, malfunctions in equipment (valves, container housing, lines, etc.). This should include a brief discussion of any field observations made during the maintenance event and proposed procedures to address any problems, if necessary;

d. Values for the field parameters: conductivity, temperature, Eh, and pH for comparison of water quality before and after cleaning events;

e. Supporting data confirming that groundwater quality returns to a natural level subsequent to the completion of the maintenance procedures (water quality must be pumped from the well until the water quality is essentially the same as prior to treatment); and

f. Identification of all cleaning compounds used for well maintenance, including, but not limited to, a discussion and supporting documentation regarding: (1) mixture concentrations, amounts, and injection rates; (2) general procedures used in the application of chemical compounds that are utilized to maintain the system; and (3) a performance evaluation. If the cleaning technique involves the

application of acidic chemical compounds, at total concentration of 15% (2-3 times zone volume) should not be exceeded.

10. The Permittee shall maintain all equipment associated with groundwater monitoring wells. Dedication pump systems (contained in the applicable monitoring wells identified in Condition C.1) must be removed and inspected every five (5) years. The system must be repaired, if necessary. In addition, elevation measurements (as referenced to MSL) of the bottom of each monitoring well containing a dedicated pump system must be collected at this time. Information regarding inspection and maintenance of the pump systems must be reported by July 15 of that year. Total well depths will continue to be measured annually for wells that are not equipped with dedicated pump systems, in accordance with Condition E.5.

I. REQUEST FOR PERMIT MODIFICATION

1. If the Permittee determines that the corrective action program no longer satisfies the requirements of 35 Ill. Adm. Code 724, Subpart F, the Permittee shall, within ninety (90) days, submit an application for a permit modification to make any appropriate changes to the program.

2. Conditions in this section of the Permit may be modified in accordance with 35 Ill. Adm. Code 705.128 if there is cause for such modification, as defined in 35 Ill. Adm. Code 702.184. Causes for modification identified in this section include, but are not limited to, alteration to the permitted facility; additional information which would have justified the application of different permit conditions at the time of issuance; and new regulations.

3. If the Permittee determines that a GMZ well is no longer necessary to satisfy the requirements of 35 Ill. Adm. Code 620.250, the Permittee may submit an application for a permit modification to make any appropriate changes to the monitoring program.

4. The Permittee may submit a request for permit modification to alter the frequency of monitoring groundwater in accordance with 35 Ill. Adm. Code 703. Appendix A(c)(2). This request for permit modification may be submitted following hydraulic capture of the contaminant plume for a period of one year and no additional contaminants have occurred at the facility during this period of time. The permit modification request shall at a minimum include: groundwater flow maps and contaminant isoconcentration maps for the one year period; and, a summary of the groundwater contaminants that have been detected during this period of time.

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Section II: POST-CLOSURE

A. SUMMARY

Hazardous waste management units where waste is left in-place must receive post-closure care for at least 30 years after the date the certification of closure is approved in writing by the Illinois EPA's DLPC or the date this Post-Closure Permit becomes effective, whichever is later. As Areas 1 and 2 were used for the disposal of hazardous waste after July 26, 1982, and had closure approved on September 10, 1992, post-closure care must be provided for both units until September 10, 2022. Activities required during post-closure care include, but are not limited to, (1) maintenance of the final cover, (2) management of leachate, (3) monitoring of the groundwater, and (4) providing financial assurance for post-closure activities pursuant to 35 IAC Part 724.

Surface Impoundments 5 and 6 were closed in accordance with 35 Ill. Adm. Code Part 725 and certified as such in a letter from Illinois EPA dated September 10, 1992. Post-closure care for surface impoundments 5 and 6 will not be necessary.

B. UNIT IDENTIFICATION

1. The Permittee shall provide post-closure care for the Area 1 and Area 2 hazardous waste landfills, subject to the terms and conditions of this permit.

2. Except for wastes exhumed from in and around Area 1 and Area 2 during corrective action activities, Area 1 and Area 2 are no longer permitted to accept hazardous waste.

C. MONITORING, MAINTENANCE, AND RECORDKEEPING

1. The Permittee shall conduct post-closure care for each hazardous waste management unit listed in Section II.B.1. above to begin after closure of each unit and continue until September 10, 2022.

2. Prior to the time that post-closure care is due to expire, the Board will extend or the Illinois EPA's DLPC may propose extension of the post-closure care period if it finds that the extended period is necessary to protect human health and the environment (e.g., leachate or groundwater monitoring results indicate a potential for migration of waste at levels which may be harmful to human health and the environment).

3. The Illinois EPA's DLPC may include restrictions upon the future use of the site if necessary to protect public health and the environment, including permanent prohibition of the use of the site for purposes which may create an unreasonable risk of

injury to human health or the environment. After administrative and judicial challenges to such restrictions have been exhausted, the Illinois EPA's DLPC shall file such restrictions of record in the Office of the Recorder of the county in which the hazardous waste disposal site is located.

4. Other than exhumation and re-deposition of wastes during corrective action activities, the Permittee shall not allow any use of the units designated in Section II.B which will disturb the integrity of the final cover, liners, any components of the containment system, or function of the facility's monitoring systems during the post-closure care period, unless such use is necessary to protect human health or the environment.

5. The Permittee shall implement the approved Post-Closure Plan contained in the Approved Permit Application. All post-closure care activities must be conducted in accordance with the provisions of the approved Post-Closure Plan.

6. The Permittee must request a permit modification to authorize a change in the approved Post-Closure Plan. This request must be in accordance with applicable requirements of 35 IAC Parts 702, 703 and 724 and must include a copy of the amended Post-Closure Plan for approval by the Illinois EPA's DLPC.

7. The Illinois EPA's DLPC may require, at closure, continuation of any of the security requirements during part or all of the post-closure period.

8. The Permittee shall maintain and monitor the groundwater monitoring system and comply with the other applicable regulations of 35 IAC 724 Subpart F (Groundwater Protection) during the post-closure period for both Area 1 and Area 2 landfills.

9. The Permittee shall maintain the integrity and effectiveness of the final cover, including making repairs to the cap as necessary to correct the effects of settling, subsidence, erosion, and other events.

10. The Permittee shall comply with the following requirements for Area 1 and 2 landfills as follows:

    a. Maintain the integrity and effectiveness of the final cover, including making repairs to the cap as necessary to correct the effects of settling, subsidence, erosion, cracking or other events.

       Corrective action for the cover shall be taken if problems, including, but not limited to, the following, occur:

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ponding
cracks greater than one inch wide
gas problems
odor problems
dead or stressed vegetation
vegetation with taproots growing in areas not designed to accomodate such
vector problems
leachate popouts or seeps

b. Operate the newly installed leachate collection system to its capacity to reduce the amount (head) of leachate in areas 1 and 2. Removal of leachate must not be merely based on the ability to maintain the operation of the flares. WMI must continuously remove all pumpable leachate until the required maximum depth of 1 foot of leachate above the invert of the landfill liner is achieved. Upon achieving the required depth, leachate must be removed as necessary to maintain the required depth.

In order to accurately determine leachate levels throughout the landfill, the permittee must monitor and evaluate the leachate levels within the 13 leachate observation wells on a monthly basis. If such evaluation reveals that the improved leachate collection system is incapable of achieving the required leachate depth throughout the landfill, the Illinois EPA may require the Permittee to further improve the leachate collection system so that it is capable of achieving the required leachate depth throughout the landfill.

In accordance with the approved post-closure care plan, representative samples of leachate from the co-disposal hill and the drum trenches shall be collected from withdrawal points annually and analyzed individually (no compositing) for the constituents listed in 35 Ill. Adm. Code Part 724, Appendix I which have been accepted at the respective landfill or trench. These samples shall be collected during the first quarter inspections. The results of these analyses shall be submitted to the Illinois EPA's DLPC by June 1 each year. Leachate levels observed in each withdrawal point, the amount of leachate removed from each withdrawal point, leachate levels observed in each of the 13 Leachate Observation Wells and an evaluation of the effectiveness of the leachate removal system shall also be included with these submittals. The method proposed in Section 6.3.4.6 of the June 30, 1994 permit modification request for reduction of analytical parameters is approved, however, at least once every four years the Permittee must conduct a full Appendix I analysis on the leachate samples.

c. Prevent run-on and run-off from eroding or otherwise damaging the final cover.

d. Maintain and monitor the groundwater monitoring system and comply with all other applicable requirements of 35 IAC Part 724 Subpart F.

e. Protect and maintain surveyed benchmarks used in complying with surveying and recordkeeping requirements.

D. INSPECTIONS

1. The Permittee shall inspect the components, structures, and equipment at the site in accordance with the post-closure inspection schedule in Attachment E, subject to the following modification:

   a. The Area 1 and Area 2 landfills shall be inspected quarterly to determine if corrective action for the final cover or any other structure at each landfill is needed. Inspection of the landfills and any corrective action taken shall be in accordance with the post-closure care plan in the approved permit application. If corrective action is taken, the site shall be re-visited one month later to ensure that the actions taken have indeed corrected the problem(s) noted.

E. NOTICES AND CERTIFICATION

1. After final closure has been certified, the person or office specified in the approved Post-Closure Plan must keep the plan during the remainder of the post-closure period.

2. No later than sixty (60) days after completion of closure of each permitted hazardous waste disposal unit, the Permittee shall submit to the local zoning authority, or the authority with jurisdiction over local land use, and to the Illinois EPA's DLPC a survey plat and a record of the type, location, and quantity of wastes disposed of within each cell or other disposal unit of the facility. For hazardous wastes disposed before January 12, 1981, the Permittee shall identify the type, location, and quantity of the wastes to the best of his knowledge and in accordance with any records he has kept. This plat must be prepared and certified by an independent registered land surveyor.

3. Within sixty (60) days after completion of closure of each hazardous waste disposal unit, the Permittee shall:

   a. Record, in accordance with Illinois law, a notation on the deed to the facility property -- or on some other instrument that is normally examined during title search -- that will in perpetuity notify any potential purchaser of the property that:

      (i) The land has been used to manage hazardous wastes

(ii) Its use is restricted under 35 IAC 724.217

(iii) The survey plat and record of the type, location, and quantity of hazardous wastes disposed within each cell or other hazardous waste disposal unit of the facility have been filed with the Illinois EPA's DLPC, the County Recorder, and any local zoning authority.

b. Submit a certification to the Illinois EPA's DLPC, signed by the Permittee, that he has recorded the notation specified in Condition II.E.3.a, including a copy of the document in which the notation has been placed.

4. If the Permittee or any subsequent owner or operator of the land upon which a hazardous waste disposal unit is located wishes to remove hazardous wastes and hazardous waste residues, the liner, if any, or contaminated soils, then he must request a modification to this post- closure permit in accordance with the applicable requirements in 35 IAC Parts 703, 705 and 724. The owner or operator must, at a minimum, demonstrate that the removal of hazardous wastes will satisfy the criteria of 35 IAC 724.217.

5. No later than sixty (60) days after completion of the established post-closure care period for each hazardous waste disposal unit, the Permittee shall submit to the Illinois EPA's DLPC, by registered mail, a certification that the post-closure care for the hazardous waste disposal unit was performed in accordance with the specifications in the approved Post-Closure Plan. The certification must be signed by the owner or operator and an independent registered professional engineer. Documentation supporting the independent registered professional engineer's certification must be furnished to the Illinois EPA's DLPC upon request until the Illinois EPA's DLPC releases the Permittee from the financial assurance requirements for post-closure care.

F. SUBSURFACE GAS MANAGEMENT

1. The Permittee shall flare the subsurface gas generated at Area 1 during the post-closure care period.

2. A corrective action plan to modify the facilities existing gas control system shall be submitted to the Illinois EPA's DLPC for approval if subsurface gas creates problems. Upon approval, the plan shall be implemented.

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SECTION III: STANDARD CONDITIONS

GENERAL REQUIREMENTS

1. **EFFECT OF PERMIT**. The existence of a RCRA permit shall not constitute a defense to a violation of the Environmental Protection Act or Subtitle G, except for development, modification or operation without a permit. Issuance of this permit does not convey property rights or any exclusive privilege. Issuance of this permit does not authorize any injury to persons or property or invasion of other private rights, or infringement of state or local law or regulations. (35 IAC 702.181)

2. **PERMIT ACTIONS.** This permit may be modified, reissued or revoked for cause as specified in 35 IAC 703.270 through 703.273 and Section 702.186. The filing of a request by the Permittee for a permit modification or revocation, or a notification of planned changes or anticipated noncompliance on the part of the Permittee does not stay the applicability or enforceability of any permit condition. (35 IAC 702.146)

3. **SEVERABILITY**. The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby. (35 IAC 700.107)

4. **PERMIT CONDITION CONFLICT**. In case of conflict between a special permit condition and a standard condition, the special condition will prevail. (35 IAC 702.160)

5. **DUTY TO COMPLY**. The Permittee shall comply with all conditions of this permit except for the extent and for the duration such noncompliance is authorized by an emergency permit. Any permit noncompliance constitutes a violation of the Environmental Protection Act and is grounds for enforcement action; permit revocation or modification; or for denial of a permit renewal application. (35 IAC 702.141 and 703.242)

6. **DUTY TO REAPPLY.** If the Permittee wishes to continue an activity allowed by this permit after the expiration date of this permit, the Permittee must apply for a new permit at least 180 days before this permit expires, unless permission for a later date has been granted by the Agency. (35 IAC 702.142 and 703.125)

7. **PERMIT EXPIRATION**. This permit and all conditions herein will remain in effect beyond the permit's expiration date if the Permittee has submitted a timely, complete

application (see 35 IAC 703.181-703.209) and through no fault of the Permittee the Agency has not issued a new permit as set forth in 35 IAC 702.125.

8. **NEED TO HALT OR REDUCE ACTIVITY NOT A DEFENSE**. It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. (35 IAC 702.143)

9. **DUTY TO MITIGATE**. In the event of noncompliance with the permit, the permittee shall take all reasonable steps to minimize releases to the environment, and shall carry out such measures as are reasonable to prevent significant adverse impacts on human health or the environment. (35 IAC 702.144)

10. **PROPER OPERATION AND MAINTENANCE**. The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory, and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit. (35 IAC 702.145)

11. **DUTY TO PROVIDE INFORMATION**. The Permittee shall furnish to the Agency, within a reasonable time, any relevant information that the Agency may request to determine whether cause exists for modifying, revoking and reissuing or terminating this permit, or to determine compliance with this permit. The Permittee shall also furnish to the Agency, upon request, copies of records required to be kept by this permit. (35 IAC 702.148)

12. **INSPECTION AND ENTRY**. The Permittee shall allow an authorized representative of the Agency, upon the presentation of credentials and other documents as may be required by law, to:

    a. Enter at reasonable times upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

    b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

d. Sample or monitor, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the appropriate Act, any substances or parameters at any location. (35 IAC 702.149)

13. MONITORING AND RECORDS. (35 IAC 702.150)

a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The method used to obtain a representative sample of the waste must be the appropriate method from Appendix A of 35 IAC 721. Laboratory methods must be those specified in Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846, latest versions; Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, latest versions; or an equivalent method as specified in the approved Waste Analysis Plan.

b. The Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports and records required by this permit, and records of all data used to complete the application for this permit for a period of at least 3 years from the date of the sample, measurement, report or application. These periods may be extended by request of the Agency at any time. The permittee shall maintain records from all groundwater monitoring wells and associated groundwater surface elevations, for the active life of the facility, and for disposal facilities for the post-closure care period as well.

c. Records of monitoring information shall include:

i. The date(s), exact place, and time of sampling or measurements;

ii. The individual(s) who performed the sampling or measurements;

iii. The date(s) analyses were performed;

iv. The individual(s) who performed the analyses;

v. The analytical technique(s) or method(s) used; and

vi. The result(s) of such analyses. (35 IAC 702.150)

14. **REPORTING PLANNED CHANGES**. The permittee shall give notice to the Agency as soon as possible of any planned physical alterations or additions to the permitted facility. For a new HWM facility, the permittee may not commence treatment, storage or disposal of hazardous waste; and for a facility being modified the permittee may not treat, store or dispose of hazardous waste in the modified portion of the facility, until:

a. The permittee has submitted to the Agency by certified mail or hand delivery a letter signed by the permittee and a registered professional engineer stating that the facility has been constructed or modified in compliance with the permit; and

b. 1. The Agency has inspected the modified or newly constructed facility and finds it is in compliance with the condition of the permit; or

2. If, within 15 days of the date of submission of the letter in paragraph (a), the permittee has not received notice from the Agency of its intent to inspect, prior inspection is waived and the permittee may commence treatment, storage or disposal of hazardous waste. (35 IAC 703.244 and 702.152(a))

15. **ANTICIPATED NONCOMPLIANCE**. The Permittee shall give advance notice to the Agency of any planned changes in the permitted facility or activity that may result in noncompliance with permit requirements. For a new facility, the permittee shall not treat, store or dispose of hazardous waste; and for a facility being modified; the permittee shall not treat, store or dispose of hazardous waste in the modification portion of the facility, except as provided in Section 703.280, until:

a. The permittee has submitted to the Agency by certified mail or hand delivery a letter signed by the permittee and a registered professional engineer stating that the facility has been constructed or modified in compliance with the permit; and

b. Either:

i. The Agency has inspected the modified or newly constructed facility and finds it is in compliance with the conditions of the permit; or

ii. Within 15 days after the date submission of the letter in section i above, the permittee has not received notice from the Agency of its intent to inspect, the permittee may commence treatment, storage or disposal of hazardous waste.

(35 IAC 702.152(b) and 703.247)

16. **TRANSFER OF PERMITS**. This permit is not transferable to any person except after notice to the Agency. The Agency may require modification of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the appropriate Act. (See Sections 703.260 and 703.270, in some cases modification is mandatory.) (35 IAC 702.152(c))

17. **MONITORING REPORTS**. Monitoring results shall be reported at the intervals specified in the permit. (35 IAC 702.152(d))

18. **COMPLIANCE SCHEDULES**. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than specified in 35 IAC 702.162. (35 IAC 702.152(e))

19. **TWENTY-FOUR HOUR REPORTING.**

a. The Permittee shall report to the Agency any noncompliance with the permit that may endanger health or the environment. Any such information shall be reported orally within 24 hours from the time the Permittee becomes aware of the following circumstances. This report shall include the following:

i. Information concerning the release of any hazardous waste that may cause an endangerment to public drinking water supplies.

ii. Information concerning the release or discharge of any hazardous waste or of a fire or explosion at the HWM facility, which could threaten the environment or human health outside the facility.

b. The description of the occurrence and its cause shall include:

i. Name, address, and telephone number of the owner or operator;

ii. Name, address, and telephone number of the facility;

iii. Date, time, and type of incident;

iv. Name and quantity of material(s) involved;

v. The extent of injuries, if any;

vi. An assessment of actual or potential hazards to the environment and human health outside the facility, where applicable; and

vii. Estimated quantity and disposition of recovered material that resulted from the incident.

c. A written submission shall also be provided within 5 days of the time the Permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance including exact dates and times and if the noncompliance has not been corrected; the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The Agency may waive the five day written notice requirement in favor of a written report within fifteen days. (35 IAC 702.152(f) and 703.245(b))

20. **OTHER NONCOMPLIANCE.** The Permittee shall report all instances of noncompliance not otherwise required to be reported under Standard Conditions 17, 18, and 19, at the time monitoring reports, as required by this permit, are submitted. The reports shall contain the information listed in Standard Condition 19. (35 IAC 702.152(g))

21. **OTHER INFORMATION.** Where the Permittee becomes aware that it failed to submit any relevant facts in the permit application, or submitted incorrect information in a permit application or in any report to the Agency, the Permittee shall promptly submit such facts or information. (35 IAC 702.152(h))

22. **REPORTING REQUIREMENTS.** The following reports required by 35 Ill. Adm. Code 724 shall be submitted in addition to those required by 35 Ill. Adm. Code 702.152 (reporting requirements):

a. Manifest discrepancy report: if a significant discrepancy in a manifest is discovered, the permittee must attempt to reconcile the discrepancy with the waste generator or transporter. If the discrepancy is not resolved within 15 days after receiving the waste, the permittee must immediately submit to the Agency a letter describing the discrepancy and attempts to reconcile it and a copy of the manifest or shipping paper at issue. (35 IAC 724.172(b))

b. Unmanifested waste report: The permittee must submit to the Agency within 15 days of receipt of unmanifested waste an unmanifested waste report on EPA form 8700-13B. (35 IAC 724.176)

c. Annual report: an annual report must be submitted covering facility activities during the previous calendar year. (35 IAC 724.175)

23. **SUBMITTAL OF REPORTS OR OTHER INFORMATION.** All written reports or other written information required to be submitted by the terms of this permit shall be sent to:

Illinois Environmental Protection Agency
Bureau of Land -- #33
Permit Section
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276

24. **SIGNATORY REQUIREMENT.** All permit applications, reports or information submitted to the Agency shall be signed and certified as required by 35 IAC 702.126. (35 IAC 702.151)

25. **CONFIDENTIAL INFORMATION.** Any claim of confidentiality must be asserted in accordance with 35 IAC 702.103 and 35 IAC 161.

26. **DOCUMENTS TO BE MAINTAINED AT FACILITY SITE.** The Permittee shall maintain at the facility, until closure is complete, the following documents and amendments, revisions and modifications to these documents:

a. Waste analysis plan as required by 35 IAC 724.113(b) and this permit.

b. Personnel training documents and records as required by 35 IAC 724.116(d) and this permit.

c. Contingency plan as required by 35 IAC 724.153(a) and this permit.

d. Closure plan as required by 35 IAC 724.212(a) and this permit.

e. Cost estimate for facility closure as required by 35 IAC 724.242(d) and this permit.

f. Operating record as required by 35 IAC 724.173 and this permit.

g. Inspection schedules as required by 35 IAC 724.115(b) and this permit.

27. **WASTE MINIMIZATION.** The Permittee shall certify at least annually that the Permittee has a program in place to reduce the volume and toxicity of hazardous waste that he generates to the degree determined by the Permittee to be economically practicable, and the proposed method of treatment, storage, or disposal is that practicable method currently available to the Permittee which minimizes the present and future threat to human health and the environment, in accordance with 35 IAC 724.173(b)(9).

GENERAL FACILITY STANDARDS

28. **NOTICE OF WASTE FROM A FOREIGN SOURCE.** The permittee who has arranged to receive hazardous waste from a foreign source must notify the Agency in writing at least four weeks in advance of the date the waste is expected at the facility. (35 IAC 724.112(a))

29. **NOTICE OF WASTE FROM OFF-SITE.** The Permittee who receives hazardous waste from an off-site source (except where the Permittee is also the generator), must inform the generator in writing that the permittee has the appropriate permits for, and will accept, the waste the generator is shipping. The Permittee must keep a copy of this written notice as part of the facility operating record. (35 IAC 724.112(b))

30. **GENERAL WASTE ANALYSIS.** The Permittee shall comply with the procedures described in the approved waste analysis plan. (35 IAC 724.113)

31. **SECURITY.** The Permittee shall comply with the security provisions of 35 IAC 724.114(b) and (c).

32. **GENERAL INSPECTION REQUIREMENTS.** The Permittee shall follow the approved inspection schedule. The Permittee shall remedy any deterioration or malfunction discovered by an inspection as required by 35 IAC 724.115(c). Records of inspections shall be kept as required by 35 IAC 724.115(d).

33. **PERSONNEL TRAINING.** The Permittee shall conduct personnel training as required by 35 IAC 724.116 and shall maintain training documents and records as required by 35 IAC 724.116(d) and (e).

34. **GENERAL REQUIREMENTS FOR IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE.** The Permittee shall comply with the requirements of 35 IAC 724.117.

PREPAREDNESS AND PREVENTION

35. **DESIGN AND OPERATION OF FACILITY**. The Permittee shall maintain and operate the facility to minimize the possibility of fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment. (35 IAC 724.131)

36. **REQUIRED EQUIPMENT.** The Permittee shall equip the facility with the equipment set forth in the approved contingency plan, as required by 35 IAC 724.132.

37. **TESTING AND MAINTENANCE OF EQUIPMENT.** The Permittee shall test and maintain the equipment specified in condition 36 as necessary to assure its proper operation in time of emergency. Such testing and maintenance activities are set forth in the approved inspection schedule. (35 IAC 724.133)

38. **ACCESS TO COMMUNICATIONS OR ALARM SYSTEM.** The Permittee shall maintain access to the communications or alarm system as required by 35 IAC 724.134.

39. **REQUIRED AISLE SPACE.** The Permittee shall maintain aisle space as required by 35 IAC 724.135 and National Fire Protection Association (NFPA) requirements.

40. **ARRANGEMENTS WITH STATE AND LOCAL AUTHORITIES AND EMERGENCY RESPONSE CONTRACTORS.** The Permittee shall attempt to make emergency response arrangements with State and local authorities and agreements with State emergency response teams and emergency response contractors and equipment suppliers as required by 35 IAC 724.137. If State or local officials refuse to enter in preparedness and prevention arrangements with the Permittee, the Permittee must document this refusal in the operating record.

CONTINGENCY PLAN

41. **IMPLEMENTATION OF PLAN.** The provisions of the contingency plan must be carried out by the Permittee immediately whenever there is a fire, explosion or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment (35 IAC 724.151(b)). Within 15 days of any incident that requires implementation of the contingency plan, the owner or operator must submit a written report to the Agency as required by 35 IAC 724.156(j).

42. **COPIES OF PLAN.** A copy of the contingency plan, including any revisions, must be maintained at the facility and submitted to all local police and fire departments, hospitals and state and local emergency response teams as required by 35 IAC 724.153.

43. **AMENDMENTS TO PLAN.** The Permittee shall review and immediately amend, if necessary, the contingency plan, as required by 35 IAC 724.154.

44. **EMERGENCY COORDINATOR.** A trained emergency coordinator shall be available at all times in case of an emergency as required by 35 IAC 724.155 and 724.156.

MANIFEST SYSTEM RECORD KEEPING AND REPORTING

45. **MANIFEST SYSTEM.** The Permittee shall comply with the manifest requirements of 35 IAC 724.171, 724.172, 724.176 and 733.

46. **OPERATING RECORD.** The Permittee shall maintain a written operating record at the facility in accordance with 35 IAC 724.173.

47. **ANNUAL REPORT.** The Permittee shall prepare and submit an annual report to the Agency prior to March 1st of each year in accordance with the requirements of 35 IAC 724.175.

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Section IV: REPORTING AND NOTIFICATION REQUIREMENTS

The reporting and notification requirements of each section of the RCRA post-closure permit are summarized below. This summary is provided to highlight the various reporting and notification requirements of this permit.

Condition	Submittal	Due Date
Section I: Corrective Action Program		
C.4	Submit completed data sheets from the installation and development of each new or replacement well	Within 30 days of the date that installation of the well is completed
C.4	Submit well plugging and abandonment certifications	Within 30 days of the date that the well is plugged and abandoned
C.5	Notify the Illinois EPA if any well: has bee damaged, the structural integrity has been compromised, or has become consistently dry or unserviceable. A proposal for a replacement well(s) must be included with this submittal.	Within 30 days of discovery
D.5.a	Provide Illinois EPA with background data	Within 45 days of receipt of the fourth quarter groundwater analytical results
E.1.a.2	Report changes in the pumping rates, if applicable, of the groundwater extraction pumping wells	Annual Report
E.3	Report groundwater flow rate data (GMZ and Observation Wells)	Annual Report
E.4	Report surveyed elevation of stick-up	When a well is installed (with as-built diagrams) and every two years (during the second quarter

		sampling event) or whenever the elevation changes
E.5	Report elevation (MSL) of the bottom of each groundwater monitoring well	Annual Report
G.2.c	Submit trend analysis	Annual Report
G.3	Submit evaluation of effectiveness of the groundwater extraction system to hydraulically capture and withdraw the off-site plume of groundwater contamination	Semi-annually (in accordance with Permit Condition H.2)
G.3	Submit notification or modification if off-site plume of contamination is not completely captured by the current extraction system design	Within 30 days of the semi-annual evaluation
H.2	Groundwater monitoring data and statistical calculations	Information Collected During Months of / Results to Illinois EPA by April-June / July 15 October-December / January 15
H.6.a	Submit notification if any concentration limits specified in the Groundwater Protection Standard are being exceeded at any Observation Well	Within 7 days after discovery of exceedance
H.6.b	Submit application for permit modification to establish Corrective Action Program	Within 180 days or within 90 days if an engineering feasibility study has been previously submitted
H.7.a	Submit notification to make determination that another source caused the increase or that the increase	Within 7 days of discovery of increase

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	resulted from error in sampling, analysis, or evaluation	
H.7.b	Submit report that demonstrates that a source other that a regulated unit caused the standard to be exceeded or that that apparent noncompliance with the standards resulted from error in sampling, analysis, or evaluation	Within 90 days of discovery of exceedance
H.7.c	Submit an application for a permit modification to make any appropriate changes to the Corrective Action Program, if necessary	Within 90 days of discovery of exceedance
H.8.a	Report concentration of additional constituent(s) detected in the groundwater pursuant to Condition G.2.a(1)	Within 7 days after completion of the analysis
H.9	Submit documentation that rehabilitation activities (well maintenance procedures are completed)	Semi-annually (in accordance with Permit Condition H.2)
I.1	Submit application for permit modification	Within 90 days of determination that the corrective action program no longer satisfies the requirements of 35 Ill. Adm. Code 724, Subpart F

Section II: POST-CLOSURE

C.10.b	Leachate analyses, levels, and amount removed.	June 1 of each year
E.2	Submit to the Illinois EPA's DLPC a survey plat and a record of the type, location, and quantity of hazardous waste disposed within each cell or disposal unit.	Within 60 days after completion of closure and with the closure certification

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E.3.a	Record notation on the deed to the facility property regarding hazardous waste management at the site.	Within 60 days after completion of closure and with the closure certification
E.3.b	Certify to the Illinois EPA's DLPC that the notation required in E.3.a has been recorded.	Within 60 days after completion of closure and with the closure certification
E.4	Request permit modification to remove the liner or hazardous wastes.	Prior to removing the liner or wastes
E.5	Certify to the Illinois EPA's DLPC that post-closure care was performed in accordance with the specifications.	Within 60 days after completion of the post-closure care period
F.2	A corrective action plan to the Illinois EPA's DLPC for approval if subsurface gas becomes a a problem.	Within 30 days after discovery of the problem

Section III: STANDARD CONDITIONS

6	Complete application for new permit.	At least 180 days prior to permit expiration
11	Information requested by Illinois EPA and copies of records required to be kept by this permit.	Submittal date to be determined by the Illinois EPA's DLPC
14	Notify Illinois EPA of planned physical alterations or additions.	At least 15 days prior to planned change
15	Notify Illinois EPA of changes which may result in permit noncompliance.	Within 15 days of change

16	Application for permit modification indicating permit is to be transferred.	At least 90 days prior to transfer date
18	Submission of any information required in a compliance schedule.	Within 14 days after each schedule date
19	Report to Illinois EPA any non-compliance which may endanger health or environment.	
	by telephone	Within 24 hours after discovery
	and	
	in writing	5 days after discovery
20	Report all other instances of noncompliance.	March 1 of each year along with Annual Report
40	Implementation of Contingency Plan.	As required
	Notify appropriate state and local agencies with designated response roles.	As required
	Notify appropriate local officials.	Immediately, if emergency coordinator's assessment indicates evacuation of local area is advisable.
	Notify the Illinois EPA's Emergency Response Unit (217/782-3637) or Illinois ESDA (217/782-7860) if emergency coordinator determines there has been a release, fire or explosion which could threaten human health or the environment, outside the facility.	Immediately after determination made

	Notify Illinois EPA and appropriate state and local authorities, in writing that facility is in compliance with 35 IAC 264.156(h).	Prior to resuming operation in affected areas
	Report to Illinois EPA details regarding incident which required implementation of contingency plan.	Within 15 days after event
46	Submit annual report required by 35 IAC 724.175.	March 1 of each year
48	Application for permit modification amending closure plan.	Within 90 days of discovery of need for modification

ATTACHMENT D

A.2	Documentation of arrangements and agreements with local response agencies.	Within 90 days after effective date of permit

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ATTACHMENT A

MONITORING WELL CONSTRUCTION DIAGRAM

COMPLETION REPORT FOR GROUNDWATER MONITORING WELL, AND

ILLINOIS EPA GROUNDWATER FORMATTING REQUIREMENTS

ILD074411745

State ID # LPC 1970450002

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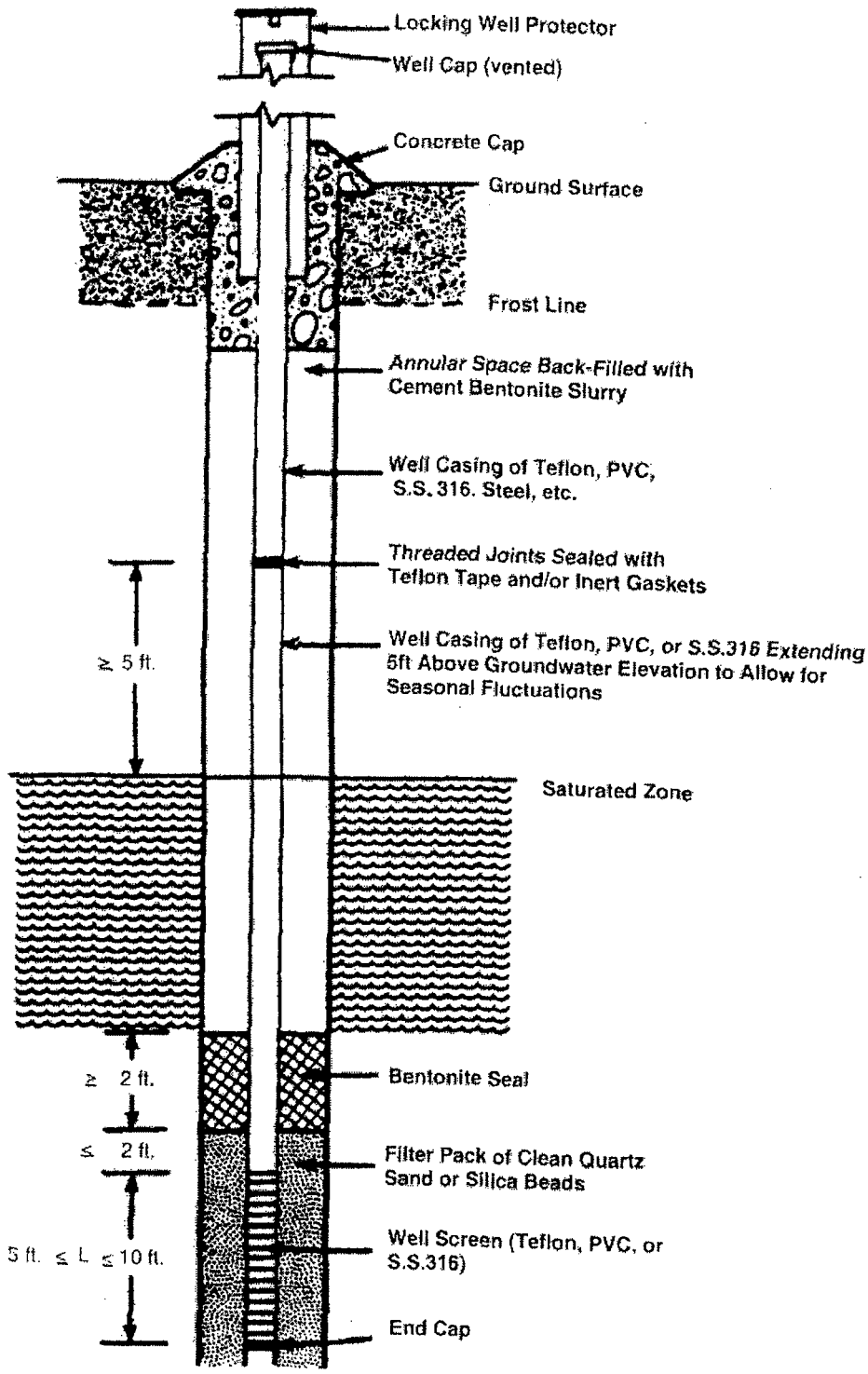
Monitoring Well Diagram



Illinois Environmental Protection Agency **Well Completion Report**

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Site Number: _____ County: _____

Site Name: _____ Well #: _____

State Plane Coordinate: X _____ Y _____ (or) Latitude: ___ ___ ___ Longitude: ___ ___ ___ Borehole #: _____

Surveyed by: _____ IL Registration #: _____

Drilling Contractor: _____ Driller: _____

Consulting Firm: _____ Geologist: _____

Drilling Method: _____ Drilling Fluid (Type): _____

Logged By: _____ Date Started: _____ Date Finished: _____

Report Form Completed By: _____ Date: _____

ANNULAR SPACE DETAILS

Type of Surface Seal: _____

Type of Annular Sealant: _____

Installation Method: _____

Setting Time: _____

Type of Bentonite Seal - - Granular, Pellet, Slurry (Choose One)

Installation Method: _____

Setting Time: _____

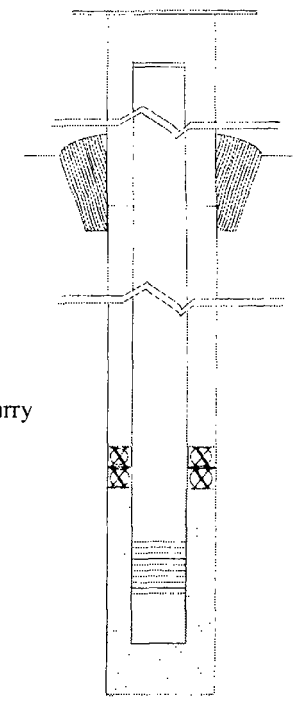
Type of Sand Pack: _____

Grain Size: _____ (Sieve Size)

Installation Method: _____

Type of Backfill Material: _____ (if applicable)

Installation Method: _____



	Elevations (MSL)*	Depths (BGS)	(.01ft.)
	_____	_____	Top of Protective Casing
	_____	_____	Top of Riser Pipe
	_____	_____	Ground Surface
	_____	_____	Top of Annular Sealant
	_____	_____	Static Water Level (After Completion)
	_____	_____	Top of Seal
	_____	_____	Top of Sand Pack
	_____	_____	Top of Screen
	_____	_____	Bottom of Screen
	_____	_____	Bottom of Well
	_____	_____	Bottom of Borehole

* Referenced to a National Geodetic Datum

WELL CONSTRUCTION MATERIAL

(Choose one type of material for each area)

Protective Casing	SS304, SS316, PTFE, PVC, or Other
Riser Pipe Above W.T.	SS304, SS316, PTFE, PVC, or Other
Riser Pipe Below W.T.	SS304, SS316, PTFE, PVC, or Other
Screen	SS304, SS316, PTFE, PVC, or Other

CASING MEASURMENTS

Diameter of Borehole (inches)	
ID of Riser Pipe (inches)	
Protective Casing Length (feet)	
Riser Pipe Length (feet)	
Bottom of Screen to End Cap (feet)	
Screen Length (1st slot to last slot) (feet)	
Total Length of Casing (feet)	
Screen Slot Size **	

**Hand-Slotted Well Screens are Unacceptable

Illinois Environmental Protection Agency

Field Boring Log

Page ___ of ___

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Site ID No. _____ Federal ID No. _____

Site Name: _____

Quadrangle: _____ Sec. _____ T. _____ R. _____

UTM (or State Plane) Coord. N. (X) _____ E. (Y) _____

Latitude: ___ ___ ___ (o ' ") Longitude: ___ ___ ___ (o ' ")

Boring Location: _____

Drilling Equipment: _____

County: _____

Boring No. _____ Monitoring Well No. _____

Surface Elevation: _____ Completion Depth: _____

Auger Depth: _____ Rotary Depth: _____

Date: Start: _____ Finish: _____

Personnel
G -
D -
H -
H -

Elev.	Description of Material	Graphic Log	Depth In Feet	SAMPLES: Sample No.	Sample Type	Sample Recovery (X)	Penetrometer	N Values (Blow Counts)	OVA or HNU Readings	REMARKS

ATTACHMENT B

IEPA MONITORING WELL PLUGGING AND ABANDONMENT PROCEDURES

ILD074411745

STATE ID # LPC 1970450002

ILLINOIS EPA MONITOR WELL PLUGGING AND ABANDONMENT PROCEDURES

	Well Construction		Plugging Procedure
I. Unconsolidated Sediment Wells	I-A	...if backfilled with cement grout above bentonite seal and/or sandpack:	1. Cut casing off at desired depth. 2. Mix neat cement slurry (5 gal. water per 94 lb. bag cement). 3. Insert tremi pipe (1" i.d. pvc) into well and extend to bottom. 4. Slowly pump slurry under low pressure through temi pipe. 5. Slowly withdraw tremi pipe - making sure bottom of pipe remains below pure slurry. 6. Continue slow pumping until all formation water and the watery slurry mix is displaced from top of casing.
	I-B	...if backfilled with soft sediments (cuttings) above bentonite seal and/or sandpack:	1. Knock out and remove thin surface concrete plug, if present. 2. Re-auger entire length of well. 3. Remove well casing from re-augured borehole. 4. Mix neat cement slurry (5 gal. water per 94 lb. bag cement). 5. Insert tremi pipe (1" i.d. pvc) into augers and extend to bottom. 6. Slowly pump slurry under low pressure through tremi pipe. 7. Continue slow pumping until all formation water and the water slurry mix is displaced from top of casing. 8. Slowly withdraw tremi pipe - making sure bottom of pipe remains below pure slurry. 9. Pull a flight of augers (5" if in unstable materials and hole collapse is likely or 10" if in competent material and collapse is unlikely). 10. Top off cement slurry after each flight is removed.
	I-C	...if monitor well construciton is unknown:	1. Follow procedures in I-A.
II. Bedrock Wells	II-A	...All bedrock monitor wells:	1. Cut casing off at desired depth. 2. Mix neat cement slurry (5 gal. water per 94 lb. bag cement). 3. Insert tremi-pipe (1" i.d. pvc) into well and extend to bottom. 4. Slowly pump slurry under low pressure through tremi pipe. 5. Slowly withdraw pipe making sure bottom of pipe remains below pure slurry. 6. Continue slow pumping until all formation water and the watery slurry mix is displaced from top of casing.

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ATTACHMENT C

PREDICTION LIMIT TEST

ILD074411745

STATE ID # LPC 1970450002

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ATTACHMENT C

Prediction Limit Test

The following statistical procedures must be followed as referenced in Section I (Corrective Action Program).

1) Calculate the background mean (X_b) for each parameter, using the values (X_i) from each background sampling event of upgradient wells as follows:

$$X_b = \frac{X_1 + X_2 \ldots X_n}{n}$$

Where X_i = each background value

n = the total number of background measurements

X_b = background mean

2) Calculate the background variance (S_b^2) and standard deviation (S_b) for each parameter using the values (X_i) from each background sampling event of upgradient wells as follows:

$$S_b^2 = \frac{(X_1 - X_b)^2 + (X_2 - X_b)^2 \ldots + (X_n - X_b)^2}{n-1}$$

and $S_b = (S_b^2)^{1/2}$

3) Calculate the prediction limit using:

$$P = X_b + C(S_b)$$

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Where C = Coefficient determined from Table 1, at the number of background measurements (n) and the number of downgradient monitoring wells to be statistically compared to upgradient wells at the facility (K) during a sampling event, such that $K \leq 5$.

P = the prediction limit

4) If the value of any routine parameter for any downgradient well exceeds the prediction limit value (P) for that parameter, the permittee shall conclude that a statistically significant difference exists between the background and routine values for that parameter for that well.

5) When some of the upgradient values are less than the Method Detection Limit (MDL), a value of one half (1/2) the MDL shall be substituted for all background values that are reported as less than the MDL. All other computations shall be calculated as given above.

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TABLE 1

FACTORS FOR OBTAINING ONE-SIDED
95% PREDICTION LIMITS FOR k ADDITIONAL
SAMPLES GIVEN A BACKGROUND SAMPLE OF SIZE n

Number of new measurements (k)

n	1	2	3	4	5
4	2.63	3.56	4.18	4.67	5.08
5	2.34	3.04	3.49	3.83	4.10
6	2.18	2.78	3.14	3.42	3.63
7	2.08	2.62	2.94	3.17	3.36
8	2.01	2.51	2.80	3.01	3.18
9	1.96	2.43	2.70	2.90	3.05
10	1.92	2.37	2.63	2.82	2.96
11	1.89	2.33	2.58	2.75	2.89
12	1.87	2.29	2.53	2.70	2.83
13	1.85	2.26	2.49	2.66	2.78
14	1.83	2.24	2.46	2.62	2.74
15	1.82	2.21	2.44	2.59	2.71
16	1.81	2.20	2.41	2.57	2.68
17	1.80	2.18	2.40	2.54	2.66
18	1.79	2.17	2.38	2.53	2.64
19	1.78	2.16	2.36	2.51	2.62
20	1.77	2.14	2.35	2.49	2.60
21	1.77	2.13	2.34	2.48	2.59
22	1.76	2.13	2.33	2.47	2.57
23	1.75	2.12	2.32	2.46	2.56
24	1.75	2.11	2.31	2.45	2.55
25	1.74	2.10	2.30	2.44	2.54
26	1.74	2.10	2.29	2.43	2.53
27	1.74	2.09	2.29	2.42	2.52
28	1.73	2.09	2.28	2.42	2.52
29	1.73	2.08	2.28	2.41	2.51
30	1.73	2.08	2.27	2.40	2.50
31	1.72	2.07	2.27	2.40	2.50
32	1.72	2.07	2.26	2.39	2.49
33	1.72	2.07	2.26	2.39	2.49

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TABLE 1
(Continued)

34	1.72	2.06	2.25	2.38	2.48
35	1.71	2.06	2.25	2.38	2.48
36	1.71	2.06	2.25	2.37	2.47
37	1.71	2.06	2.24	2.37	2.47
38	1.71	2.05	2.24	2.37	2.46
39	1.71	2.05	2.24	2.36	2.46
40	1.71	2.05	2.23	2.36	2.46
41	1.70	2.05	2.23	2.36	2.45
42	1.70	2.04	2.23	2.35	2.45
43	1.70	2.04	2.23	2.35	2.45
44	1.70	2.04	2.22	2.35	2.44
45	1.70	2.04	2.22	2.35	2.44
46	1.70	2.04	2.22	2.34	2.44
47	1.70	2.03	2.22	2.34	2.44
48	1.70	2.03	2.22	2.34	2.43
49	1.69	2.03	2.21	2.34	2.43
50	1.69	2.03	2.21	2.34	2.43
60	1.68	2.02	2.20	2.32	2.41
70	1.68	2.01	2.19	2.31	2.40
80	1.67	2.00	2.18	2.30	2.39
90	1.67	2.00	2.17	2.29	2.38
100	1.67	1.99	2.17	2.29	2.38

$$\text{Factor} = t(n-1,1-a/k)\,(1+1/n)^{1/2}$$

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ATTACHMENT D

ADDITIONAL SPECIAL CONDITIONS

ILD074411745

STATE ID # LPC 1970450002

Additional Special Conditions

A. Contingency Plan

1. The Permittee shall respond to any emergency situation (fire, explosion or release of hazardous waste/hazardous constituents) in accordance with the contingency plan in the approved permit application, subject to the following modifications:

   a. The emergency coordinator shall be immediately notified of any spill or release of hazardous waste or hazardous constituent, any fire, or any other emergency situation which occurs at the facility. This notification shall be made by the person observing the release, a co-worker or supervisor, or a security officer.

   b. The emergency coordinator shall notify the appropriate local and state emergency response teams as necessary when their help is needed or when there is danger to the surrounding area during an imminent or actual emergency.

   c. During an emergency, the emergency coordinator shall take all reasonable measures necessary to ensure fires, explosions, or releases do not occur, recur, or spread. These measures shall include stopping processes, stopping operation, collecting and containing waste, and removing and isolating containers.

   d. The Permittee shall not handle incompatible waste in an area where there has been a spill or release of waste until the waste has been removed from the affected area in accordance with the approved contingency plan.

   e. All wastewater generated during decontamination of the equipment used in responding to an emergency shall be managed as a hazardous waste.

2. Within sixty (60) days of the effective date of this permit, the Permittee shall:

   a. Make arrangements to familiarize police, fire departments and emergency response teams with the layout of the facility (including a tour of the facility), properties of the hazardous waste handled at the facility and associated hazards, places where facility personnel would normally be working, entrances to and roads inside the facility and possible evacuation routes. All aspects of the approved contingency plan shall also be thoroughly discussed during this time to familiarize these entities with the type of procedures to be employed by the Permittee in the event of an emergency.

   b. Make agreements in writing with local police and fire departments to:

1. Designate primary emergency authority to a specific police department and specific fire department;

2. Describe support which the other local police and fire departments will provide the primary emergency authorities.

c. Make agreements in writing with state emergency response teams and emergency response contractors to describe what kind of response these entities will provide in the event of an emergency.

d. Make arrangements to familiarize all local hospitals with the properties of hazardous waste handled at the facility and the types of injuries or illnesses which could result from fire, explosions or releases at the facility.

Documentation of these arrangements and agreements, including minutes and summaries of meetings and telephone conversations shall be submitted to the Illinois EPA's DLPC for approval within ninety (90) days of the effective date of this permit.

3. The Permittee shall contact the local police and fire departments, the local hospitals, and the concerned emergency response teams annually to:

a. Review the agreements made with each entity,

b. Review and discuss the information described in Condition A.2.a. above.

c. Discuss any changes made to the facility or contingency plan.

Copies of all communications made during the annual review, including minutes and summaries of the meetings and telephone conversations shall be incorporated into the operating record for this facility.

B. Personnel Training

1. Employees shall not work unsupervised until they have completed the training program contained in the approved permit application.

C. Reporting

1. All certifications, logs or reports which are required to be submitted to the Illinois EPA by the Permittee should be mailed to the following address:

   Illinois Environmental Protection Agency
   Permit Section
   Bureau of Land -- #33
   1021 North Grand Avenue East
   P.O. Box 19276
   Springfield, Illinois 62794-9276

2. When the Permittee is required, by a condition of this permit, to submit material for review and determination by the Illinois EPA's DLPC. The Illinois EPA review of the material will be subject to permit appeal provisions contained in Section 39(a) and 40(a) of the Environmental Protection Act.

D. 39i Certification

1. The permittee shall submit a 39(i) certification and supporting documentation within 30 days after the effective date of permit modification number 1 and thereafter within 30 days of any of the following events:

   a. the owner or operator or officer of the owner, or operator, or any employee who has control over operating decisions regarding the facility has violated federal, State, or local laws, regulations, standards, or ordinances in the operation of waste management facilities or sites; or

   b. the owner or operator or officer of the owner, or operator, or any employee who has control over operating decisions regarding the facility has been convicted in this or another State of any crime which is a felony under the laws of this State, or conviction of a felony in a federal court; or

   c. the owner or operator or officer of the owner, or operator, or any employee who has control over operating decisions regarding the facility has committed an act of gross carelessness or incompetence in handling, storing, processing, transporting or disposing of waste; or

   d. a new person is associated with the owner or operator who can sign the application or who has control over operating decisions regarding the facility, such as a corporate officer or a delegated employee.

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The certification shall describe the violation(s), convictions, carelessness or incompetence as outlined in 1, 2, or 3 above and must include the date that a new person as described in 4 above began employment with the applicant.

The 39i certification and supporting documentation shall be submitted to the address specified below:

Illinois Environmental Protection Agency
Bureau of Land #33
39(i) Certification
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276

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ATTACHMENT E

POST CLOSURE INSPECTION SCHEDULE

ILD074411745

STATE ID # LPC 1970450002

Post-Closure Inspections

Inspection Schedule

Post-closure inspections will be conducted quarterly during the post-closure period. Additional inspections will be performed following precipitation events in which two inches or more of precipitation are received at the site during a 24-hour period. If such precipitation events occur within one month of one of the scheduled quarterly inspections, the precipitation event inspection will be substituted for the regular quarterly inspection. Findings made during each inspection will be recorded on the post-closure inspection log, included as Figure 10 of the approved permit application or, on a similar log. Copies of all inspection logs will be kept at the landfill. Documentation of all repairs performed or replacements required to properly maintain the site will be kept with the inspection logs. General post-closure inspection procedures will include the following:

1. Visually inspect the perimeter fence and all gates. Check for fence integrity and note any areas of damage. Note the working condition of each gate, and check to ensure that all locks and other security systems are in place and functioning.

2. Visually inspect the landfill cover and surrounding areas. Note any evidence of cover erosion, settling, or negative stress. Also note any unusual conditions such as odors, ponded water, or bubbling. Visually inspect the run-on/run-off control berms and ditches. Mark any areas requiring further inspection or repairs to the District Engineer so arrangements can be made to efficiently effect all necessary repairs.

3. Visually inspect the gas risers, flares, and venting trenches. Note any damage, malfunction, and/or clogging. Check liquid level in each riser and make arrangements for condensate removal.

4. Visually inspect each leachate collection riser and note any damage. Check and record the liquid level in each withdrawal riser for the co-disposal hill and each drum trench. If the liquid level is found to be above the maximum acceptable level (Section II, C.11.b) make arrangements for leachate removal.

5. Inspect each groundwater well cover for damage. Check the well cap and well cover lock to ensure they are functioning and have not been tampered with. Note area around wells for erosion, settling or negative stress. The monitoring wells are also utilized as permanent benchmarks. Visually inspect each benchmark. Report any missing benchmarks, and note any damage to the benchmarks.

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6. Visually inspect any applicable safety and emergency equipment. Report missing and/or damaged equipment.

7. Visually inspect the groundwater remediation system each time water level measurements are obtained.

8. Inspect the components of the groundwater treatment process each working day of operation.

9. Inspect the leachate collection tanks and associated secondary containment. Check for any accumulation of standing water (from precipitation) and arrange for removal. Check for evidence of leakage. Investigate all breaches within 24 hours of occurrence and correct the problem as soon as practicable. These inspections will cover each working day whenever the portable tanks are being used.

Arrangements will also be made to repair or replace any items in order to maintain the site at a condition equal to that in the application.

Post-Closure Maintenance

Maintenance activities will respond to the needs determined from the inspections. The following items will be repaired to original conditions described in the original Post-Closure Permit Application: slopes damaged by erosion; areas of settlement, subsidence and displacement; run-on and run-off control structures; and the leachate collection and removal system. Wells will be repaired or replaced. The vegetative cover on the final cover will be: (1) mowed annually, (2) fertilized with 60 pounds of nitrogen per acre in the spring of each year (or such other amounts as indicated by soil testing), and (3) fertilized with 60 pounds of nitrogen, 150 pounds of phosphate and 80 pounds of potassium (or such other amounts as indicated by soil testing) in the late summer or early fall of each year. Any item requiring repair or maintenance will be served or replaced to provide performance equal to a new item.

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ATTACHMENT F

APPROVED PERMIT APPLICATION IDENTIFICATION

ILD074411745

STATE ID # LPC 1970450002

APPROVED PERMIT APPLICATION IDENTIFICATION

1. RCRA Part B, Post-Closure Permit Application, Laraway Recycling and Disposal Facility. Received by Illinois EPA on August 26, 1988.

2. RCRA Part B, Post-Closure Permit Application, Laraway Recycling and Disposal Facility. Revisions to the original submittal. Received by Illinois EPA on February 2, 1989. This submittal made revisions in all previously submitted sections and added Appendix 16 through Appendix 27 to the application.

3. RCRA Part B, Post-Closure Permit Application, Laraway Recycling and Disposal Facility. Revision to above mentioned submittals. This revision included a revised table of content for the complete application and a revised table of content for Section 7.

4. RCRA Part B, Post-Closure Permit Modification request, Laraway Recycling and Disposal Facility, dated April 12, 1991 and additional information submitted July 1, 1991. This modification request incorporated operating procedures for the new leachate collection system and changed the groundwater monitoring chemical analysis forms.

5. RCRA Part B, Post-Closure Permit Modification request, Laraway Recycling and Disposal Facility, dated October 5, 1991. Through this modification request, WMI sought changes to the statistical comparison procedures for dissolved iron in the detection monitoring program.

6. RCRA Part B, Post-Closure Permit Modification request, Laraway Recycling and Disposal Facility, dated September 25, 1991. This modification request incorporated informational changes in the Contingency Plan and Training Plan, and satisfied Condition A.2 of this permit.

7. RCRA Part B, Post-Closure Permit Modification request, Laraway Recycling and Disposal Facility, dated July 31, 1992 and additional information submitted October 9, 1992. This modification request incorporated leachate removal and level monitoring procedures. A request to reduce the number of parameters included in annual leachate analysis was denied.

8. RCRA Post-closure permit modification request and supporting information as follows:

   a. Addendum 1 to Document a above submitted by Patrick Ries of ATEC Associates dated November 6, 1992.

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b. Addendum 2 to Document a above submitted by Patrick Ries of ATEC Associates dated January 31, 1993.

c. Temporary Authorization from Illinois EPA dated October 21, 1993.

d. Addendum 3 to Document a above dated June 30, 1994. This addendum replaced Document a.

e. Revision to Document f above dated January 5, 1995.

f. Addendum 3A dated March 22, 1995.

g. Revisions to Addendum 3A dated July 5, 1995.

h. Letter dated October 2, 1997 requesting temporary authorization for construction and operation of a soil gas vent and a force main.

i. Letter dated April 7, 1998 requesting temporary authorization to construct and operate a leachate extraction and collection system for the Drum Trenches.

j. Supplemental information dated January 26, 1999.

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ATTACHMENT G

GROUNDWATER REPORTING FORMS

ILD074411745

STATE ID # LPC 1970450002

Formatting Requirements for the 01 Record of the Electronically Submitted Groundwater and Leachate Data (the 01 Record portion of the LPC-160 is included for example purposes)

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF LAND POLLUTION CONTROL
CHEMICAL ANALYSIS FORM

Page 1 of _____

RECORD CODE: L P C S M 0 1 (1–7)

TRANS CODE: A (8)

REPORT DUE DATE __ __/__ __/__ __ (36 M D Y 41)

FEDERAL ID NUMBER _____

SITE INVENTORY NUMBER _____ (9–18)

MONITOR POINT NUMBER _____ (see Instructions) (19–22)

REGION _____ CO. _____

DATE COLLECTED __ __/__ __/__ __ (23 M D Y 28)

FACILITY NAME _____

FOR IEPA USE ONLY

LAB _____ (29)

DATE RECEIVED __ __/__ __/__ __ (42 M D Y 47)

BACKGROUND SAMPLE (X) _____ (54)

TIME COLLECTED __ __:__ __ (24 Hr. Clock) (55 11 M 58)

UNABLE TO COLLECT SAMPLE (see Instructions) _____ (59)

MONITOR POINT SAMPLED BY (see Instructions) _____ (60) _____ OTHER (SPECIFY)

SAMPLE FIELD FILTERED — INORGANICS (X) _____ (61) ORGANICS (X) _____ (62)

SAMPLE APPEARANCE _____ (63–102)

COLLECTOR COMMENTS _____ (103–142)

LAB COMMENTS _____ (150–199)

IL 532 1213
LPC 160 01/90

This Agency is authorized to require this information under Illinois Revised Statutes, 1979, Chapter 111 ½, Section 1004 and 1021. Disclosure of this information is required. Failure to do so may result in a civil penalty up to $25,000 for each day the failure continues a fine up to $1,000.00 and imprisonment up to one year. This form has been approved by the Forms Management Center.

All analytical procedures must be performed in accordance with the methods contained in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods," SW-846, 3rd Edition, September 1986 or equivalent methods approved by the Agency. Proper sample chain of custody control and quality assurance/quality control procedures must be maintained in accordance with the facility sampling and analysis plan.

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*Only Keypunch with Data in Column 35 or Columns 38-47

KEY:

Spaces Numbered	Description	Format
Spaces 1-7	Record Code	LPCSM01
Space 8	Trans Code	A
Spaces 9-18	Site ID	0000000000
Spaces 19-22	Mon Pt ID	G000
Spaces 23-28	Date Collected	000000
Space 29	Lab	
Spaces 30-35	Filler	
Spaces 36-41	Report Due Date	000000
Spaces 42-47	Date Received	000000
Spaces 48-53	Filler 2	
Space 54	Background Sample	
Spaces 55-58	Time Collected	0000
Space 59	Unable to Collect Sample	
Space 60	Monitoring Point Sampled By	
Space 61	Field Filtered – Inorganic	
Space 62	Field Filtered – Organic	
Spaces 63-102	Sample Appearance	
Spaces 103-142	Collector Comments	
Spaces 143-149	Filler 3	
Spaces 150-199	Lab Comments	

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Formatting Requirements for the 02 Record of the Electronically Submitted Groundwater and Leachate Data (the 02 Record portion of the LPC-160 is included for example purposes)

RECORD CODE | L | P | C | S | M | 0 | 2 | (1–7) TRANS CODE | A | (8) (COLUMNS 9-29 FROM ABOVE)

	FIELD MEASUREMENTS CONSTITUENT DESCRIPTION AND REQUIRED UNIT OF MEASURE	STORET NUMBER (30–34)	Remarks See Inst. (35)	Replicate (36)	< or > (37)	VALUE (38–47)
Q	TEMP OF WATER (unfiltered °F)	00011				____.____
Q	SPEC COND (unfiltered umhos)	00094				____.____
Q	pH (unfilted units)	00400				____.____
Q	ELEV OF GW SURF (ft ref MSL)	71993				____.____
Q	DEPTH OF WATER (ft below LS)	72019				____.____
A	BTM WELL ELEV (ft ref MSL)	72020				____.____
Q	DEPTH TO WATER FR MEA PT (ft)	72109				____.____
						____.____
						____.____

IL 532 1213
LPC 160 01/90

This Agency is authorized to require this information under Illinois Revised Statutes, 1979, Chapter 111 ½, Section 1004 and 1021. Disclosure of this information is required. Failure to do so may result in a civil penalty up to $25,000 for each day the failure continues a fine up to $1,000.00 and imprisonment up to one year. This form has been approved by the Forms Management Center.

All analytical procedures must be performed in accordance with the methods contained in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods," SW-846, 3rd Edition, September 1986 or equivalent methods approved by the Agency. Proper sample chain of custody control and quality assurance/quality control procedures must be maintained in accordance with the facility sampling and analysis plan.

***Only Keypunch with Data in Column 35 or Columns 38-47**

KEY:

Spaces Numbered	Description	Format
Spaces 1-7	Record Code	LPCSM02
Space 8	Trans Code	A
Spaces 9-18	Site ID	0000000000
Spaces 19-22	Mon Pt ID	
Spaces 23-28	Date Collected	
Space 29	Lab	
Spaces 30-34	STORET Number	
Space 35	Remarks	
Space 36	Replicate	
Space 37	< or >	
Space 38-47	Value	

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ATTACHMENT H

STATISTICAL PROCEDURES FLOW CHART

ILD074411745

STATE ID # LPC 1970450002

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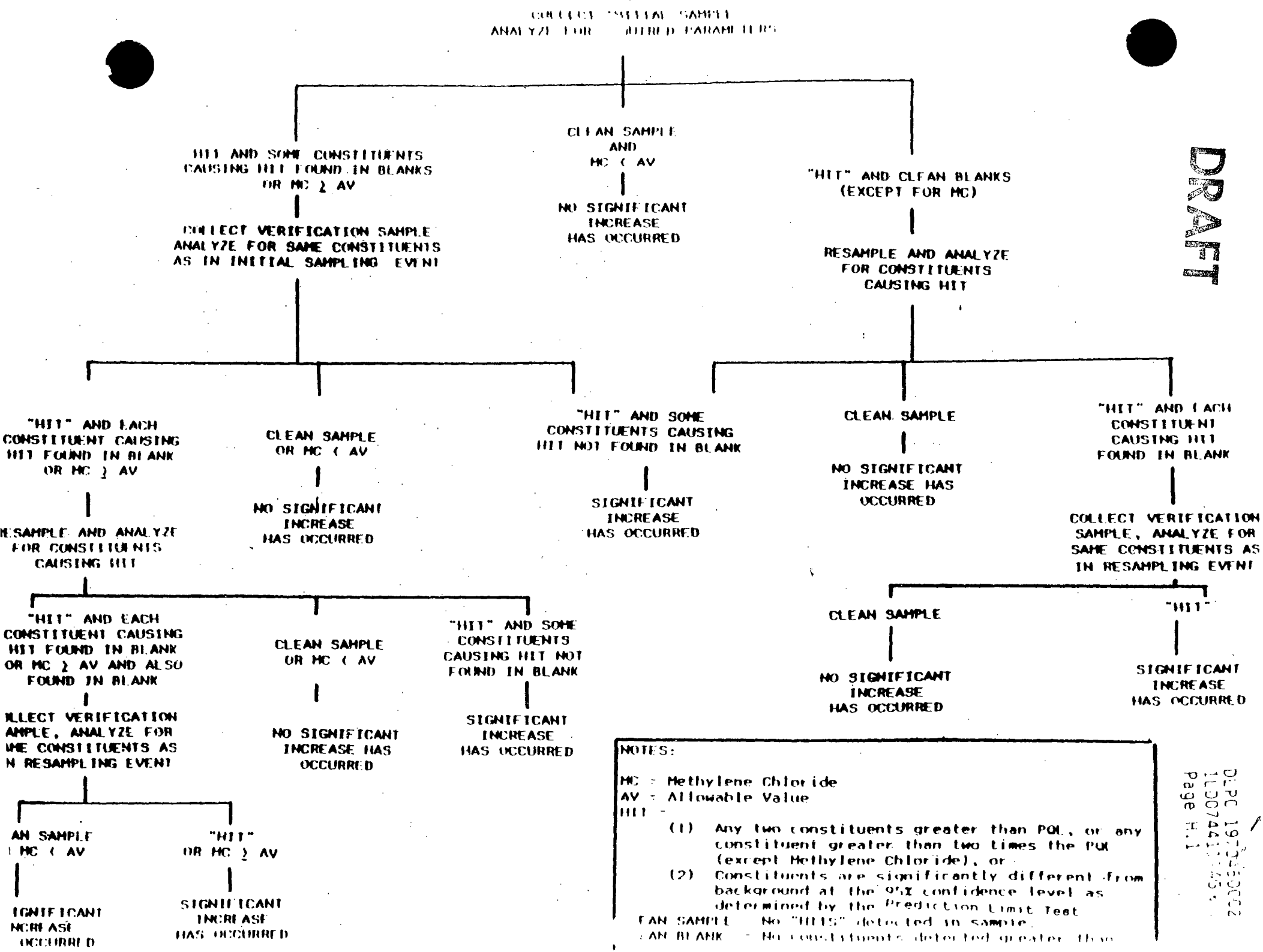
COLLECT INITIAL SAMPLE
ANALYZE FOR REQUIRED PARAMETERS
HIT AND SOME CONSTITUENTS CAUSING HIT FOUND IN BLANKS OR MC ≥ AV
COLLECT VERIFICATION SAMPLE ANALYZE FOR SAME CONSTITUENTS AS IN INITIAL SAMPLING EVENT
CLEAN SAMPLE AND MC < AV
NO SIGNIFICANT INCREASE HAS OCCURRED
"HIT" AND CLEAN BLANKS (EXCEPT FOR MC)
RESAMPLE AND ANALYZE FOR CONSTITUENTS CAUSING HIT
"HIT" AND EACH CONSTITUENT CAUSING HIT FOUND IN BLANK OR MC ≥ AV
RESAMPLE AND ANALYZE FOR CONSTITUENTS CAUSING HIT
CLEAN SAMPLE OR MC < AV
NO SIGNIFICANT INCREASE HAS OCCURRED
"HIT" AND SOME CONSTITUENTS CAUSING HIT NOT FOUND IN BLANK
SIGNIFICANT INCREASE HAS OCCURRED
CLEAN SAMPLE
NO SIGNIFICANT INCREASE HAS OCCURRED
"HIT" AND EACH CONSTITUENT CAUSING HIT FOUND IN BLANK
COLLECT VERIFICATION SAMPLE, ANALYZE FOR SAME CONSTITUENTS AS IN RESAMPLING EVENT
CLEAN SAMPLE
NO SIGNIFICANT INCREASE HAS OCCURRED
"HIT"
SIGNIFICANT INCREASE HAS OCCURRED
"HIT" AND EACH CONSTITUENT CAUSING HIT FOUND IN BLANK OR MC ≥ AV AND ALSO FOUND IN BLANK
COLLECT VERIFICATION SAMPLE, ANALYZE FOR SAME CONSTITUENTS AS IN RESAMPLING EVENT
CLEAN SAMPLE OR MC < AV
NO SIGNIFICANT INCREASE HAS OCCURRED
"HIT" AND SOME CONSTITUENTS CAUSING HIT NOT FOUND IN BLANK
SIGNIFICANT INCREASE HAS OCCURRED
CLEAN SAMPLE OR MC < AV
SIGNIFICANT INCREASE HAS OCCURRED
"HIT" OR MC ≥ AV
SIGNIFICANT INCREASE HAS OCCURRED
NOTES:
MC = Methylene Chloride
AV = Allowable Value
HIT =
(1) Any two constituents greater than PQL, or any constituent greater than two times the PQL (except Methylene Chloride), or
(2) Constituents are significantly different from background at the 95% confidence level as determined by the Prediction Limit Test
CLEAN SAMPLE = No "HITS" detected in sample.
CLEAN BLANK = No constituents detected greater than

DRAFT

ILD 074 411 745

FACILITY MAILING LIST
PUBLIC NOTICE OF CLASS 3 PERMIT MODIFICATION REQUEST

Waste Management of Illinois, Inc. (WMII) submitted a Class 3 permit modification request on March 17, 2008 to the Illinois Environmental Protection Agency (IEPA) for modification of the RCRA Part B permit for its Laraway Recycling and Disposal Facility. The facility, located approximately two miles west of Illinois Route 53 directly south west of the intersection of Laraway and Patterson Roads in unincorporated Will County, Illinois includes a closed RCRA landfill and active non-hazardous solid waste landfill. As part of this modification request, WMII is seeking approval of (1) a revision to the facility boundary; (2) a corrective action plan for phosphogypsum stacks located within the facility, (3) expansion of the non-hazardous solid waste landfill, (4) revised contingency plan and (5) changes to the closed RCRA landfill corrective action program and groundwater management zone .

A copy of the permit modification request and supporting documentation may be viewed at the following location:

Wilmington Public Library
201 S Kankakee Street
Wilmington, Illinois 60481

A sixty (60) day public comment period for the modification request ends on May 18, 2008 and written comments on this request may be submitted to the following IEPA contact person:

Ms. Mara McGinnis
Public Involvement Coordinator
Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276
(217) 524-3288

The permittee's compliance history during the life of the permit being modified is available from the IEPA contact person. A summary of past Class 1 and Class 1* permit modifications are attached.

WMII will hold an informational public meeting to present information on the permit modification request and to answer questions regarding the request. The meeting will be held on April 30, 2008 from 10:00 am to 12:00 pm at the Prairie View Recycling and Disposal Facility, 29755 S. Prairie View Drive, Wilmington, Illinois 60481.

Additional information regarding this permit modification request may be obtained by contacting the following persons:

Modification Items 1 – 4
Chris Rubak, P.E.
Waste Management
31725 N. Route 83
Grayslake, Illinois 60030
(847) 223-9282

Modification Item 5
Lisa Grassl
Waste Management
138th and Interstate 94
P.O. Box 1309
Calumet City, Illinois 60409-1309
(773) 646-3099

File B.1.5

SECTION 11

NOTE: The is an addendum to a Class III Permit Modification Request, and NOT RCRA Corrective Action

CORRECTIVE ACTION PROGRAM
FOR
GROUNDWATER CONTAINMENT, EXTRACTION AND TREATMENT

WASTE MANAGEMENT, INC

CLOSED RCRA UNIT
LARAWAY RECYCLING & DISPOSAL FACILITY

ILD 074.411745

Prepared by:

Waste Management of Illinois, Inc.
And
RUST Environment & Infrastructure

REVISED MARCH 15, 1995
June 30, 1994

RECEIVED
MAR 27 1995
IEPA - BOL
PERMIT SECTION

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11.0 CORRECTIVE ACTION PROGRAM GROUNDWATER CONTAINMENT, EXTRACTION, AND TREATMENT SYSTEM

11.1 INTRODUCTION

This proposed Corrective Active Program for Laraway RDF is submitted as an addendum modification to the Class 3 Permit Modification previously submitted for approval August 14, 1992 to IEPA.

The Corrective Action Program includes groundwater containment, extraction and treatment and has been prepared to meet the corrective action requirements of 35 IAC 703.185 - Groundwater Protection Information, 35 IAC 724.191 - Required Programs and 35 IAC 724.200 - Corrective Action Program.

Implementation of this groundwater Corrective Action Program is intended to prevent low level organic contaminants (as identified by 35 IAC 724.193) from exceeding the groundwater protection standard at the compliance point established by the Laraway RCRA Part B Post Closure Permit.

As a support to the Corrective Action Program, three-dimensional groundwater flow modeling was conducted by RUST Environment and Infrastructure (RUST E&I). Details of the groundwater modeling assumptions and results are included in sub-sections 11.6 and 11.7 of this submission.

11.1.1 Purpose of Corrective Action Program

The purpose of this Corrective Action Program is as follows:

1. Contain and prevent organic contaminants released into the groundwater beneath the closed RCRA Unit from exceeding the groundwataer protection standard beyond the Point of Compliance.

2. Extract groundwater to control groundwater at the Point of Compliance.

3. Compliant discharge of groundwater which has been extracted by operation of the Corrective Action Program as required by the National Pollutant Discharge Elimination System (NPDES) permit or other acceptable discharge or disposal.

4. Establish a Groundwater Management Zone, pursuant to 35 IAC 620.250, to mitigate uppermost aquifer groundwater under the Closed RCRA Unit and the off-site groundwater which has been impacted by the release of constituents from the Closed RCRA Unit

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5. Continue mitigation of the uppermost aquifer within the Groundwater Management Zone during the period of time necessary for management of groundwater and until attainment of applicable groundwater standards as specified in 35 IAC 620.450(a)(4)(B).

The purpose of this submittal is to present a design to a sufficient level of detail in a narrative form and on plans for regulatory review, approval and comment.

11.1.2 Site Location and Characteristics

Laraway RDF is located approximately two miles southwest of Joliet, Illinois. The closed RCRA unit of the site is approximately 60 acres, and consists of Area 1, a co-disposal area and Area 2, the container disposal trenches. Area 1 is located in the extreme southwest corner of the site and was used for co-disposal of municipal refuse and industrial bulk wastes. In Area 2, which is directly east of Area 1, a series of clay-lined trenches were utilized for disposal of containers. A solid waste disposal unit lies to the north of the closed RCRA unit. The land use surrounding the Laraway facility is composed of agricultural to the south and east, and heavy and medium industrial to the north and west.

11.1.3 Site Characteristics

11.1.3.1 Closed RCRA Unit

On-site geologic conditions have been defined by an extensive series of soil borings drilled at the site between 1972 and 1993. The reports outlining the on-site geologic conditions are summarized in Attachment 1.

The on-site geology consists predominantly of 30 to 40 feet of yellow-brown to gray clay with traces of sand and gravel, associated primarily with the Yorkville Till. The clay grades laterally across the site vary primarily from a low-to-medium plastic silty clay along the western and eastern borders of the site, to a high plasticity ("fat") clay in the central portion of the site (RUST, 1993a).

Underlying the clay is a thin-to-absent, slightly undulating layer of glacial outwash deposits associated with the Henry Formation, which ranges in thickness across the site from 0 to 10 feet. These outwash deposits consist primarily of poorly-sorted, angular sand and gravel, with occurrences of clayey-to-silty sand in the center of the site extending to the eastern property line. The glacial outwash deposits, where present, directly overlie the Silurian Dolomite bedrock, except at the far southeastern corner of the area where boring logs R-111 and R-112 indicate the sand is underlain by a 12-foot thick clay-silt layer, and in the far southwestern corner of the site where a 2 to 5-foot thick intermediate clay layer is evident.

Three deep borings extending to depths of 92-120 feet were completed in 1983 by Woodward-Clyde Consultants. Core samples from these borings and 17 additional shallow bedrock borings, indicate that the uppermost bedrock unit beneath the site primarily consists of 10-20 feet of the

basal silty and shaly Brandon Bridge Member of the Joliet Formation. The unit is described in on-site boring logs as pale green-to-yellow gray, argillaceous, fine grained dolomite, sporadically mottled and containing occasional shale seams. A thin five-foot remnant of the overlying, relatively pure Markgraf Member and the Romeo Member, present in the north central area, have been almost completely eroded.

The Brandon Bridge Member is underlain by the relatively pure Kankakee Formation, which is approximately 30 feet thick across the site and is described as a massive, gray to green dolomite with thin clay or shale partings and occasional vugs. The Kankakee Formation overlies the Elwood Formation which exceeds 30 feet beneath the area and consists of a light gray, hard dolomite with chert and numerous clay or shale partings. The Silurian dolomite is expected to be approximately 200 feet thick based on off-site borings at the Lincoln Stone Quarry, located approximately 1.5 miles northeast of the area.

The dolomite bedrock across the site displays an irregular surface topography, ranging in elevation from approximately 595 msl feet along the eastern boundary and generally dipping to the west to approximately 570 feet msl along the western boundary. Along the southern boundary of the site, however, the bedrock drops to approximately 570 feet msl at the eastern and western property lines and from a central bedrock high of 590 feet msl. A depression exists in the dolomite bedrock at the center of the area where the dolomite has locally been eroded to approximately 568 feet msl. This depression extends to the south central property line. A localized 10 foot thick shale occurrence is present in this dolomite depression at boring location G-53D, but is not documented at any other boring location.

11.1.3.2 Site Hydrogeology

Groundwater is encountered in both the unconsolidated outwash deposits and the Silurian dolomite bedrock underlying the Laraway site. The outwash deposits, where present, primarily overlie and are in direct hydraulic connection with the dolomite bedrock. This results in the formation of a single hydrostratigraphic unit composed of the outwash sand and upper weathered and fractured transmissive zone of the dolomite bedrock, which is considered to be the uppermost aquifer (RUST, 1993a).

11.2 TEMPORARY AUTHORIZATION GROUNDWATER ASSESSMENT ACTIVITIES SUMMARY

On June 1, 1993, under the authority of the pending Class 3 Permit Modification application submitted to the IEPA, the IEPA issued to Waste Management of Illinois (WMII) a Temporary Authorization approval letter allowing WMII, among other things, to conduct specific ground water assessment investigations related to detected compounds in RCRA ground water monitoring wells. The following assessment activities and reports were performed as a result of the Illinois Environmental Protection Agency (IEPA) Temporary Authorization. The Assessment activity documentations reports have been submitted as addenda to the Class 3 Permit Modification.

11.2.1 Hydrogeologic Investigations

Pursuant to the Requirement of the Temporary Authorization, a Hydrogeologic Investigation of the Laraway Recycling and Disposal Facility was submitted to the IEPA in September of 1993 and subsequently approved in December of 1993. This report contains updated hydrogeologic information as well as cross sections and isopach maps that were requested by the IEPA. The Hydrogeological Investigation Report submitted in September 1993 to IEPA is made a part of this Class iii submittal for approval.

Included in the report are the results of field hydraulic conductivity testing performed by RUST E&I and ATEC Associates in August of 1993, boring logs and water level elevations for five new monitoring wells screened in the dolomite, and ground water elevations and contour maps. The report further documents, using comparisons of potentiometric heads and hydraulic conductivities, that the uppermost transmissive unit at the site is composed of the gravel outwash unit which is physically and hydraulically connected to the underlying weathered Silurian dolomite. The results of packer tests conducted by Woodward-Clyde Consulting in 1983 indicate that the upper transmissive zone, composed of the outwash and weathered, fractured rock, extends 5 to 25 feet into the dolomite in the north central and southeastern locations, and over 30 feet into the dolomite in southwestern locations.

11.2.2 Source Determination

Pursuant to the IEPA Temporary Authorization Letter, in June and July of 1993, ATEC Associates (ATEC, 1993) and RUST E&I conducted sampling to determine the source. The Plan to Determine Source Report (August 31, 1993) as submitted to the IEPA in August 1993, and approved is included in this section by reference.

11.2.3 Investigation of New Solid Waste Management Unit

During the installation of monitoring well G160 (near R144), near surface soils were observed to exhibit petroleum like odors. Three additional shallow soil borings were completed and sampled to further identify the potential contamination. A work plan, for the identification of a new Solid Waste Management Unit, as submitted to and approved by the IEPA is included in this Section by reference.

11.2.4 Aquifer Pumping Test

An aquifer pumping test was conducted in December of 1993 by RUST E&I for the purpose of evaluating the aquifer response to be used for the design of a ground water control/remediation system at the site (RUST E&I, 1994A). The pumping test consisted of a step drawdown test, a 72-hour constant discharge test, and a 15-hour recovery test. The pumping well had a screen length of twenty feet, extending down from the top of the outwash into the dolomite and was located between observation wells G-130 and G-131. From the analysis of the test data, it was determined that the aquifer hydraulic conductivity in the test vicinity ranges from 1.57 E-02 to

2.16 E-02 cm/sec, and the storage coefficient ranges from 2.19 E-05 to 7.2 E-05. A comparison of hydraulic conductivities determined from the aquifer pumping test and the slug tests conducted previously are discussed in Subsection 11.7.0 of this submission.

11.2.5 Extent of Contamination

A plan to determine the rate of contaminant migration from the Co-Disposal Hill (Area 1) of the Closed RCRA Unit, using a numerical study, was submitted to IEPA on July 27, 1993. The numerical study was proposed because Waste Management's attempts to gain access beyond the site boundaries for installation of monitoring wells failed. This plan was approved by the IEPA in their correspondence dated October 21, 1993.

The study was conducted (RUST E&I, 1994) using the site available hydrogeological and groundwater contamination data. A review of the site hydrogeological data indicated that the upper transmissive zone is the only aquifer of concern at this site. Additionally, a review of the site RCRA quarterly monitoring data indicated that p-Dioxane and vinyl chloride are the primary contaminants of concern at the site. P-Dioxane was found in monitoring wells G130, G131, R29D, R29S, G123 and R134 and vinyl chloride was found in monitoring wells G129 and R29D.

The rate of migration was estimated using Darcy's flow equation with retardation factors for contaminant migration. The velocity was calculated using average values for the aquifer hydraulic conductivity and hydraulic gradient. The retardation factor was estimated based on a literature search for desorption coefficients for these contaminants. The extent of migration was then calculated by multiplying the velocity by the travel time. The travel time was estimated based on the historical detection of the contaminants in the monitoring wells. Based on this review, p-Dioxane was first detected in monitoring wells in April 1992 and vinyl chloride was first detected in July 1990. Then using this duration and the calculated velocity, the horizontal extent of the plume was estimated. Based on this calculation, p-Dioxane migrated 410 feet north and 200 feet northwest of the site boundaries as of 1994. Vinyl chloride migrated 380 feet north of the site boundary as of 1994. The furthest extent of migration as of 1995 is calculated for P-Dioxane as approximately 600 feet north and 295 feet northwest.

The vertical extent of the plume was evaluated based on the review of the contamination data from the nested monitoring wells. This review indicates that the vertical extent of contaminants is limited to the upper transmissive zone.

11.2.6 Groundwater Monitoring Well G141

WMII has implementated the required two month sampling event(s) as specified by the interim groundwater monitoring program (Requirement Number 4, of the IEPA May 27, 1993 Temporary Authorization). Groundwater monitoring well G141 has been included in the interim monitoring program. The constituent chloroethane was reported for groundwater sampled at monitoring well G141 during the February 1994 sampling event. Prior to this event chloroethane has not been reported for G141 or for any other RCRA groundwater monitoring well at Laraway RDF.

Methane gas has been reported present in groundwater monitoring well G141 and is known to be present at other locations near monitoring well G141.

WMII believes that the presents of methane gas is associated with, and is causing a false indication of chloroethane in groundwater samples taken from monitoring well G141. WMII will continue to evaluate G141 groundwater data and determine if chloroethane is actually present at monitoring well G141, at concentrations which are statistically significant. In the event that statistically significant concentrations of this constituent are confirmed for the G141 monitoring location, the Corrective Action Program provided in this submission will be properly revised to address developing groundwater conditions at the G141 monitoring well location.

WMII will request IEPA to authorize future revision to the Corrective Action Program as appropriate to address potential changing groundwater conditions in the vicinity of groundwater monitoring well G141 as a Class 1(*) Permit Modification

11.2.7 Groundwater Management Zone

Pursuant to 35 IAC 620.250, WMII proposes to establish a Groundwater Management Zone for groundwater in the uppermost unconsolidated aquifer, including the weathered dolomite interface, partially under the Closed RCRA Unit and partially under the solid waste unit which has been impacted by the release of constituents from the closed RCRA Unit at Laraway RDF. The Groundwater Management Zone would continue during the period of time necessary for management of groundwater by the Corrective Action Program presented in this submission and until attainment of applicable groundwater standards as specified in 35 IAC 620.450(a)(4).

WMII will provide IEPA, as a Class 1(*) Permit Modification documentation that the Corrective Action Program has achieved design performance goals, and documentation establishing the practicable released chemical consitiuent(s) in groundwataer constitent with requirements of 35 IAC 620.450(a)(4).

WMII requests IEPA to authorize future modifications to the Corrective Action Groundwater Management Zone Aerial extent as appropriate to address potential changing groundwater conditions and potential changing Groundwater Management Zone Area.

11.3 BASIS OF DESIGN

11.3.1 Evaluation of Ground Water Quality Related to Treatment

The ground water quality of 23 monitoring wells surrounding the closed RCRA co-disposal unit was analyzed in order to determine the most appropriate extraction/treatment system for the site. All available laboratory data from Waste Management's Environmental Monitoring Laboratory (EML) was obtained and analyzed for this purpose. The maximum detected concentrations of volatile organic carbon compounds (VOC's) as well as other groundwater quality parameters that may influence the design of the extraction/treatment system is shown on Table 11-1.

P-Dioxane was detected at low levels in ten monitoring wells and 1,1-DCA was detected in six monitoring wells. Well R29D, located along the north side of the closed RCRA unit, shows the highest concentration of p-Dioxane, vinyl chloride, dichlorodifluoromethane and trichloro-fluoromethane.

11.3.1.1 Evaluation of Natural Occurring Water Quality Significant to Water Treatment Methods

The water quality parameters of alkalinity, chloride, and iron were also tabulated, as these parameters have a significant influence on the efficiency of various ground water treatment technologies. As shown in Table 3-1, the natural concentration of alkalinity of the uppermost transmissive unit ranges from 264 to over 455 mg/L as bicarbonate. Natural chloride levels range from 4.9 to 46 mg/L within most of the monitoring wells and from 97 to 203 mg/L on the north side of Area 1. Natural iron levels range from 0.30 to 6.55 mg/L.

Various metal concentrations are also summarized in Table 11-1. This data suggests that where present, natural metal concentrations in groundwater are at low levels and should not present a problem to the proposed treatment system, nor should they present an effluent discharge excursion.

11.3.2 Groundwater Extraction

The groundwater extraction system was designed considering the following:

- Interpretation of available hydrogeological information.
- Interpretation of groundwater quality data to determine contaminant plume orientation.
- Estimation of distances of volatile organic compound plumes using transport modeling.
- Determination of radius influence and subsequent spacing of extraction wells based on the aquifer pumping test.
- Placement of groundwater extraction wells within the property line along the westerly and northerly (down gradient) sides.

TABLE 11-1: LARAWAY RDF RCRA AREA 1 GROUNDWATER QUALITY PARA

Proposed Corresponding Extraction Well	Wells	Detected VOCs (µg/L)					Water Quality Paran	
		P-Dioxane	Vinyl Cloride	1,1 DCA	Dichlorodiflour o-methane	trichloroflouro-methane	Alkalinity	Chlorid
	South Side							
	G141		4				409	19.8
EW-1	G240			13				4.9
EW-1	R40S						422	13.5
EW-1	R40D			47				27.0
EW-1	R4D2	38					383	12.0
	R139			9			372	7.0
EW-2	G138			9			312	6.8
EW-2	G137	51					358	35.0
	West Side							
	G136						336	6.0
EW-3	G135						329	21.0
	R134	270		36			403	21.5
	G163	24					455	18.9
	G132						362	24.6
EW-4	G133	12					433	30.0
	North Side							
	G131	16		12			287	46.0
EW-5	G130	210					418	97.0
EW-6	R29S	770					317	203.0
EW-6	R29D	500	170		59	97	264	158.0
	R128						407	24.2
EW-7	G127						408	13.0
EW-8	G125						384	9.0
EW-9	G123	21					382	111.0
EW-9	R122						390	8.2

*Concentrations shown represent Dissolve/Total concentrations. Where only one concentration is listed, it represents both dissolved and total concentrations except fc

- Placement of extraction wells along the southern border for purposes of focusing on reducing VOC mass at the source area.
- Development and use of a groundwater flow model to determine appropriate extraction well flow rates in order to establish a zone of capture.
- Estimation of the recovery rate and cleanup time for a representative VOC.

As support to the remedial design, three-dimensional ground water flow modeling was initiated to determine 1) the number of extraction wells required, 2) the location of the extraction wells and 3) rate of extraction per well in order to contain groundwater flow beneath the Co-Disposal Area. To achieve these objectives, modeling of the groundwater extraction system included the following:

- Review and analysis of previous hydrogeologic investigations that were completed at the Laraway RDF site.
- Determination and development of a model that reflects hydrogeologic conditions beneath the site.
- Selection of numerical model computer code for groundwater flow based on the site-specific conceptual model.
- Generation of a horizontal and vertical modeling grid system.
- Compilation of input data for the groundwater flow model using observed ground water head values, measured hydraulic conductivity values, recharge rate estimates, bottom and top elevations of the existing monitoring wells screen intervals, and aquifer geometry (ground surface elevations and formation contact elevations).
- Entering the input data into the computer.
- Calibration of the groundwater flow model.
- Comparison of the calibrated model results with the pumping test results.
- Simulation of various extraction well scenarios.
- Sensitivity analyses of input parameters used in the groundwater flow model.

For additional background on the site model, refer to sub-section 11.6.

The design capacity of the Groundwater Treatment System for Laraway RDF is based on results of the groundwater modeling performed by RUST E&I. Results of the groundwater modeling indicate that initially, seven extraction wells pumping at a flow rate of 5 gallons per minute (gpm) each, for a total of 35 gpm, are adequate to achieve the desired capture zone and maintain an inward gradient at the boundary of the closed RCRA Unit. If during operation of the groundwater extraction system, WMII determines that additional flow/less flow is required to maintain the desired capture zone and inward gradient, additional extraction wells may be added to the system, and/or extraction wells may be removed from the program to achieve a capture zone. The routine increase or reduction of flow is considered as paramount to the efficient operation or the extraction/treatment/containment system. Flow changes therefore will be performed at times to maintain efficient operation and capture of the aquifer.

WMII will notify the IEPA of the addition or reduction of new extraction wells by a Class 1 Permit Modification Application submittal.

11.3.3 Groundwater Treatment

The treatment system has been designed to accommodate flows ranging from 35 gpm or less up to 100 gpm.

The proposed tanks and large pieces of process equipment for the Groundwater Treatment System have been sized to accommodate flow rates of up to 100 gpm. The transfer pumps initially installed within the treatment plant have been sized to handle flow rates of 50 gpm. This will allow additional extraction wells to be added to the system without major process modifications. If it is determined that flows greater than 50 gpm are required to maintain the desired capture zone, pumps may be removed and replaced to increase flow as necessary to achieve project objectives. Routine increase or reduction of flow is considered as paramount to the efficient operation of the extraction/ containment/treatment system. Flow changes therefore will be performed at times to maintain efficient operation and capture of the aquifer.
WMII will notify the IEPA of the removal, replacement, or management of pumps by a Class 1 Permit Modification Application submittal.

The treatment process units have been designed based on the groundwater sampling results presented in Table 11-1. Because of potential aquifer and concentration variability and dilution, the Groundwater Treatment System will be constructed in three phases based on an observational approach. This approach allows each treatment phase to be added, removed or operated based on analytical data and quality of influent, or effluent of the previous phase. For example, the initial operation is to startup the system by discharging groundwater into containers such as fran tank containers. During this time, influent conditions will be characterized prior to procuring and installing the first, second and/or third phase equipment and process units. If the influent conditions or groundwater monitoring program during the life of the project indicate minimal levels of treatment are required to meet NPDES discharge requirements, various phases of the treatment system may be taken off-line, as long, as effluent objectives are met. As each phase is constructed, or removed from operation, a Class I permit modification will be submitted to the IEPA as notification.

WMII will notify the IEPA as each phase is constructed, or removed from operation by a Class 1 Permit Modification Application submission.

The three phases of the Groundwater Treatment System construction are as follows:

Phase I - Initial Groundwataer Extraction,Air Sparging, Heat Treatment, Aeration, Pre-clarifier

Phase I groundwater treatment is anticipated to initially consist of nine extraction wells pumping to a common header, and then into an influent accumulation tank located at the treatment building. Prior to entering the influent accumulation tank, the groundwater may be injected with air by an

air compressor in order to aerate the water. Once the groundwater enters the building, it may be heated by an in-line heater to increase the water temperature. The groundwater in the accumulation tank may be aerated by a blower to maintain solids in suspension. Whether these operations occur will be determined during startup. These process options may be incorporated if reduction in VOC's is necessary. The effluent will be analyzed periodically for target parameters of selected VOC's and p-Dioxane. If the analysis shows elevated concentrations of VOC's and p-Dioxane, then Phase II groundwater treatment will be constructed and operated. A process flow diagram indicating Phase I groundwater treatment is shown on Drawing F-01 (Attachment 4). A solids pre-clarification process may be installed in Phase 1 depending on observations.

Phase II - Air Stripping

Phase II groundwater treatment will consist of an air stripper to remove any organics that did not meet acceptable discharge levels during Phase I. A second in-line heater may also be required to increase the water temperature prior to entering the air stripper. The increased temperature may improve the efficiency of the air stripper and aid in the removal of organics. Heat will only be applied if demonstrated to be effective. Given the current levels of VOC's in the groundwater, preliminary modeling by an equipment vendor at a flowrate of 100 gpm indicates that vapor phase treatment of the air stripper off-gas is not required at the present time. However, the off-gas from the air stripper will be evaluated periodically. A copy of the equipment vendors predictive model is included in Attachment 3. The effluent from the air stripper will be pumped to an Effluent Accumulation Tank where it will be analyzed for target parameters of selected VOC's and p-Dioxane. If analysis shows elevated concentrations of VOC's and p-Dioxane, then Phase III groundwater treatment will be constructed and operated. A process flow diagram indicating Phase II groundwater treatment is shown on Drawing F-01 (Attachment 4).

Phase III UV/Oxidation

Phase II

11.3.4 Treated Groundwater Discharge

Prior to final discharge, treated effluent from the Groundwater Treatment System will meet the limits of the facilities NPDES permit. A new modified NPDES permit incorporating the groundwater treatment effluent monitoring standards and sampling schedule was issued May 11, 1994 by IEPA. The current and effective NPDES permit in included in this permit application by reference.

Table 11.2

NPDES Effluent Limits

Reserved

11.4 PROCESS DESCRIPTION

11.4.1 Groundwater Extraction System

The performance goal for the perimeter groundwater collection system is to maintain an inward gradient flow onto the site and contain off-site migration of contaminants. As determined from the modeling sensitivity analysis, as few as five extraction wells and as many as nine extraction wells may be initially installed along the west and/or north sides of the closed RCRA unit. As determined by the groundwater model, 5 gpm per well, for a total of 35 gpm, may be sufficient to maintain capture of the groundwater flow. The groundwater will be conveyed through a force main and discharged into an influent accumulation tank. Below is a discussion of the individual components of the groundwater extraction system which include: extraction well installation, extraction well head assembly, pumps-valves-fittings, controls, and force main. The groundwater extraction system, force main routing, general site layout are presented on Drawing C-01 in Attachment 4.

11.4.2 Well Design

11.4.2.1 Extraction Well Installation

The groundwater extraction wells will be constructed by various drilling methods including the method of mud-rotary drilling. The cuttings will be drummed and disposed of appropriately. The extraction wells will consist of a minimum of 5 inch diameter stainless steel screens and black carbon blank casings. Each well will be back-filled with granular material and a bentonite plug to ground surface. The wells will be developed to remove drilling fluids which may remain within the well and well screen. The well screen will be located within the upper transmissive zone of the upper aquifer.

11.4.2.2 Well Head Assembly

It is anticipated that the flow rates from individual extraction wells may vary from the anticipated 5 gpm. Therefore, electric pumps may be used for flows in excess of 5 gpm, and pneumatic pumps may be used for flows below 5 gpm. Determination of pump type will be made during well installation, when each well is step-tested.

A well cap will be installed at the top of the well, which can seal the well under either vacuum or pressure. Ports are built within the cap to accommodate the requirements for an electric or pneumatic pump. If an electrical pump is used, the ports will be used for liquid discharge from pump, electric power, electric controls, and a water monitoring port. If a pneumatic pump is used the ports will be used for liquid discharge from the pump, air line to the pump, pump exhaust and a brain exhaust. The pump exhaust will be rerouted into the well in order to eliminate VOC emissions from the well. The well head assembly will be contained within a vault to protect it from the elements of the environment and for security purposes. The vault will be constructed of concrete or other materials and, will have a removable lid for access to the well for operation

and maintenance purposes. The details for the well head assembly and construction details are shown on drawing C-02 in Attachment 4.

11.4.2.3 Pumps, Valves, and Fittings

The pumps will be sized based on the characteristics of the water being pumped and the hydraulic head and flow requirements of each extraction well. The purpose of the extraction wells will be to remove groundwater from the well and discharge it directly into the force main. The components of the extraction system located within the extraction well vault include a pressure indicator, sample port, flow meter, check valve and a globe valve. The pressure indicator will gauge pump performance and help determine if sediments have accumulated within the discharge line or force main. The groundwater being removed from each extraction well can be individually sampled for analytical evaluation through a port dedicated at the well.

A flow meter located at each extraction well will gauge total gallons of water pumped and indicate flow rates from the well. The check valve will prevent backflow of groundwater from the force main into the extraction wells. The globe valve will be used to regulate the flow rate from the extraction well and function as an isolation valve when repairing the pumps or the extraction wells.

11.4.2.4 Controls

The controls for the extraction system will include local level controls to start and stop the well pumps. Also a high level switch (LSH) located in the Influent Accumulation Tank will shut down all well pumps to prevent an overflow from the tank when the tank is full or when the treatment system is inoperable.

11.4.3 System Piping

The force main collects the groundwater from the extraction wells and conveys it to the treatment system. Two locations within the closed RCRA unit are being considered for placement of the forcemain: either adjacent to the perimeter road and/or along the perimeter trench. The final location of the forcemain will be determined during construction. If the force main is located within the perimeter leachate collection trench, the force main will be a single containment pipe, constructed of High Density Polyethylene (HDPE), and range in diameter from 2-inches to 3-inches. The forcemain will increase in size as more wells come on-line. If the pipe is located adjacent to the perimeter road, the force main will be double containment pipe consisting of either a 2-3 inch diameter carrier pipe enclosed within a secondary pipe or a 4-inch diameter carrier pipe within a secondary pipe, or equal.

The force main will vary in elevation creating high and low points. Low points in the force main will contain provisions to clean out the force main if sediment accumulation occurs, and monitor the forcemain for leaks during system operation. Valves will be located to isolate the forcemain during clean-out operations. High points in the force main will have an air release valve to allow

the pumps to run at maximum efficiency and allow for maximum capacity of groundwater within the force main.

Laterals from the force main located at the perimeter trench will be dual contained up to the well vault. The air service line/electric power service line used to operate pumps will be installed within the same trench as the force main or installed in a separate service line trench. The trench will be excavated and back-filled with sand and soil and the remaining soil will be disposed of on-site.

11.4.4 Groundwater Treatment Design

The initial design for the Laraway RDF groundwater treatment system is based on current groundwater sampling/analysis and characteristics of the groundwater. Based on sampling results, the following treatment processes are selected for design:

- Air Stripping
- Flocculation/Clarification
- UV/Oxidation
- Sludge Dewatering using a Filter Press

A phased construction and equipment installation approach will be utilized on the project based on analytical data obtained periodically during operation of the extraction system. The phased construction approach is discussed in Subsection 11.3.3 and 11.4.5 and shown on Drawing F-01, Process Flow Diagram in Attachment 4.

11.4.4.1 Description of Treatment Process, Phases 1, 2 and 3

The standard operating sequence of the groundwater treatment system will consist of groundwater being pumped from the extraction wells to a influent accumulation tank (Phase I construction). The influent accumulation tank may be aerated to prevent solids from settling in the tank. As an option, an in-line heat exchanger may be provided upstream of the tank to increase the temperature of the groundwater and assist in the removal of volatile organic compounds. Also as a option, a pre-clarification solids separation system may be installed to remove solids in Phase 1.

When sufficient volume is present in the influent tank, groundwater will be pumped by a submersible pump to an air stripper for removal of volatile organics (Phase II Construction). As an option, a second in-line heat exchanger may be installed to further increase the groundwater temperature which would assist in the removal of volatile organics. The exhaust air from the air stripper will be vented to the atmosphere with a provision to add vapor phase carbon if, in the future, analytical data indicates that loadings to the atmosphere exceed the current IEPA limits of 8.0 pounds per hour. Current modeling by the air stripper manufacturer indicates that loadings to the atmosphere will be 0.8 grams per hour (0.002 pounds per hour).

Groundwater from the influent accumulation tank will flow to a clarifier for solids and metals precipitation (Phase III construction). A polymer/flocculent may be added to facilitate settling. The clarifier effluent will flow by gravity to a holding tank (Holding Tank No. 1). The groundwater will then be pumped to a UV/Oxidation system for removal of p-Dioxane and residual volatile organics. The groundwater will flow by gravity to the air stripper and then to the Effluent Holding Tank. Treated groundwater will be pumped from the Effluent Holding Tank to the larger Effluent Accumulation Tank, where treated effluent can be stored, sampled and tested prior to release to the NPDES discharge. The Effluent Accumulation Tank will have a capacity of up to 24,000 gallons. In lieu of the Effluent Accumulation Tank, fran tanks with a total capacity of up to 50,000 gallons may be used for accumulation of treated groundwater prior to NPDES discharge.

Solids from the clarifier will be pumped to a Sludge Holding Tank prior to dewatering. The Sludge Holding will have a capacity of up to 12,000 gallons and may be aerated to maintain solids in suspension and prevent the contents of the holding tank from going septic. Solids from the Sludge Holding Tank will be dewatered daily by a 50 cubic foot filter press and disposed of in an appropriate manner. As an option, a polymer or other additive may be added to the filter press feed upstream of a static mixer. The addition of polymer/additive will assist in the dewatering of the sludge and potentially increase the solids concentration.

11.4.4.2 Mass Balance

A solids mass balance calculation, analyzing the flow and solids concentration entering and exiting each treatment unit, were performed. The mass balance was performed to determine the size of storage tanks and process equipment for all 3 phases of equipment installation based on a conservative estimate of the solids concentration entering the treatment system. The results of the mass balance calculations for a flow of 50 gpm (72,000 gpd) and 100 gpm (144,000 gpd) are summarized in Attachment 2 along with the mass balance calculations. The treatment process units and storage tanks were sized based a flowrate of 100 gpm. The transfer pumps were initially sized for 50 gpm, but can be removed or replaced if higher flow rates are required to maintain capture of the aquifer.

11.4.4.3 Treatment System Design

The treatment equipment design parameters are summarized in the following sections. Specific requirements and equipment layout are presented on Drawing M-01 in Attachment 9. Design parameters and calculations for equipment sizing are presented in Attachment 5. The equipment will be installed initially in an existing Facility Building located north of the closed RCRA landfill. During the development of the solid waste landfill unit the existing building will be demolished and the equipment relocated to either a new pre-engineered metal building (Stage 2A) located adjacent to the closed RCRA unit or the existing Office/Maintenance Building (Stage 2B) located at the north end of the facility. The location of the groundwater treatment building is presented on Drawing C-02 in Attachment 4.

11.4.4.3.1 Influent Accumulation Tank

The Influent Storage Tank will provide initial capacity to accumulate extracted groundwater. The accumulation tank may be aerated to keep solids in suspension and equalize the flow and constituent concentration prior to groundwater entering the treatment system. The Influent Accumulation shown has tank capacity of a minimum of 3000 gallons. However, a frac tank container with a capacity of up to 40,000 gallons may be used. Based on a design flow of 35 gpm from the extraction wells, the tank will have an accumulation capacity of over 1 hour. The accumulation tank will be located at the treatment building. The tank will be constructed of fiberglass reinforced plastic, cross-linked polyethylene, or painted steel for corrosion protection. Groundwater from the force main will be discharged into the tank through a side inlet area near the top of the tank.

The groundwater volume in the storage tank will be controlled by level float switches or other controls which can start or stop the transfer pump. High-high and low-low level alarms will be provided to shut down operation of the extraction wells or submersible pumps in the event of equipment failure.

11.4.4.3.2 Air Stripper

Removal of residual VOC's will be accomplished by air stripping. In air stripping, volatile organic compounds dissolved in liquid phase are transferred to the vapor phase as a result of an increase of the surface area contact between the liquid and the stripping gas, which is usually air. This process is most effective for compounds that are volatile and can be readily transferred into the vapor phase. Given the compounds present in the groundwater, most of the organics other than p-Dioxane are expected to be easily removed in the air stripping process.

Three different types of air stripper may be applicable for the project, counter-current packed-bed, shallow tray and turbulent jet. The turbulent jet type air stripper, although less efficient than the other two, is being considered for the project because the system is less susceptible to fouling or plugging from solids, has a lower maintenance and operating cost, maintenance can be accomplished by non-technical, on-site personnel, and no blowers are required for operation. If analytical data obtained in the future indicates a more efficient unit is required for removal of VOC's, a different type of unit will be selected.

<u>WMII will notify the IEPA of any equipment changes by a Class 1 Permit Modification Application submission.</u>

The air stripper has been sized for a flowrate of 100 gpm. The removal efficiencies have been modeled by the equipment manufacture, and loadings to the atmosphere have been calculated. Table 11-1 summarizes the air emissions and loadings for the volatile organic components present in the groundwater. Modeling data from the air stripper manufacturer is included in Attachment 3.

TABLE 11-3
AIR STRIPPER EMISSIONS
LARAWAY RDF

Constituent	Influent Conc. (ug/l)	Removal Efficiency (%)	Effluent Conc (ug/l)	Conc. in Air (g/hr)
1,1-DCA	5.40	75.99	1.30	0.09
Vinyl Chloride	18.90	91.00	1. 70	0.39
Dichlorodifluoromethane	6.60	79.75	1.34	0.12
Trichloroflouromethane	10.80	72.75	2.19	0.20
			TOTAL	0.80 g/hr (0.002 lb/hr)

The exhaust air from the air stripper has been evaluated to determine if treatment with vapor phase carbon is necessary prior to discharge to the atmosphere. The concentrations listed in Table 11-3 are based on twenty hours per day of air stripping. Based on the manufacturer's modeling results, the organic compound loading to the atmosphere is 0.042 lbs/day. This is below the limit of 8.0 lbs/day per IEPA regulations. Therefore. exhaust from the air stripping process should not require further treatment prior to discharge to the atmosphere.

11.4.4.3.3 Clarifier

The clarifier will provide a settling process to separate metal precipitates and solids from the groundwater. Prior to clarification, a polymer or other additive may be added into a mix tank and flocculating chamber that is provided with the equipment. The clarifier is designed for a maximum flowrate of 100 gpm and has a surface overflow rate of 0.25 gpm/sf. Based on the groundwater characteristics and design loading, an inclined plate clarifier was selected for design. The model chosen will provide a effective surface area of 570 ft^2 and would have a surface overflow rate of 0.22 gpm/ft^2.

11.4.4.3.4 UV/Peroxide Oxidation

UV/peroxide oxidation utilizes hydrogen peroxide and ultraviolet (UV) light to oxidize organics which are highly soluble in groundwater. The UV process converts hydrogen peroxide to hydroxide radicals which are used to oxidize organic compounds. Typical byproducts from this process consist of water. carbon-dioxide and organic acids. There are no air emission or secondary waste products generated by the unit process thus eliminating the need for an air permit or vapor monitoring. The unit process consists of a skid-mounted peroxide tank, peroxide feed system and UV/peroxide oxidation system. The UV/peroxide oxidation system is designed for

100 gpm, and based on preliminary modelling by the manufacturer, the unit process can reduce p-Dioxane, 1,1-DCA and Vinyl Chloride to meet NPDES discharge requirements.

11.4.4.3.5 Effluent Accumulation Tank

The effluent accumulation tank will provide accumulation capacity for the treated groundwater prior to final discharge. The tank is designed with a nominal capacity of up to 24,000 gallons. Based on a flow of 50 gpm, the site will have 8 hours of accumulation capacity and at 100 gpm. 4 hours of accumulation capacity. The tank is currently designed to be 12-foot diameter and 28 feet high and constructed of fiberglass (FRP), cross-linked polyethylene (XLPE) or steel with corrosion protection. The tank size may vary due to pumping rates.

11.4.4.3.6 Sludge Holding Tank

Solids collected in the clarifier will be pumped to a sludge holding tank. The sludge holding tank is designed to concentrate sludge from the clarifier and equalize sludge flow through mixing. The sludge may be aerated to maintain solids in suspension prior to dewatering. Prior to dewatering, mixing is shut off to allow the sludge to thicken. The sludge holding tank is also designed to provide sufficient storage capacity (12,000 gallons) to allow the filter press to operate one cycle per day, 5 days per week at a system flow rate of 50 gpm. The sludge holding tank will provide 6 days of storage at an average flow rate of 50 gpm and 3 days of storage at an average flow rate of 100 gpm. The tank size may vary due to sludge holding system needs.

11.4.4.3.7 Filter Press

Sludge from the sludge holding tank will be dewatered to approximately 30% solids by the filter press prior to disposal. The filter press was designed to process 15,146 lbs/day of sludge from the clarifier at 2% solids concentration. Based on operating the filter press 5 days per week with one run per day, a filter press capable of processing approximately 30 cubic feet is required. A filter press capable of processing 50 cubic feet/cycle was selected, which will allow for flexibility in flow rate and allow for sludge accumulation over the weekend. A pump will be provided to transfer sludge to the filter press. Dewatered solids removed from the filter press may be disposed of on-site in the Closed RCRA Unit or off-site in appropriate facilities.

<u>WMII requests a Class 1(*) modification authorization for on-site disposal into the Closed RCRA Unit of solids generated by implementation of the Corrective Action Program</u>

An equipment list summarizing the capacity and materials of construction for all phases of this treatment system is shown on Table 11-4.

TABLE 11-4: EQUIPMENT LIST
LARAWAY RDF WATER TREATMENT BUILDING

Tag No.	Equipment	Anticipated Equipment Capacity[1]	Possible Matl's of Construction[2]
	Accumulation		
T-100	INFLUENT ACCUMULATION TANK	3000 gal	FRP / XLPE
P-110	GROUNDWATER TRANSFER PUMP	50 gpm	---
AS-200	AIR STRIPPER	50 / 100 gpm	---
C-300	CLARIFIER	50 / 100 gpm	---
T-400	HOLDING TANK No. 1	1100 gal	FRP / XLPE
P-410	CLARIFIER TRANSFER PUMP	50 gpm	---
O-500	OXIDATION SYSTEM	50 / 100 gpm	---
H-510	HYDROGEN PEROXIDE STORAGE/FEED MODULE	500 gal	---
T-600	EFFLUENT HOLDING TANK	1100 gal	FRP / XLPE
P-610	EFFLUENT TRANSFER PUMP	50 gpm	---
T-700	EFFLUENT ACCUMULATION TANK	24000 gal	FRP / XLPE
P-410	CLARIFIER SLUDGE PUMP	15 gpm	---
T-800	SLUDGE HOLDING TANK	12000 gal	CS
P-810	FILTER PRESS FEED PUMP	30 gpm	---
F-900	FILTER PRESS	50 / 100 gpm	---
T-1000	FILTRATE HOLDING TANK	1550 gal	FRP / XLPE
P-1010	FILTRATE TRANSFER PUMP	30 gpm	---
C-1100	AIR COMPRESSOR	---	---

FRP - Fiberglass Reinforced Plastic
XLPE - Crosslinked High Density Polyethylene
CS - Carbon Steel
Gal - Gallons
GPM - Gallons per minute

1 *Anticipated capacity for stage design is listed above. However, equipment capacities may vary to maintain flow and performance requirements of the groundwater treatment system and to maintain capture of the aquifer.*

2 *Construction materials may vary to maintain project performance requirements.*

11.4.4.4 Electrical Design

The motor control center will be located in the existing Electrical Building adjacent to the Treatment Building during Phase I of the Facility Operations. Groundwater treatment equipment above 1/2 hp will be 480 volt, 3 phase, with power and control wiring run through conduit within the building. All 480 volt motor starters will be located in the motor control center.

During the development of the solid waste landfill unit, the existing treatment and electrical building may be demolished. Prior to demolition, all treatment units and tankage may be relocated to either a new pre-engineered metal building located adjacent to the closed RCRA facility or to the existing Office/Maintenance Building located at the north end of the facility. The motor control center will be relocated to the new building or the Office/Maintenance Building. If required, the local power company will provide power to the treatment building at the new location. A wire service will be transformed to 120/240 for distribution to wells, lights, and receptacles. If extraction wells are electric, site distribution power to the wells will consist of 240 volt circuits, with wiring designed to account for voltage drops. The relocation of equipment to the new pre-engineered treatment building or to the existing Office/Maintenance Building will require temporary shut down of treatment operations until the transition of the equipment is completed. The temporary shut down of operations is estimated to be 60 days or less.

11.4.4.5 Structural Design

The existing buildings appear to be adequate to accommodate the Groundwater Treatment System. If a new facility is required adjacent to the closed RCRA facility, the groundwater treatment facility will consist of a pre-engineered metal building and a tank farm with concrete containment. The concrete slab for the pre-engineered metal building will have drains which lead to a sump for return of any spilled groundwater to the influent accumulation tank. A corrosion-resistant coating will be applied to the concrete in all treatment buildings and tank farm. The pre-engineered metal building will be insulated to maintain residual heat.

It is anticipated that the new pre-engineered metal building will be divided into two rooms by a concrete masonry wall. One room will contain and protect the motor control center and any instrument panels. The other room will contain major process equipment and pumps. Foundation designs will extend below the frost line and comply with applicable building codes. Water stops will be provided at all locations which require control of fluid seepage.

11.4.4.6 Instrumentation Design

The instrumentation will consist of local field instruments, a Programmable Logic Controller (PLC) for monitoring and control of operations and a automatic phone notification system for critical alarms. Detail for the instrumentation required for the groundwater treatment system including type of instrumentation, manufacturer, tag number, location and operation will be defined at a later date.

Each extraction well discharge line will include pressure indicators and flow meter for local indication. The extraction wells which discharge to the Influent Accumulation Tank will shutoff upon high-high level in the tanks and start upon a signal clear. Operation of the influent accumulation tank, effluent accumulation tank and holding tanks will be similar in operation. When the tanks reach high level (LSH), the respective pumps will start. The submersible pump, when started, will be set to an automatic flow control of 50 gpm. Pump operation will remain in effect until tanks reach low level (LSL) or is interrupted by one of the interlocks indicating a high-high level (LSHH). At this point, the submersible pump and feed pumps will shut off and the flow control loop will be set to manual operation. Should a high-high level be encountered in the Influent Accumulation Tank, all groundwater extraction pumps are shut down to prevent overfilling of the tank. At high-high level, a local visual alarm notification system will be triggered. A similar function will be programmed in the logic for the clarifier sludge pump. The filter press feed pump will be started/stopped locally by the operator.

In all cases, the pumps in the groundwater treatment system will start up and shut down only when the Hand-Off-Auto (HOA) switches are in the Auto Position.

The location of field instruments and control loops are shown on Drawing I-02 in Attachment 4.

11.4.5 Phased Process Construction

A phased approach for construction and equipment installation will be utilized on the project. Implementation of the phases will be based on analytical data periodically obtained during extraction well operation. The various phases, along with the equipment to be installed during that phase, are shown on the Process Flow Diagram and the Piping and Instrumentation Diagram (Attachment 4).

Phase I equipment, consisting of the extraction wells and Influent Accumulation Tank, will be installed for removal of VOCs. Phase II equipment, consisting of an air stripper, will be installed after initial start-up of the extraction system only if analytical data obtained during operation indicates that the concentrations of volatiles are approaching the NPDES discharge limits. Phase III equipment consisting of a clarifier, UV/Peroxide Oxidation System, sludge holding tank and filter press will be installed only if the concentration of p-Dioxane and solids are approaching NPDES discharge limits. The clarifier will be installed for the removal of the natural occurring iron and calcium carbonate (as alkalinity) solids that could potentially foul the UV system and reduce its effectiveness.

The effluent from Phase III will be pumped to the Effluent Accumulation Tank for sampling and testing of target parameters prior to discharge. During Phase III, the air stripper will be relocated downstream of the UV/Oxidation System. The UV/Oxidation System will oxidize volatile organics and p-Dioxane, resulting in lower concentrations of organics to the air stripper and subsequently lower emissions discharged from the air stripper. A contingent phase may be applied for the extraction/treatment operation if higher flow rates are required, or if groundwater constituents or significantly higher concentrations are observed. If this is the case, then new

system modification will be incorporated to accommodate the flow and/or treat the groundwater effectively.

This modification, as long as it maintains performance standards of the original permitted design to capture the aquifer and treat groundwater to standards, will be submitted to the IEPA for approval as a Class 1 modification to the RCRA Part B Post-Closure permit.

11.4.6 Facility Description

The building layout for the Groundwater Treatment System has been designed to meet the goals for efficient management of extracted groundwater. The layout considers all three possible phases of the project so that each phase can be constructed with minimal disruption to the previous phase.

Equipment for the Groundwater Treatment System will be temporarily housed at an existing facility building. The two larger tanks, Sludge Holding Tank and Final Effluent Holding Tank, will be installed on existing concrete pads within the tank farm located south of the existing building. A Motor Control Center will be installed in the Electrical Control Room at the north end of the existing building.

The remainder of the equipment will be installed in the eastern half of the existing building. It is anticipated that the approximate 48 foot by 33 foot area within the existing building will be of adequate size to house the equipment for all three phases of the treatment system.

As directed by facility management, the Solid Waste Landfill will expand to include the area where the existing treatment facility building is located. This existing building will be demolished during the expansion. As a result, two options are available for the location of a groundwater treatment facility. One option is the construction of a pre-engineered metal building located adjacent to the closed RCRA unit. The second option is to relocate the treatment equipment into the existing Office/Maintenance Building. The equipment layout in the new building and in the Office/Maintenance Building will be similar to the layout shown on Drawing M-01, Attachment 4.

11.4.7 Facility Operation

The intended groundwater extraction and treatment routine duration of operation is 24 hours a day. However, at times maintenance may be performed or equipment changed that will affect continuous operation. Also, at times, especially during extreme winter months, the operation may not be continuous.

If the Corrective Action System is not operating for a continuous period exceeding 90 days duration , then a Class 1 Permit Modification Status Report will be submitted to the IEPA.

11.5 MONITORING

11.5.1 Corrective Action Groundwater Monitoring Program

11.5.1.1 Summary

During the operation of the Groundwater Containment, Extraction, and Treatment System, groundwater will be monitored in order to demonstrate the effectiveness of the Corrective Action Program and to determine compliance with the groundwater protection standard. Detail of the Corrective Action Groundwater Monitoring Program is provided in sub-section 5.4.3 of this submission.

11.6 GROUND WATER FLOW MODEL

11.6.1 Model and Assumptions

The first step in ground water modeling is the development of a model of the site. The purpose of the model is to present the hydrogeologic setting of the site in simplified form emulating the existing ground water flow mechanism at the site as close as possible. The model is based on (1) site geology and hydrogeology; (2) the screen intervals of existing wells; and (3) the purpose of modeling study. The general model of the site is illustrated in Figure 1. As shown in Figure 1, the site hydrogeology is defined by (1) a surficial clay layer which restricts the ground water flow and acts to impose confined conditions on the underlying aquifer; (2) the outwash and weathered dolomite; and (3) the Silurian dolomite. The outwash deposits, where present, primarily overlie and are in direct hydraulic connection with the dolomite bedrock forming a single hydrostratigraphic unit across most of the site.

The vertical extension of the modeling zone was defined based on the length of screen intervals of the proposed extraction wells. The screen intervals were anticipated to be 20 feet, starting from the top of Outwash and Weathered Dolomite formation. The bottom elevations of the screen intervals of the proposed wells range from 562 feet msl to 568 feet msl. Therefore, the bottom elevation of the modeling zone was conservatively selected to be 540 feet msl.

The aforementioned geometric values (see Figure 1, Attachment 4) define partially-penetrating wells in the groundwater flow system. As can be seen from Figure 1, the screening intervals will be included in Layer 1 and Layer 2 only, and screens will not be included in Layer 3. For these reasons, the model will be a three-dimensional model.

Several assumptions were required for the ground water flow system beneath the Laraway RDF. All of the following modeling assumptions are based on the characteristics of the site and standard numerical modeling practices:

1. The ground water flow system is steady;

2. The modeled system is saturated and has hydrogeologic properties equivalent to the stratigraphic unit in which it is located;
3. The Silurian dolomite is a porous medium and ground water flow within it obeys Darcy's law: and
4. The bottom of the modeling zone is an impervious boundary.

11.6.2 Construction of the Model

11.6.2.1 Ground Water Flow Modeling Code: MODFLOW

11.6.2.1.1 Definition of MODFLOW

The ground water modeling study was conducted using the MODFLOW computer code. The MODFLOW code is publicly available and well-verified and is being used for more than a decade by various private and public organizations for solving saturated groundwater flow problems. MODFLOW is a complete three-dimensional finite-difference ground water flow model that was developed by McDonald and Harbaugh (1984). The model is also known as U.S. Geological Survey's modular three-dimensional computer code. This program has been augmented with a pre- and post-processor developed by Geraghty & Miller, Inc., and renamed MODFLOW[386]. The model simulates flow in three dimensions. Ground water flow within an aquifer is simulated using a block-centered finite-difference approach. Layers can be simulated as confined, unconfined, or a combination of confined and unconfined. Flow from external stresses, such as flow to wells, areal recharge, evaporation, flow to drains, and flow through river beds, can also be simulated. The finite-difference equations can be solved using either the Strongly Implicit Procedure (SIP) or the Slice-Successive Over Relaxation (SSOR) technique. MODFLOW output includes groundwater head and drawdown arrays for each modeling layer as well as other information regarding mass balance and various flow terms. The groundwater head and drawdown arrays can be used to create groundwater head and drawdown contours.

The code structure consists of a main program and a series of highly independent subroutines called "modules". The modules are grouped into "packages". Each package deals with a specific feature of the hydrologic system which is to be simulated, such as flow from rivers or flow into drains, or with a specific method of solving simultaneous linear equations which describe the flow system, such as the Strongly Implicit Procedure or Slice-Successive Over relaxation techniques.

The division of the program into modules permits examination of specific hydrologic features of the model independently. This also facilitates development of additional capabilities because new modules or packages can be added to the program without modifying the existing modules or packages. The input and output systems of the computer program are also designed to permit maximum flexibility.

The input data of MODFLOW was prepared using computer-aided design preprocessor software called ModelCad[386] developed by Rumbaugh (1993). ModelCad[386] provides an efficient graphical

interface that allows the user to input spatially distributed model input parameter data required during MODFLOW model grid generation.

11.6.2.1.2 Verification Status of MODFLOW

MODFLOW is a well-verified and publicly accepted ground water flow modeling code that is widely used in ground water modeling practices. A verification study was conducted by FAUST et al. (1990) by comparing the results of MODFLOW with FTWORK. FTWORK was developed by Faust et al. (1990) and is a complete three-dimensional finite-difference ground water flow and solute transport code and is similar in many respects to MODFLOW. A comparison of MODFLOW to FTWORK is summarized below in a test problem found in the FTWORK user's manual.

Section 5.1 of the FTWORK user's manual deals with the assessment of drawdowns resulting from irrigation pumping in a regional multi-aquifer system. A fully three-dimensional model was assembled. The areal finite-difference grid is shown in Figure 5.2 of the FTWORK user's manual. The results of FTWORK are in agreement with the results of MODFLOW (Table 5.2 of the FTWORK user's manual).

In Section 5.2 of the FTWORK user's manual, the results of the sample problem in the MODFLOW manual (McDonald and Harbaugh, 1984) are compared with the results of FTWORK. As shown in Figure 5.5 of the FTWORK user's manual, the sample problem is composed of three layers separated by confining layers. Comparison of the results of these two codes show a match within 0.1 feet at any equivalent model grid block. Figure 5.6 of the FTWORK user's manual shows heads in a cross-section across the drain for Layer 1. The match between the two models is too close to be visible in Figure 5.6 of the FTWORK user's manual and, therefore, a table of model results is included in Table 5.4 of the manual. A graph of drainage versus time is presented in Figure 5.7 and Table 5.5 of the FTWORK user's manual. As previously discussed, heads are within 0.1 feet between the two nodes. A table of heads versus distance from the drain is also presented in Table 5.4 of the FTWORK user's manual.

Stream leakage versus time is presented in Figure 5.9 and Table 5.5 of the FTWORK user's manual. A cross-section across the stream at mid- and late-simulation time in column 10 is presented in Figure 5.10 with results in Table 5.7 of the FTWORK user's manual. Results show the corresponding heads between the two models.

11.6.2.2 Modeling Grid System

A rectangular finite-difference grid was superimposed on the site map to simulate the hydrogeologic conditions at the site. The finite-difference grid overlay is illustrated in Figure 2 (Attachment 5). The grid system consists of three modeling layers as discussed in Subsection 11.6.1. Each modeling layer consists of 78 rows and 87 columns, or 6786 modeling cells per layer. Therefore, the total number of finite-difference cells in the Laraway RDF model is 20358. Grid sizes within the model domain are uniform and they are 50 feet by 50 feet. The model

represented an area 3900 feet by 4350 feet. The thicknesses of each modeling layers are variable. Significantly large distances were kept between the proposed extraction wells area and model boundaries in order to reduce the potential boundary effects upon the results of model. As mentioned in Subsection 11.6.1, the model will be three-dimensional because of the existence of partially-penetrating wells.

11.6.2.3 Model Boundary Conditions

Boundary conditions play an important role in the development of a ground water flow model. The type of boundary conditions and the values used at these boundaries were carefully chosen based on the site-specific hydrologic and hydrogeologic information. The boundary conditions chosen for the model are:

1. Constant or prescribed head (Dirichlet condition) boundary condition;
2. Flux-type boundary condition (Neuman condition) for which fluxes are specific; and
3. No-flow boundary condition, for which the fluxes are zero (a special form of the Neuman boundary condition).

Prescribed head, no-flow, and Neuman flux-type boundary conditions were assigned around the modeled grid boundaries of the aquifer. No-flow boundary condition was assigned to a portion of the western boundary (rows from 1 through 34) because the potentiometric head contours are approximately perpendicular to that boundary. Prescribed head boundary conditions were assigned to the rest of boundaries around the model grid area.

The aquifer is under confined conditions. The bottom of the aquifer was simulated as a no-flow boundary.

11.6.2.4 Model Input Parameters

The site-specific model input parameters are discussed below.

11.6.2.4.1 Observed Ground Water Heads

Ground water head levels were collected from the on-site monitoring wells during January, April, July, and November, 1993, and are presented in Table 11-5. Shown in Table 11-5 are only the observed values that correspond to the modeling area (RUST, 1993a, Table 2-7). Table 6-1 also includes arithmetic averages and standard deviations. The standard deviations range from 0.15 feet to 1.80 feet. The arithmetic average value of the standard deviations is 0.52 feet. As can be seen from Table 11-5, the ground water heads do not fluctuate significantly throughout the year. The observed ground water head contours are shown on Figure 2 in Attachment 5.

11.6.2.4.2 Bottom and Top Elevations

The top elevation contours for the Outwash and Weathered Dolomite (Layer 1) and the top elevation contours for Silurian dolomite are shown in Figure 3 and Figure 4, respectively in Attachment 5. The spatial variability of these elevation values were incorporated into the model by creating elevation zones for each contour map. The top elevation of Layer 1 varies from 572.5 feet msl to 590.5 feet msl. The bottom elevations of Layer 1 or the top elevations of Layer 2 vary from 558 feet msl to 587.5 feet msl. The average bottom elevation of Layer 2 is 2567 feet msl and minor adjustments were made around the existing wells. The bottom elevation of Layer 3 was assigned to be 540 feet msl.

11.6.2.4.3 Horizontal and Vertical Hydraulic Conductivities

The modeling area encompasses the RCRA unit, southern half of the solid waste unit and other off-site areas. The measured hydraulic conductivities available for these areas are summarized in the following paragraphs.

The measured horizontal hydraulic conductivities based on slug and pumping tests on the RCRA unit are summarized in Table 11-6. The wells listed in Table 11-6 are screened mostly in the Outwash and Weathered Dolomite formation. As can be seen from Table 11-6, the horizontal hydraulic conductivity ranges from 2.80×10^{-2} cm/sec to 1.80×10^{-4} cm/sec and their average and geometric mean values are 3.92×10^{-3} cm/sec and 2.60×10^{-3}, respectively. For scattered hydraulic conductivity distribution, the geometric mean is a better representative value than the average value. Therefore, the value 2.60×10^{-3} cm/sec (7.37 ft/day) was assigned to the RCRA unit for the Outwash and Weathered Dolomite formation (Layer 1 and Layer 2). Table 11-7 presents the measured horizontal hydraulic conductivities for the Silurian dolomite based on packer and slug tests. Their arithmetic average value, 2.0×10^{-4} cm/sec (0.57 ft/day), was assigned to the RCRA unit for Layer 3. The ratio between the horizontal hydraulic conductivity (K_h) and vertical hydraulic conductivity (K_v) was assumed to be 10. Based on the aforementioned values, the assigned hydraulic conductivity values for the model are summarized in Table 11-8.

The horizontal and vertical hydraulic conductivity values for the solid waste area were taken from a previously prepared report (RUST, 1993b) and the values are listed in Table 11-9. Details regarding these values can be found in RUST (1993b). Comparison of Table 11-8 and Table 11-9 show that the corresponding hydraulic conductivity values are in the same order of magnitude and they are significantly close to each other.

The measured horizontal hydraulic conductivities based on December 1993 pumping test around the wells G-130 and G-131 are presented in Table 11-10 (RUST, 1994a). Comparison of these values with the other measured values show that they are approximately one order of magnitude higher than the previously measured values. These values were assigned to a zone in Layers 1 and 2 of the model created around the wells G-130 and G-131. The ratio between the horizontal and vertical hydraulic conductivity was assumed to be 10 and one order of magnitude less hydraulic conductivities were assigned to Layer 3.

The arithmetic average values of the RCRA unit and Solid Waste unit were assigned to the southern area of the Co-Disposal Area. In other words, the arithmetic averages of the corresponding values in Tables 11-8 and 11-9 were assigned to this area. The adequacy of these values were evaluated during the calibration process.

TABLE 11-5: OBSERVED GROUNDWATER HEADS FOR THE UPPERMOST AQUIFER (OUTWASH/DOLOMITE)

WELL ID	X EASTING	Y NORTHING	GROUNDWAWTER ELEVATIONS Jan-93 GW ELEV.	Apr-93 GW ELEV.	Jul-93 GW ELEV.	Nov-93 GW ELEV.	AVERAGE GW ELEV.	STANDARD DEVIATION OF GROUND WATER ELEV.
G115	1041646.70	1752975.48	583.18	583.18		582.69	583.02	0.23
G116	1041406.79	1752971.95	580.84	582.28		581.67	581.60	0.59
G117	1040920.14	1752921.26	581.94	582.94		581.94	582.27	0.47
G118	1041114.84	1752570.34	583.87	584.64		583.74	584.08	0.40
G119	1041043.62	1752277.84	587.03	587.92		587.13	587.36	0.40
G120	1040995.55	1752025.90	588.19	589.12		588.15	588.49	0.45
G121	1040992.02	1751793.79	590.13	591.04		590.74	590.64	0.38
R122	1040985.41	1751558.82	592.77	593.59	592.89	591.36	592.65	0.81
G123	1040785.41	1751529.95	592.47	593.23	592.69	592.15	592.64	0.39
G124	1040583.87	1751521.57	591.18	592.09	591.74	590.88	591.47	0.47
G125	1010453.11	1751360.44	591.01	592.08	591.69	590.17	591.24	0.73
G126	1040272.30	1751349.64	590.97	591.85	591.56	590.60	591.25	0.49
G127	1040091.50	1751349.64	590.36	591.33	590.88	589.92	590.62	0.53
R128	1039907.15	1751346.12	589.69	590.66	NA	589.59	442.49	255.47
R29S	1039711.56	1751298.06	592.08	590.17	590.21	589.52	590.50	0.96
R29D	1039723.03	1751325.18	590.98	590.73	590.18	591.44	590.83	0.45
G130	1039585.65	1751313.50	589.92	590.85	590.33	589.45	590.14	0.52
G131	1039408.15	1751299.17	589.92	590.84	590.32	589.59	590.17	0.47
G132	1039162.51	1751183.00	589.94	590.81	590.32	589.93	590.25	0.36
G133	1039158.98	1750991.68	590.13	590.94	590.38	589.49	590.24	0.52
G135	1039169.79	1750604.61	590.10	591.04	590.45	589.72	590.33	0.49
G136	1039169.57	1750409.54	589.66	590.87	590.41	589.53	590.12	0.55
G137	1039234.39	1750257.67	590.27	591.22	590.65	589.75	590.47	0.54
G138	1039408.15	1750261.64	590.35	591.28	590.75	589.93	590.58	0.50
R139	1039559.30	1750316.30	589.70	591.33	590.92	590.02	590.49	0.66
R40S	1039777.93	1750305.72	590.85	591.67	591.23	590.26	591.00	0.52
G141	1040156.54	1750319.61	592.17	593.38	591.76	590.14	591.86	1.16
G142	1040435.25	1750324.02	591.95	592.81	592.26	591.57	592.15	0.45
G143	1040710.22	1750316.30	592.54	593.34	592.70	592.02	592.65	0.47
R144	1041057.29	1750375.15	593.43	593.98	593.49	593.03	593.48	0.34
G145	1041274.05	1750312.55	592.80	593.37	592.97	591.55	592.67	0.68
G146	1041577.46	1750319.39	593.58	594.12	593.53	593.06	593.57	0.38
G147	1041768.85	1750467.73	593.78	594.46	593.99	593.32	593.89	0.41
G148	1041773.04	1750893.95	593.94	594.62	594.11	593.44	594.03	0.42
G149	1041758.71	1751393.95	596.44	595.37	595.14	595.27	595.56	0.52
R150	1041769.51	1752011.03	584.46	588.48		584.92	585.95	1.80
G151	1041769.52	1752502.01	587.57	584.85		584.28	585.57	1.44
G52D	1041566.87	1751393.07	591.77	594.19	593.63	593.26	593.21	0.90
G52S					593.55	593.21	593.38	0.17
G53D	1041335.57	1751390.42	592.52	593.33	592.75	592.23	592.71	0.40
G53S						592.77	592.77	0.00
G55S	1040697.43	1752143.83	593.64	594.17	593.17?		395.94	279.97
G221	1041186.73	1751782.55	592.46	593.03		591.91	592.47	0.46

TABLE 11-5: CONTINUED

WELL ID	X EASTING	Y NORTHING	GROUNDWAWTER ELEVATIONS				AVERAGE GW ELEV.	STANDARD DEVIATION OF GROUND WATER ELEV.
			Jan-93 GW ELEV.	Apr-93 GW ELEV.	Jul-93 GW ELEV.	Nov-93 GW ELEV.		
G222	1041396.87	1751791.59	593.35	593.14		591.84	592.78	0.67
G223	1041201.50	1752936.25	590.98?	582.34		582.05	388.13	274.45
R4D2	1039777.05	1750304.62	590.88	591.79	591.22	590.37	591.07	0.52
R134					590.39	591.12	590.76	0.37
							ARITHMETIC AVERAGE =	0.52

TABLE 11-6: HORIZONTAL CONDUCTIVITY SUMMARY OF DATA FROM RCRA UNIT AT THE LARAWAY RDF

WELL ID	SCREENED INTERVAL (ft) - FORMATION	HORIZONTAL HYDRALIUC CONDUCTIVITY (cm/sec)*
Outwash Wells:		
G122*	33.0-42.4 - Till/Outwash/Till	9.70e-03
G134*	37.3-43.3 - Till/Outwash	1.70e-03
G144*	25.5-30.0 - Outwash	8.30e-05
G164#	43.5-48.5 - Outwash	2.30e-02
R40S#	33.3-38.5 - Outwash	1.05e-02
R134#	40.0-50.0 - Outwash	1.27e-02
	Range:	2.33E-02 - 8.30E-05
	Geometric Mean:	4.02e-03
	Average:	9.61e-03
	Standard Deviation:	8.28e-03
Weathered Dolomite Wells:		
R29D#	50.5-55.5 - Dolomite	1.48e-02
R4D2#	53.0-58.5 - Dolomite	3.44e-03
G52D#	44.5-50.0 - Dolomite	4.12e-03
G149#	30-35 - Till/Dolomite	1.10e-04
G160#	54.0-59.0 - Dolomite	3.56e-04
G162#	53.0-58.0 - Dolomite	1.86e-03
G163#	62.0-67.0 - Dolomite	6.31e-03
G165#	73.0-78.0 - Dolomite	6.05e-04
	Range:	1.48E-02 - 1.10E-04
	Geometric Mean	1.66e-03
	Average:	3.95e-03
	Standard Deviation:	4.88e-03
Outwash/Dolomite Wells:		
R29S#	40.5-45.5 - Outwash/Dolomite	6.09e-03
R122#	24.3-43.6 - Outwash/Dolomite	9.20e-04
G123*	32.2-51.4 - Outwash/Dolomite	2.20e-03
G124*	31.2-45.6 - Outwash/Dolomite	1.30e-03
G125#	31.4-50.5 - Outwash/Dolomite	5.83e-03
G126*	31.5-50.6 - Outwash/Dolomite	5.83e-03
G127*	35-54.1 - Outwash/Dolomite	2.30e-03
G128*	37-56.1 - Outwash/Dolomite	9.30e-03
G129*	37.4-56.5 - Outwash/Dolomite	4.80e-03
G130*	40.7-61 - Outwash/Dolomite	4.80e-03
G131*	44.5-63.6 - Outwash/Dolomite	1.10e-03
G132*	41.5-60.7 - Outwash/Dolomite	2.00e-03
G133#	40.3-60 - Outwash/Dolomite	4.90e-03
G135*	41.65-60.8 - Outwash/Till/Dolomite	8.00e-04
G136*	37-60.95 - Outwash/Till/Dolomite	2.80e-02
G137*	34.1-58.1 - Outwash/Till/Dolomite	1.45e-03
G138#	34.2-58 - Outwash/Till/Dolomite	6.30e-04
G140*	33.6-57.5 - Till/Outwash/Dolomite	2.40e-03
G141*	29.01-48.29 - Outwash/Dolomite	1.83e-03
G142#	30.48-49.76 - Outwash/Dolomite	7.09e-03
R144#	30.0-40.0 - Outwash/Dolomite	1.42e-03
G145*	31.43-61.0 - Outwash/Dolomite	1.80e-04

TABLE 11-6: CONTINUED

WELL ID	SCREENED INTERVAL (ft) - FORMATION	HORIZONTAL HYDRALIUC CONDUCTIVITY (cm/sec)*
G146*	34.3-53.5 - Till/Outwash/Dolomite	2.60e-04
G147#	35-54.1 - Outwash/Dolomite	5.80e-04
G148*	36.06-50.43 - Outwash/Dolomite	2.00e-03
	Range:	2.80E-02 - 1.80E-04
	Geometric Mean:	2.12e-03
	Average:	3.92e-03
	Standard Deviation:	5.58e-03
	AVERAGE OF GEOMETRIC MEANS:	2.60e-03
		= 7.37 ft/day
	STANDARD DEVIATION OF GEOMETRIC MEANS:	1.25e-03
	STANDARD DEVIATION OF ARITHMETIC MEANS:	3.28e-03

**:Calculated Kh value determined by pump test conducted by Woodwoard-Clyde Consultants from April 2-May 6, 1984*
#:Measured Kh value determined by slug tests conducted by ATEC in August, 1993

TABLE 11-7: MEASURED HORIZONTAL HYDRAULIC CONDUCTIVITIES FOR LAYER 3 (SILURIAN DOLOMITE)

Well ID	Packer Test Interval Deptx (ft)	Elevation of Test Interval (ft MSL)	Formation Monitored	Horizontal Hydraulic Conductivity Kh (cm/sec)x
G-120	61 - 66	556.5 - 551.5	DOLOMITE	1.0E-04
	66 - 72	551.5 - 545.5	DOLOMITE	1.0E-04
	72 - 78	545.5 - 539.5	DOLOMITE	1.1E-04
G-121	53 - 59	566.5 - 560.49	DOLOMITE	1.0E-05
	59 - 65	560.49 - 554.5	DOLOMITE	1.5E-04
G-122	62 - 68	558.5 - 552.5	DOLOMITE	3.0E-04
	Screen Interval			
G-165	73 - 78	549.2 - 544.2	DOLOMITE	6.1E-04
			ARITHMETIC AVERAGE	**2.0E-04**

xValues for G120, G121, and G122 determined by packer tests conducted by Woodward-Clyde (WCC 1983). Value for G165 determined by slug test conducted by ATEC in 1993.

TABLE 11-8: SUMMARY OF HYDRAULIC CONDUCTIVITY VALUES USED IN RCRA UNIT OF GRID

LAYER	FORMATION	Kh (cm/sec)	Kh (ft/day)	Kv* (cm/sec)	Kv* (ft/day)
1	OUTWASH AND WEATHERED DOLOMITE	2.60e-03	7.37	2.60e-04	0.74
2	WEATHERED SILURIAN DOLOMITE	2.60e-03	7.37	2.60e-04	0.74
3	SILURIAN DOLOMITE	2.0e-04	0.57	2.0e-05	0.06

**Based on the assumption that Kh/Kv = 10.*

TABLE 11-9: HYDRAULIC CONDUCTIVITY VALUES FOR THE SOLID WASTE UNIT

LAYER	HORIZONTAL HYDRAULIC CONDUCTIVITY		VERTICAL HYDRAULIC CONDUCTIVITY	
	cm/sec	ft/day	cm/sec	ft/day
1	2.29e-03	6.5	2.29e-04	0.65
2	2.29e-03	6.5	2.29e-04	0.65
3	2.82e-04	0.8	2.82e-05	0.08

TABLE 11-10: MEASURED HORIZONTAL HYDRAULIC CONDUCTIVITIES FROM THE DECEMBER, 1993 PUMPING TEST

WELL ID	HORIZONTAL HYDRAULIC CONDUCTIVITY	
	cm/sec	ft/day
G-130	1.63E-02	40.2
G-131	1.57E-02	44.5
AVERAGE:	1.60E-02	42.35

Based on the above-mentioned hydraulic conductivities a total of 11 hydraulic conductivity zones were created for the model.

11.6.2.4.4 Recharge

The uppermost aquifer is under confined aquifer conditions. The measured vertical hydraulic conductivities are listed in Table 2-6 of RUST (1993a). Table 3-5 of RUST (1993b) presents their arithmetic average value. The average vertical hydraulic conductivity of the silty clay is 3.2×10^{-8} cm/sec (9.07×10^{-5} ft/day). The vertical recharge occurs under unsaturated flow conditions in the silty clay. El Nimr and Street (1972, p.21, Eq. 43) theoretically showed that under unsaturated flow conditions the maximum recharge rate is approximately equal to the vertical saturated hydraulic conductivity. Therefore, the recharge rate was assigned to be 9.07×10^{-5} ft/day (0.40 in/year) (RUST, 1993b, p. C-27). This value is an extremely small recharge rate and one should not expect any visible effects on the ground water contours as shown on Figure 2 in Attachment 5.

11.6.2.5 Model Calibration

The primary goal of model calibration was to establish a site-specific model which simulates the long term, steady-state ground water flow conditions in the confined flow zones. Calibration is accomplished by inputting site hydrologic and hydrogeologic data, running the model, comparing computed heads with observed heads and varying site data within known ranges until computed heads closely compare to observed heads.

An iterative procedure was used during the calibration of the model. An initial model run was made using the available average field parameters. The calculated head values at specific model cells from the initial run were compared to the observed head values located in the same model cell. If the difference (residual) between the observed and calibrated head values was too great, another calibration run was made and one of the parameters was adjusted within a range of realistic values.

The Strongly Implicit Procedure (SIP) package of MODFLOW was used for iteratively solving a system of simultaneous linear equations. In the SIP input data file of MODFLOW, HCLOSE is the head change criterion for convergence. When the maximum absolute value of head change from all cells during an iteration is less than or equal to HCLOSE, iteration stops (McDonald and Harbaugh, 1988). In all simulations, the value of HCLOSE was kept at 0.0001 feet and 256 iterations were required to satisfy the convergence criterion. The calibration run final volume balance in was 3960.6 ft^3/day and the volume balance out was 3989.8 ft^3/day, yielding a -0.0073 discrepancy (or -0.73 percent discrepancy). This value is consistent with the convergence criterion and the modeled assumption of steady state (no storage) in the system.

Figure 5 (Attachment 5) presents the calibrated potentiometric head contours for the outwash and weathered dolomite (Layer 1). The head contours for the other layers (Layers 2 and 3) are the same as Layer 1 and they are not presented in this document. Observed and calculated head

comparisons are presented in Table 11-11. As can be seen from this table, the arithmetic average of residuals are less than 1 foot (0.82 ft). The arithmetic average of the standard deviations of the observed head values is 0.52 ft. This value is an indication that the observed head values do not appear to significantly fluctuate with seasonal influences. As mentioned in Section 3.2.4.4, a recharge rate 0.40 in/year was estimated for the uppermost aquifer and used in the calibrated model. Computer runs were also conducted with a zero recharge rate. When the modeled head values from the 0.4 in/yr and 0.0 in/yr runs were compared the calculated head values approximated each other. Therefore, it can be said that the model is not sensitive within the expected range of recharge rates.

The overall simulated ground water head values, flow directions, and hydraulic gradients, show the model will provide a simulation of the site hydrogeologic system.

11.6.2.6 Comparison of the Calibrated Model Results With the Pumping Test Results

The calibrated model results are compared with the pumping test results conducted on December 23, 1993. The aquifer pumping test was conducted in the well PW-1 and drawdowns were recorded at various observation wells. A constant discharge pumping test was conducted for a 72.25 hour time period with 12.5 gpm pumping rate. The length of the screening interval is 20 feet.

The drawdowns measured at the end of pumping test are included in Figure 6 (Attachment 5). Based on these values drawdown contours were generated and are shown in the same figure (Figure 6). The calibrated model was run for the same pumping rate at the grid coordinates (ROW = 34, Column = 30) for the same pumping period with PERLEN = 72.25 hours and TSMULT = 1.1, which are the stress period length and the multiplier for the length of successive time steps, respectively. Based on these values the required number of time steps (NSTP) was calculated to be 64. These are mainly the input data for the basic package of the MODFLOW code for transient simulations. The simulated drawdown contours along with the observed ones are shown in Figure 6. Two contours were created for the observed drawdown values. The observed 1 foot contour line falls between 1-foot and 2-foot simulated contours but it is closer to the 2-foot contour line. The other observed drawdown contour (0.5-foot) is mostly around 0.5-foot and 1-foot simulated contour lines. There are two important points for the observed drawdown contours. The first one is that the drawdown contours were generated from fairly limited spatially distributed data points. The second point is that the recorded drawdown locations are at least 900 feet away from the pumped well (PW-1), and therefore, the drawdown variation range is relatively small, between 0.5 feet and 1.0 feet. The simulated drawdown range in the recorded area is between 0.5 feet and 1.75 feet and these values compare favorably with the above values. Comparisons for the measured values at G-130 and G-137 could not be made because they are too close to the pumped well (PW-1).

Based on the above analysis, it can be concluded that the model predicted values compared reasonably well with the measured values.

TABLE 11-11: OBSERVED VERSUS CALIBRATED HEAD VALUES

NO.	WELL ID	GRID COORDINATES		OBSERVED HEAD		CALCULATED HEAD he (ft MSL)	RESIDUAL ho - he (ft)
		ROW (J)	COLUMN (I)	VALUE ho (ft MSL)	STANDARD DEVIATION (ft)		
1	G115	3	75	583.02	0.23	583.6	-0.58
2	G116	3	70	581.6	0.59	583.6	-2
3	G117	3	61	582.27	0.47	583.7	-1.43
4	G118	11	64	584.08	0.4	586.3	-2.22
5	G119	17	63	587.36	0.4	588	-0.64
6	G120	22	62	588.49	0.45	589.1	-0.61
7	G121	27	62	590.64	0.38	590.1	0.54
8	R122	32	63	592.65	0.81	591	1.65
9	G123	33	58	592.64	0.39	590.8	1.84
10	G124	33	54	591.47	0.47	590.6	0.87
11	G125	34	50	591.24	0.73	590.6	0.64
12	G126	34	46	591.25	0.49	590.5	0.75
13	G127	34	42	590.62	0.53	590.4	0.22
14	R128	34	39	589.98	0.48	590.3	-0.32
15	R29*	34	35	590.67	0.71	590.3	0.37
16	G130	34	32	590.14	0.52	590.3	-0.16
17	G131	34	28	590.17	0.47	590.3	-0.13
18	G132	36	25	590.25	0.36	590.3	-0.05
19	G133	39	25	590.24	0.52	590.4	-0.16
20	G135	47	25	590.33	0.49	590.9	-0.57
21	G136	50	25	590.12	0.55	591.1	-0.98
22	G137	54	26	590.47	0.54	591.3	-0.83
23	G138	54	30	590.58	0.5	591.4	-0.82
24	R139	54	34	590.49	0.66	591.5	-1.01
25	R40S	54	39	591	0.52	591.6	-0.6
26	G141	54	44	591.86	1.16	591.8	0.06
27	G142	54	49	592.15	0.45	592	0.15
28	G143	54	56	592.65	0.47	592.4	0.25
29	R144	54	61	593.48	0.34	592.7	0.78
30	G145	54	68	592.67	0.68	593.2	-0.53
31	G146	54	74	593.57	0.38	593.7	-0.13
32	G147	51	77	593.89	0.41	594	-0.11
33	G148	43	77	594.03	0.42	593.8	0.23
34	G149	33	77	595.56	0.52	592.7	2.86
35	G151	12	77	585.57	1.44	586.9	-1.33
36	G52**	33	73	593.3	0.54	592.1	1.2
37	G53†	33	69	592.74	0.2	591.6	1.14
38	G55S	20	52	593.91††	0.26	588.6	5.31
39	G221	27	67	592.47	0.46	590.4	2.07
40	G222	27	71	592.78	0.67	590.7	2.08

TABLE 11-11: CONTINUED

NO.	WELL ID	GRID COORDINATES		OBSERVED HEAD		CALCULATED HEAD he (ft MSL)	RESIDUAL ho - he (ft)
		ROW (J)	COLUMN (I)	VALUE ho (ft MSL)	STANDARD DEVIATION (ft)		
41	G223	2	67	582.2	0.15	583.3	-1.1
42	R4D2	54	39	591.07	0.52	591.6	-0.53
43	R134	43	25	590.76	0.36	590.7	0.06
Absolute Arithmetic Average Value (Without G55S)							0.82
Arithmetic Average of the Standard Deviaions of Observed Head Values (Without G55S)							0.52

*Average values of R29S and R29D
**Average values of G52S and G52D
†Average values of G53S and G53D
††High value

11.7 EXTRACTION WELLS SIMULATIONS/SENSITIVITY ANALYSIS

Using the calibrated flow model a trial-and-error method was applied for extraction wells in order to create sufficient inward gradients to control the contaminant plume and maintain the aquifer under the corrective area. Both the rates and locations of extraction wells were changed during the simulation process.

A total of four extraction wells scenarios were simulated. The baseline model and all scenarios show that the plume can be controlled and maintain capture of the aquifer. The scenarios are:

Scenario 1: A total of nine extraction wells, each of 5 gpm extraction rate.
Scenario 2: A total of seven extraction wells, each of 5 gpm extraction rate.
Scenario 3: A total of eighteen extraction wells, each of 2.5 gpm extraction rate.
Scenario 4: A total of eight extraction wells, each of 5 gpm extraction rate.

The results of scenarios are presented in the following sections.

11.7.1 Extraction Wells Simulations for Scenario 1

11.7.1.1 Results of the Baseline Model

A total of nine wells, each of 5 gpm extraction rate was found sufficient in order to control the contaminant plume around the co-disposal area. The well coordinates and other pertinent data are included in Table 11-12. Drawdowns, initial heads, and top elevations are included in Table 7-2. As can be seen from Table 11-13, the drawdown at extraction wells locations ranges from 9.73 feet to 12.22 feet. The ground water head contours and flow lines are presented in Figure 7, Attachment 5. Figure 7 shows that the flow lines are directed to the extraction wells area and the contaminants will be taken under control with the proposed extraction wells scenario. The inward hydraulic gradients along approximately 800 feet distance from the extraction wells location in the northwestern zone of the Co-Disposal Area range approximately from 0.004 ft/ft to 0.005 ft/ft. This area is the downgradient location relative to the contaminant plume area. In the other zones around the contaminant plume area the inward hydraulic gradients are higher than the ones given above. These hydraulic gradients are sufficient enough in controlling the contaminant plume and maintaining capture of the aquifer under the RCRA corrective action area. Figure 8 presents the drawdown contours. Figure 8 (Attachment 5) shows that the minimum drawdown around the co-disposal area is around 3 feet.

11.7.1.2 Results of the Sensitivity Analysis

A sensitivity analysis was completed for Scenario 1 to measure the ground water flow model's response to changes in the values assigned to major input parameters. Because the uppermost aquifer is under confined conditions with the overlain silty clay formation, the recharge rate is fairly small (see Subsection 11.6.2.4.4). Because the simulations were conducted under steady

state conditions, the storage coefficient is zero. Therefore, the only parameter left is the hydraulic conductivity and a sensitivity analysis was conducted for its values.

ABLE 11-12: EXTRACTION WELL COORDINATES AND THEIR RATES FOR SCENARIO 1

WELL ID	EXISTING WELL	GRID COORDINATES		VERTICAL GRID ELEVATIONS (ft MSL)				LAYER LOCATIONS OF SCREENS	TOTAL MODELING SCREEN LENGTH (ft)	EXTRACTION RATE (gpm)
		ROW (J)	COLUMN (I)	TOP OF LAYER 1	BOTTOM OF LAYER 1	BOTTOM OF LAYER 2	BOTTOM OF LAYER 3			
EW-1	R4D2	54	39	589.5	574.5	569.5	540	1,2	15.0 + 5.0 = 20.0	5
EW-2	G138	54	30	587.5	572	567.5	540	1,2	15.5 + 4.5 = 20.0	5
EW-3	G135	47	25	583.5	566	563.5	540	1,2	17.5 + 2.5 = 20.0	5
EW-4	G133	39	25	582.5	568	562.5	540	1,2	14.5 + 5.5 = 20.0	5
EW-5	G130	34	30	582.26	570	562.26	540	1,2	12.26 +7.74 = 20.0	5
EW-6	R29	34	35	584.5	576	564.5	540	1,2	8.5 + 11.5 = 20.0	5
EW-7	G127	34	42	584.5	576	564.5	540	1,2	8.5 + 11.5 = 20.0	5
EW-8	R122	32	63	586.5	576	566.5	540	1,2	10.5 + 9.5 = 20.0	5
EW-9	G125	34	50	587.5	580	567.5	540	1,2	7.5 + 12.5 = 20.0	5

TABLE 11-13: DRAWDOWN AT THE EXTRACTION WELLS FOR SCENARIO 1

WELL ID	EXISTING WELL ID	GRID COORDINATES		DRAWDOWN (FT)	INITIAL HEAD (FT MSL)	TOP ELEV. OF AQUIFER (TOP OF LAYER 1) (FT MSL)
		ROW (J)	COLUMN (I)			
EW-2	G138	54	30	10.50	591.40	587.50
EW-3	G135	47	25	11.09	590.90	583.50
EW-4	G133	39	25	10.56	590.40	582.50
EW-5	G130	34	30	9.73	590.30	582.30
EW-6	R29	34	35	9.92	590.30	584.50
EW-7	G127	34	42	12.22	590.40	584.50
EW-8	R122	32	63	7.68	591.00	586.50
EW-9	G125	34	50	9.29*	590.60	587.50

**Layer 1 dry; represents Layer 2 drawdown*

As discussed in detail in Subsection 11.6.2.4.3, both the slug test horizontal hydraulic conductivity values at the RCRA area and the pumping test results conducted in 1984 for the same area are consistent with each other. These values have been included in Table 11-6. As mentioned in Subsection 11.6.2.4.3, the geometric mean value for the horizontal conductivity is 2.60×10^{-3} cm/sec (7.37 ft/day) and its standard deviation is 1.25×10^{-3} cm/sec (3.54 ft/day). Therefore, the upper and lower range of the horizontal hydraulic conductivity are 3.85×10^{-3} cm/sec (10.91 ft/day) and 1.35×10^{-3} cm/sec (3.83 ft/day), respectively.

Based on these values, two conservative sensitivity runs were conducted by multiplying the baseline model values by "2" (Sensitivity Analysis 1) and by dividing the baseline model values by "2" (Sensitivity Analysis 2). The ground water head contours and flow lines for Sensitivity Analysis 1 of Layer 1 for 5 gpm of each extraction well is shown in Figure 9 (Attachment 5). The corresponding drawdown contours are presented in Figure 10 (Attachment 5). For Sensitivity Analysis 2 the head and drawdown contours are given in Figure 11 and Figure 12 (Attachment 5), respectively. As can be seen from Figures 9 and 11, the extraction system creates sufficient hydraulic gradients around the Co-Disposal area to control the plume and capture the aquifer.

11.7.2 Extraction Wells Simulations for Scenario 2

11.7.2.1 Results of the Baseline Model

Scenario 2 is the same as Scenario 1 with the exception that extraction wells EW-1 and EW-2 are taken off from the extraction system. Therefore, a total of seven extraction wells (rates and coordinates are given in Table 11-14) were simulated. Drawdowns, initial heads, and top elevations are included in Table 11-15. As can be seen from Table 11-15, the drawdown at the extraction wells locations ranges from 8.18 feet to 10.23 feet. The groundwater head contours and flow lines are presented in Figure 13 (Attachment 5). The drawdown contours are presented in Figure 14 (Attachment 5). These values are approximately 2 feet less than the respective drawdown values of Scenario 1. Figure 13 shows that the contaminant plume can be controlled under the proposed scenario and the aquifer can be captured.

11.7.2.2 Results of the Sensitivity Analysis

A sensitivity analysis was completed for Scenario 2 to measure the ground water flow model's response to changes in the values assigned to major input parameters. The rationale behind the selection of sensitivity parameters are explained in detail in Subsection 11.7.1.2. Therefore, a sensitivity analysis was conducted for the range of hydraulic conductivity values.

Based on the hydraulic conductivity values mentioned in Subsection 11.7.1.2, two conservative sensitivity runs were conducted by multiplying the baseline model values by "2" (Sensitivity Analysis 1) and by dividing the baseline model values by "2" (Sensitivity Analysis 2). The ground water head contours and flow lines for Sensitivity Analysis of Layer for 5 gpm of each extraction well is shown in Figure 15 (Attachment 5). The corresponding drawdown contours are presented in Figure 16 (Attachment 5). For Sensitivity Analysis 2, the head and drawdown

TABLE 11-14: EXTRACTION WELL COORDINATES AND THEIR RATES FOR SCENARIO 2

WELL ID	EXISTING WELL ID	GRID COORDINATES		VERTICAL GRID ELEVATIONS (ft MSL)				LAYER LOCATIONS OF SCREENS	TOTAL MODELING SCREEN LENGTH (ft)	EXTRACTION RATE (gpm)
		ROW (I)	COLUMN (J)	TOP OF LAYER 1	BOTTOM OF LAYER 1	BOTTOM OF LAYER 2	BOTTOM OF LAYER 3			
EW-3	G135	47	25	583.5	566	563.5	540	1,2	17.5 + 2.5 = 20.0	5
EW-4	G133	39	25	582.5	568	562.5	540	1,2	14.5 + 5.5 = 20.0	5
EW-5	G130	34	30	582.26	570	562.26	540	1,2	12.26 +7.74 = 20.0	5
EW-6	R29	34	35	584.5	576	564.5	540	1,2	8.5 + 11.5 = 20.0	5
EW-7	G127	34	42	584.5	576	564.5	540	1,2	8.5 + 11.5 = 20.0	5
EW-8	R122	32	63	586.5	576	566.5	540	1,2	10.5 + 9.5 = 20.0	5
EW-9	G125	34	50	587.5	580	567.5	540	1,2	7.5 + 12.5 = 20.0	5

TABLE 11-15: DRAWDOWN AT THE EXTRACTION WELLS FOR SCENARIO 2

WELL ID	EXISTING WELL ID	GRID COORDINATES		DRAWDOWN (FT)	INITIAL HEAD (FT MSL)	TOP ELEV. OF AQUIFER (TOP OF LAYER 1) (FT MSL)
		ROW (J)	COLUMN (I)			
EW-3	G135	47	25	8.82	590.90	583.50
EW-4	G133	39	25	8.99	590.40	582.50
EW-5	G130	34	30	8.25	590.30	582.30
EW-6	R29	34	35	8.36	590.30	584.50
EW-7	G127	34	42	10.23	590.40	584.50
EW-8	R122	32	63	6.99	591.00	586.50
EW-9	G125	34	50	8.18*	590.60	587.50

**Layer 1 dry; represents Layer 2 drawdown*

contours are given in Figure 16 and Figure 17 (Attachment 5), respectively. As can be seen from the head contours in Figure 15 and Figure 17, the extraction system creates sufficient hydraulic gradients around the Co-Disposal area to control the plume and maintain capture of the aquifer under the corrective action area. The head contours and flow lines for the seven extraction wells considered for initial construction is shown on Figure 11-1.

11.7.3 Extraction Wells Simulations for Scenario 3

11.7.3.1 Results of the Baseline Model

The total extraction rate of Scenario 3 is the same as Scenario 1 (45 gpm), but the number of extraction wells are double of Scenario 1 with each of them 2.5 gpm extraction rate. Therefore, a total of eighteen extraction wells (rates and coordinates are given in Table 11-16 were simulated. Drawdowns, initial heads, and top elevations are included in Table 11-17. As can be seen from Table 11-17, the drawdown at the extraction wells locations ranges from 6.54 feet to 12.15 feet. The ground water head contours and flow lines are presented in Figure 19 (Attachment 5). The drawdown contours are presented in Figure 20 (Attachment 5). Comparison of the head and drawdown contours of Scenario 3 with the ones for Scenario 1 show that the nine and eighteen wells create approximately the same inward gradients zone around the Co-Disposal Area.

11.7.3.2 Results of the Sensitivity Analysis

A sensitivity analysis was completed for Scenario 3 to measure the ground water flow model's response to changes in the values assigned to major input parameters. The rationale behind the selection of sensitivity parameters are explained in detail in Subsection 11.7.1.2. Therefore, sensitivity analysis was conducted for the range of hydraulic conductivity values.

Based on the hydraulic conductivity values mentioned in Subsection 11.7.1.2, two conservative sensitivity runs were conducted by multiplying the baseline model values by "2" (Sensitivity Analysis 1) and by dividing the baseline model values by "2" (Sensitivity Analysis 2). The groundwater head contours and flow lines for Sensitivity Analysis 1 of Layer 1 for 2.5 gpm of each extraction well is shown in Figure 21 (Attachment 5). The corresponding drawdown contours are presented in Figure 22 (Attachment 5). For Sensitivity Analysis 2 the head and drawdown contours are given in Figure 23 and Figure 24 (Attachment 5), respectively. As can be seen from Figure 21 and Figure 23, the extraction system creates sufficient hydraulic gradients around the Co-Disposal Area to control the plume and maintain capture of the aquifer under the corrective action area.

11.7.4 Extraction Wells Simulations for Scenario 4

11.7.4.1 Results of the Baseline Model

Scenario 4 is the same as Scenario 1 with the exception that extraction well EW-8 is taken off from the extraction system. Therefore, a total of eight extraction wells (rates and coordinates

TABLE 11-16: EXTRACTION WELL COORDINATES AND THEIR RATES FOR SCENARIO 3

WELL ID	EXISITING WELL ID	GRID COORDINATES		VERTICAL GRID ELEVATIONS (ft MSL)				LAYER LOCATIONS OF SCREENS	TOTAL MODELING SCREEN LENGTH (ft)	EXTRACTION RATE (gpm)
		ROW (J)	COLUMN (I)	TOP OF LAYER 1	BOTTOM OF LAYER 1	BOTTOM OF LAYER 2	BOTTOM OF LAYER 3			
EW-1	R4D2	54	39	589.5	574.5	569.5	540	1,2	15.0 + 5.0 = 20.0	2.5
EW-2	G138	54	30	587.5	572	567.5	540	1,2	15.5 + 4.5 = 20.0	2.5
EW-3	G135	47	25	583.5	566	563.5	540	1,2	17.5 + 2.5 = 20.0	2.5
EW-4	G133	39	25	582.5	568	562.5	540	1,2	14.5 + 5.5 = 20.0	2.5
EW-5	G130	34	30	582.26	570	562.26	540	1,2	12.26 +7.74 = 20.0	2.5
EW-6	R29	34	35	584.5	576	564.5	540	1,2	8.5 + 11.5 = 20.0	2.5
EW-7	G127	34	42	584.5	576	564.5	540	1,2	8.5 + 11.5 = 20.0	2.5
EW-8	R122	32	63	586.5	576	566.5	540	1,2	10.5 + 9.5 = 20.0	2.5
EW-9	G125	34	50	587.5	580	567.5	540	1,2	7.5 + 12.5 = 20.0	2.5
EW-10	R139	54	34	587.5	576	567.5	540	1,2	11.5 + 8.5 = 20.0	2.5
EW-11	G136	51	25	583.5	566	563.5	540	1,2	17.5 + 2.5 = 20.0	2.5
EW-12	R131	43	25	581.5	566	561.5	540	1,2	15.5 + 8.5 = 20.0	2.5
EW-13	G132	35	25	579.5	568	559.5	540	1,2	11.5 + 8.5 = 20.0	2.5
EW-14	G164	34	32	582.5	572	562.5	540	1,2	10.5 + 9.5 = 20.0	2.5
EW-15	R128	34	39	584.5	578	564.5	540	1,2	6.5 + 13.5 = 20.0	2.5
EW-16	G126	34	46	586.5	580	566.5	540	1,2	6.5 + 13.5 = 20.0	2.5
EW-17	G124	33	54	587.5	580	567.5	540	1,2	7.5 + 12.5 = 20.0	2.5
EW-18	G123	33	59	587.5	580	567.5	540	1,2	7.5 + 12.5 = 20.0	2.5

TABLE 11-17: DRAWDOWN AT THE EXTRACTION WELLS FOR SCENARIO 3

WELL ID	EXISTING WELL ID	GRID COORDINATES		DRAWDOWN (FT)	INITIAL HEAD (FT MSL)	TOP ELEV. OF AQUIFER (TOP OF LAYER 1) (FT MSL)
		ROW (J)	COLUMN (I)			
EW-1	R4D2	54	39	8.63	591.60	589.50
EW-2	G138	54	30	8.75	591.40	587.50
EW-3	G135	47	25	9.86	590.90	583.50
EW-4	G133	39	25	9.99	590.40	582.50
EW-5	G130	34	30	9.72	590.30	582.30
EW-6	R29	34	35	9.88	590.30	584.50
EW-7	G127	34	42	11.34	590.40	584.50
EW-8	R122	32	63	6.54	591.00	586.50
EW-9	G125	34	50	9.08*	590.60	587.50
EW-10	R139	54	34	8.8	591.50	587.5
EW-11	G136	51	25	8.82	591.20	583.5
EW-12	R131	43	25	10.34	590.70	581.5
EW-13	G132	35	25	9.34	590.30	579.5
EW-14	G164	34	32	9.82	590.30	582.5
EW-15	R128	34	39	12.15	590.30	584.5
EW-16	G126	34	46	9.81*	590.50	586.5
EW-17	G124	33	54	9.19	590.60	587.5
EW-18	G123	33	59	7.91	590.50	587.5

**Layer 1 dry; represents Layer 2 drawdown*

are given in Table 11-18) were simulated. Drawdowns, initial heads, and top elevations are included in Table 11-19. As can be seen from Table 11-19, the drawdown at the extraction wells locations ranges from 8.27 feet to 10.92 feet. The ground water head contours and flow lines are presented in Figure 25 (Attachment 5). The drawdown contours are presented in Figure 26 (Attachment 5). The drawdown values given above are approximately 1.5 feet less than the respective drawdown values of Scenario 1. Figure 25 shows that the contaminant plume can be controlled under the proposed scenario and capture of the aquifer can be maintained under the corrective action area.

11.7.4.2 Results of the Sensitivity Analysis

A sensitivity analysis was completed for Scenario 4 to measure the ground water flow model's response to changes in the values assigned to major input parameters. The rationale behind the selection of sensitivity parameters are explained in detailed in Subsection 11.7.1.2. Therefore, a sensitivity analysis was conducted for the range of hydraulic conductivity values.

Based on the hydraulic conductivity values mentioned in Subsection 11.7.1.2, two conservative sensitivity runs were conducted by multiplying the baseline model values by "2" (Sensitivity Analysis 1) and by dividing the baseline model values by "2" (Sensitivity Analysis 2). The ground water head contours and flow lines for Sensitivity Analysis 1 of Layer 1 for 5 gpm of each extraction well is shown in Figure 27 (Attachment 5). The corresponding drawdown contours are presented in Figure 28 (Attachment 5). For Sensitivity Analysis 2, the head and drawdown contours are given in Figure 29 and Figure 30 (Attachment 5), respectively. As can be seen from the head contours in Figure 27 and Figure 29, the extraction system creates sufficient hydraulic gradients around the Co-Disposal Area to control the plume and maintain capture of the aquifer under the corrective action area.

11.7.5 Recovery Rate of Migration of Contaminant Constituents Under Extraction Conditions

The horizontal extent of groundwater contamination under no extraction conditions at the site was determined previously and presented in another report (RUST, 1994b). Travel time estimates were carried out for vinyl chloride and p-dioxane by taking into account their estimated retardation factors. The distances traveled by these contaminant constituents are included in Table 3 of RUST (1994b). The extent of contamination plumes for vinyl chloride and p-dioxane are shown in Figures 2 and 3 of RUST (1994b), respectively.

The recovery rate of migration of the aforementioned contaminant constituents are estimated under Scenario 2 extraction conditions (See Subsection 11.7.2). The extent of contamination plumes for vinyl chloride and p-dioxane are superimposed on the corresponding groundwater head contours map given in Figure 13. All input parameters are the same as the previous report (RUST, 1994b) with the exception of hydraulic gradient between the extraction wells field and the plume extent. As can be seen from Figure 13, the hydraulic gradient around this area is spatially variable and this variability is taken into account by dividing the travel distance into

TABLE 11-18: EXTRACTION WELL COORDINTES AND THEIR RATES FOR SCENARIO 4

WELL ID	EXISTING WELL ID	GRID COORDINATES		VERTICAL GRID ELEVATIONS (ft MSL)				LAYER LOCATIONS OF SCREENS	TOTAL MODELING SCREEN LENGTH (ft)	EXTRACTION RATE (gpm)
		ROW (J)	COLUMN (I)	TOP OF LAYER 1	BOTTOM OF LAYER 1	BOTTOM OF LAYER 2	BOTTOM OF LAYER 3			
EW-1	R4D2	54	39	589.5	574.5	569.5	540	1,2	15.0 + 5.0 = 20.0	5
EW-2	G138	54	30	587.5	572	567.5	540	1,2	15.5 + 4.5 = 20.0	5
EW-3	G135	47	25	583.5	566	563.5	540	1,2	17.5 + 2.5 = 20.0	5
EW-4	G133	39	25	582.5	568	562.5	540	1,2	14.5 + 5.5 = 20.0	5
EW-5	G130	34	30	582.26	570	562.26	540	1,2	12.26 +7.74 = 20.0	5
EW-6	R29	34	35	584.5	576	564.5	540	1,2	8.5 + 11.5 = 20.0	5
EW-7	G127	34	42	584.5	576	564.5	540	1,2	8.5 + 11.5 = 20.0	5
EW-9	G125	34	50	587.5	580	567.5	540	1,2	7.5 + 12.5 = 20.0	5

TABLE 11-19: DRAWDOWN AT THE EXTRACTION WELLS FOR SCENARIO 4

WELL ID	EXISTING WELL ID	GRID COORDINATES		DRAWDOWN (FT)	INITIAL HEAD (FT MSL)	TOP ELEV. OF AQUIFER (TOP OF LAYER 1) (FT MSL)
		ROW (J)	COLUMN (I)			
EW-1	R4D2	54	39	10.92	591.60	589.50
EW-2	G138	54	30	10.17	591.40	587.50
EW-3	G135	47	25	10.75	590.90	583.50
EW-4	G133	39	25	10.15	590.40	582.50
EW-5	G130	34	30	9.30	590.30	582.30
EW-6	R29	34	35	9.43	590.30	584.50
EW-7	G127	34	42	11.22	590.40	584.50
EW-9	G125	34	50	8.27*	590.60	587.50

**Layer 1 dry; represents Layer 2 drawdown*

appropriate segments. The retarded velocities of the contaminant constituents along a segment were calculated from the following equation:

$$V_R = \frac{1}{n_e R_d} K_h I \qquad (1)$$

where n_e is the effective porosity, R_d is the retardation factor, K_h is the horizontal hydraulic conductivity, and I is the hydraulic gradient. If the length of a segment is L, the travel time along the segment is:

$$t = \frac{L}{V_R} \qquad (2)$$

or from Eq. (1)

$$t = \frac{L\, n_e\, R_d}{K_h I} \qquad (3)$$

For N number of segments, the general formula for calculation of travel time is:

$$t = \sum_{n=1}^{N} \frac{L_n n_e R_d}{K_h I_n} \qquad (4)$$

The hydraulic gradients (I_n) are determined along column 33 of Figure 7 and their range is from 0.0025 ft./ft. to 0.004 ft./ft. A total of two segments whose lengths are 50 feet and 375 feet are considered. The effective porosity (n_e) and horizontal hydraulic conductivity are 0.25 and 60 feet/day, respectively (RUST, 1994b).

The estimated retardation factor for vinyl chloride is 3.05 (RUST, 1994b). Using the variable hydraulic gradients along with the other hydrogeologic parameters, the travel time for vinyl chloride from its extent to the wells field (Between EW-5 and EW-6) is approximately, 2042 days (5.6 years).

The estimated retardation factor for p-dioxane is 1.42 (RUST, 1994b). Using the variable hydraulic gradients along with the other parameters, the travel time for p-dioxane from its extent to the wells field (between EW-5 and EW-6) is approximately 951 days (2.6 years).

The travel time calculations are presented in Attachment 6.

11.7.6 Estimation of Clean-up Time

11.7.6.1 Purpose

The purpose is to estimate the cleanup time for p-dioxane under Scenario 2 pumping conditions as presented in Subsection 11.7.2.1. In the following sections, the approach and methodology, input data, and results for the estimation of cleanup time for p-dioxane are presented.

11.7.6.2 Approach and Methodology

The approach requires the attainment areas to be defined. The attainment areas represented the areas which remediation is required. The approach was originally developed by Zheng et al. (1991, 1992) based on the mixed linear reservoir or "batch flush" model (e.g., Gelhar and Wilson, 1974; and U.S. EPA, 1988). The approach is based on the following assumptions:

1. Clean water is circulated through a volume of aquifer which initially contains contaminated water;

2. In the attainment areas the system is thoroughly mixed and the initial concentration of a contaminant constituent (C_i) is constant throughout the system;

3. Sorption and desorption may be approximated by a linear equilibrium isotherm;

4. Dispersive transport effects are negligible; and advective transport and sorption/desorption are the controlling processes; and

5. The influent water always has zero concentration as it enters the contaminated region, but adjusts rapidly to a concentration in equilibrium with the remaining sorbed mass after entering that region.

Based on the above given assumptions, Zheng et al. (1991, 1992) derived the following expression for the number of pore volumes of water which must be circulated through the contaminated zone:

$$PV = -R_d \ln \left(\frac{C_s}{C_i}\right)$$

where PV is the number of pore volumes of clean water which must be circulated through the contaminated zone to reduce the concentration of a given constituent from an initial value, C_i, to

a cleanup standard value, C_s; and R_d is the retardation factor for the target contaminant constituent. The equation for the cleanup time is (Zheng et al., 1991)

$$t_c = PV \times t_{PV}$$

where t_c is the cleanup time; and t_{PV} is the time required for movement of one pore volume of clean water thorough the attainment area.

11.7.6.3 Input Data

The measured concentrations for p-dioxane at various well locations are included in Table 11-20. For p-dioxane there are 47 measured concentration values ranging from 11 ug/l to 700 ug/l with 200 ug/l average value. Therefore, C_i is 200 ug/l. The groundwater standard, C_s, for p-dioxane is 10 ug/l. The estimated retardation factor, R_d, for p-dioxane is 1.42 (RUST, 1994b). The value for t_{pv} is 951 days (2.6 years). (RUST, 1994b).

11.7.6.4 Results

Substitution the values of R_d, C_s, and C_i into Eq. (5) gives 4.25 pore volumes of flushing (i.e., PV = 4.25) would be adequate to restore the aquifer throughout the attainment areas. With the known PV and t_{pv} values, from Eq. (6) the cleanup time, t_c, is 11.05 years. The input data and results are included in Table 11-21.

Based on the foregoing analysis, the cleanup time for p-dioxane is approximately 11 years. In other words, it will take approximately 11 years under pumping conditions of Scenario 2 to reduce the p-dioxane concentrations to less than 10 ug/l, the cleanup standard for p-dioxane. The estimated cleanup time should be considered a conservative estimate because of the assumptions as given in sub-section 11.7.6.2.

The estimated cleanup time calculations are presented in Attachment 7.

TABLE 11-20: MEASURED CONCENTRATIONS OF P-DIOXANE AT THE LARAWAY RDF SITE

DATE	SAMPLE POINT	ANALYTE	RESULTS	REPORTING LIMITS	UNITS
19920429	G123	P-DIOXANE	19.000	10.000	UG/L
19930429	G123	P-DIOXANE	31.000	10.000	UG/L
19930128	G123	P-DIOXANE	21.000	10.000	UG/L
19921026	G123	P-DIOXANE	13.000	10.000	UG/L
19930128	G124	P-DIOXANE	24.000	10.000	UG/L
19930429	G124	P-DIOXANE	30.000	10.000	UG/L
19920429	G124	P-DIOXANE	21.000	10.000	UG/L
19921026	G124	P-DIOXANE	25.000	10.000	UG/L
19920429	G130	P-DIOXANE	150.000	10.000	UG/L
19921029	G130	P-DIOXANE	210.000	10.000	UG/L
19921120	G130	P-DIOXANE	170.000	10.000	UG/L
19930129	G130	P-DIOXANE	140.000	10.000	UG/L
19930429	G130	P-DIOXANE	140.000	10.000	UG/L
19920624	G130	P-DIOXANE	170.000	10.000	UG/L
19920831	G130	P-DIOXANE	140.000	10.000	UG/L
19921028	G131	P-DIOXANE	11.000	10.000	UG/L
19930127	G131	P-DIOXANE	10.000	10.000	UG/L
19920429	G133	P-DIOXANE	16.000	10.000	UG/L
19930428	G131	P-DIOXANE	14.000	10.000	UG/L
19920430	G133	P-DIOXANE	12.000	10.000	UG/L
19930127	G137	P-DIOXANE	22.000	10.000	UG/L
19921082	G137	P-DIOXANE	12.000	10.000	UG/L
19920430	G137	P-DIOXANE	26.000	10.000	UG/L
19930428	G137	P-DIOXANE	51.000	10.000	UG/L
19930128	R134	P-DIOXANE	270.000	10.000	UG/L
19920430	R134	P-DIOXANE	110.000	10.000	UG/L
19921029	R134	P-DIOXANE	250.000	10.000	UG/L
19921120	R134	P-DIOXANE	270.000	10.000	UG/L
19930429	R134	P-DIOXANE	240.000	10.000	UG/L
19920624	R134	P-DIOXANE	110.000	10.000	UG/L
19920779	R134	P-DIOXANE	93.000	10.000	UG/L
19921029	R144	P-DIOXANE	13.000	10.000	UG/L
19921029	R29D	P-DIOXANE	330.000	10.000	UG/L
19920430	R29D	P-DIOXANE	190.000	10.000	UG/L
19921120	R29D	P-DIOXANE	350.000	10.000	UG/L
19930128	R29D	P-DIOXANE	340.000	10.000	UG/L
19930429	R29D	P-DIOXANE	390.000	10.000	UG/L
19920727	R29D	P-DIOXANE	250.000	10.000	UG/L
19920625	R29D	P-DIOXANE	250.000	10.000	UG/L
19920430	R29S	P-DIOXANE	400.000	10.000	UG/L
19920625	R29S	P-DIOXANE	380.000	10.000	UG/L
19920727	R29S	P-DIOXANE	480.000	10.000	UG/L
19920915	R29S	P-DIOXANE	570.000	10.000	UG/L
19921029	R29S	P-DIOXANE	580.000	20.000	UG/L

TABLE 11-20: CONTINUED

DATE	SAMPLE POINT	ANALYTE	RESULTS	REPORTING LIMITS	UNITS
19921120	R29S	P-DIOXANE	710.000	25.000	UG/L
19930128	R29S	P-DIOXANE	700.000	20.000	UG/L
19930429	R29S	P-DIOXANE	650.000	20.000	UG/L
		ARITHMETIC AVERAGE	200.000	10.000	UG/L

Table 11-21. Input Data and Estimated Cleanup Time for p-Dioxane

Contaminant Constituent	Rd[1]	C_i[2] (UG/L)	C_s[3] (UG/L)	t_{pv}[4] (Years)	PV[5]	t_c[6] (Years)
p-Dioxane	1.42	200.0	10.0	2.60	4.25	11.05

(1) Retardation factor.
(2) Initial concentration of the attainment areas.
(3) Groundwater cleanup standard.
(4) Time required for movement of one pore volume of clean water through the attainment area.
(5) Number of pore volumes of clean water which must be circulated through the contaminated zone to reduce the concentration of a given constituent from initial value, C_i, to a cleanup standard value, C_s.
(6) Time required for movement of one pore volume of clean water through the attainment area.

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Section 11

Attachment 2
Groundwater Treatment System Mass Balance
and
Air Emission Summry

Section 11

Attachment 3
Groundwater Corrective Action Treatment System
Equipment Sizing Calculations

Note: The following equipment documents and calculations are presented as initial sizing documentation for treatment of groundwater. The calculations assume certain initial system volume and performance requirements. The equipment type, size and material may vary due to future groundwater treatment and extraction system design requirements.

A Class 1 Permit Modification will be submitted to IEPA to authorize needed changes in equipment type, size and design, if design is revised to meet performance needs.

Section 11

Attachment 4
Groundwater Corrective Action Program Design Drawings

Drawings are in Volume II of this Submission

SECTION 11

Attachment 4
List of Drawings

C-01	Proposed Groundwater Remediation Alignment, Initial Construction Layout
C-02	Proposed Groundwater Remediation Alignment
C-03	Groundwater Extraction System Detail Sheet
A-01	Groundwater Treatment Building (Stage 2)
M-01	Groundwater Treatment System Facility Layout
F-01	Groundwater Treatment System Process Flow Design
I-01	Groundwater Treatment System Process and Instrumentation Diagram

Section 11

Attachment 5
Contours and Flow Lines
for Baseline Models and Scenarios

Note: **The following equipment documents and calculations are presented as initial sizing documentation for treatment of groundwater. The calculations assume certain initial system volume and performance requirements. The equipment type, size and material may vary due to future groundwater treatment and extraction system design requirements. A Class I modifications permit notification will be submitted if design is revised to meet performance needs.**

Drawings are in Volume II of this Submissiokn

SECTION 11

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Figure 10 Drawdown Contours for Sensitivity Analysis 1 of Layer 1 for Scenario 1
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Figure 26 Drawdown Contours for the Baseline Model of Layer 1 for Scenario 4
Figure 27 Head Contours and Flow Lines for Sensitivity Analysis 1 of Layer 1 for Scenario 4
Figure 28 Drawdown Contours for Sensitivity Analysis 1 of Layer 1 for Scenario 4
Figure 29 Head Contours and Flow Lines for Sensitivity Analysis 2 of Layer 1 for Scenario 4
Figure 30 Drawdown Contours for Sensitivity Analysis 2 of Layer 1 for Scenario 4

Section 11

Attachment 6
Groundwater Corrective Action Program
Off-Site Contaminant Recovery Time Calculation for Scenario 2

Section 11

Attachment 7
Corrective Action Project Time Estimation
Calculation for Aquifer Remediation

Note: The project time has been based upon the solubility characteristic of p-dioxane. Using this characteristic, calculation has estimated that an eleven year period can be expected to complete the proposed Corrective Action Program.

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5.0 GROUNDWATER MONITORING

5.1 INTRODUCTION

5.1.1 Purpose

Section 5.0 Groundwater Monitoring has been revised to properly incorporate past permit modifications which the Illinois Environmental Protection Agency (IEPA) has approved relating to groundwater monitoring at Laraway RDF. Section 5.0 now has been expanded to introduce the basis for a Corrective Action Program consistent with requirements of 35 IAC 703.185 - Groundwater Protection Information, 35 IAC 724.191 - Required Programs and 35 IAC 724.200 - Corrective Action Program. Additionally, WMII is requesting IEPA to approve a number of individual Class 1 and Class 2 Modifications to the current permit relating to groundwater monitoring which are described in this submission. To facilitate coordination with the facility permit the modification requests are generally written to correspond to the existing Permit with subsection 5.2 corresponding to Section I (Detection Monitoring Program) of the Permit and subsection 5.3 corresponding to Section I.A (Compliance Monitoring Program) of the Permit.

5.1.2 Background

As a result of RCRA interim status monitoring, the original RCRA Part B Post-Closure Permit issued September 29, 1989 included a condition which required special monitoring of two RCRA groundwater monitoring wells, R40D and G129. The 9/29/89 Permit required R40D to be replaced with a new groundwater monitoring well, R4D2. The 9/29/89 permit also required that monitoring well G129 to be replaced with R29D and R29S.

In the first modification to the Permit (July 11, 1991), the conditions requiring special monitoring of the R40D and G129 locations were deleted. In the second, third and forth modifications to the Permit (2/28/92, 6/9/92, and 12/4/92 respectively), a condition requiring special monitoring and evaluation of the R40D location was again required. There were no special requirements for the G129 location.

Beginning mid-1991, occasional low level concentrations of volatile organic compounds (VOC) were measured in R144. In late 1991, VOC's again appeared in R29D prompting WMII to initiate an Appendix I sampling event at all groundwater monitoring wells. Three constituents, p-dioxane, silver, and aniline, were measured during the initial Appendix I sampling which occurred in April 1992. Only p-dioxane has been detected in subsequent Appendix I groundwater sampling and analysis events.

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Table 5-1 summarizes the monitoring well locations at which groundwater monitoring parameter concentrations have exceeded the allowable limits specified in the RCRA Part B Post-Closure Permit. Table 5-1 is inclusive of all groundwater monitoring data obtained since issuances of the Post Closure Permit and up to and including the fourth quarter 1992 sampling and analysis

event. There have been no exceedences for at least four consecutive quarters at any other permitted groundwater monitoring well including the R40 series.

On May 27, 1993, the IEPA issued WMII a Temporary Authorization to allow WMII to conduct certain investigations for the purpose of obtaining site specific information needed to design an effective groundwater Corrective Action Program for Laraway RDF. The basis for the selected Corrective Action Program is described in this Section. A complete description of the proposed Corrective Action Program is provided in Section 11 of this submission.

5.2 DETECTION MONITORING PROGRAM

Upon completion of the Corrective Action Program, as described in subsection 5.4, WMII will return to the Detection Monitoring Program as required by the facility permit (as modified). Following are requests for modifications to the Detection Monitoring Program as defined in the existing Permit.

5.2.1 Summary of Detection Monitoring Results

Attachment 5A summarizes groundwater data for each groundwater monitoring well in the Detection Monitoring Program since the RCRA Part B Post-Closure Permit was issued through first quarter 1994. The summaries include a special sampling event as required under the Temporary Authorization.

The summaries are provided for ease of review. There is no associated Modification requested.

5.2.2 Groundwater Monitoring Well Location and Construction

Section I.B.2 of the Permit lists the groundwater monitoring wells to be included in the Detection Monitoring Program. Four upgradient monitoring wells (R111, R112, R113, R114) were initially proposed to ensure that sufficient data could be quickly generated for purposes of establishing background. From a practical as well as regulatory basis, there is no need for quarterly monitoring of all four upgradient monitoring wells. First, for purposes of statistical evaluation, background has been established long ago. Second, there have been no indications that upgradient monitoring wells are being adversely impacted from either off-site or on-site sources. The groundwater quality in these monitoring wells has remained fairly consistent throughout the life of the Permit. Third, although the regulations specify a minimum number of samples (4) and a minimum frequency (semi-annual), they do not specify the number of upgradient monitoring wells required to be in a Detection Monitoring Program.

TABLE 5-1
SUMMARY OF STATISTICALLY SIGNIFICANT EXCEEDANCES
4ht QUARTER 1992 TO 1st QUARTER 1994

WELL	PARAMETERS AND RANGES (ug/l)													
	p-Dioxane		Vinyl Chloride		Tran-1,2-DCE		Dichlorodifluoromethane		Trichlorofluoromethane		Chloromethane		Chloroethane	
	Low	*High*	*Low*	*High*	*Low*	*High*	*Low*	*High*	*Low*	*High*	*Low*	*High*	*Low*	*High*
G123	13	46	ND <2	2	ND <5	ND <5	ND <5	ND <5	ND <5	ND <5	ND <10	ND <10	ND <10	ND <10
G124	21	40	ND <2	ND <2	ND <5	ND <5	ND <5	ND <5	ND <5	ND <5	ND <10	ND <10	ND <10	ND <10
R29S	400	770	ND <2	ND <2	ND <5	ND <5	ND <5	ND <5	ND <5	ND <5	ND <10	ND <10	ND <10	ND <10
R29D	230	500	4	160	ND <5	ND <5	ND <5	ND <5	8	82	ND <10	ND <10	ND <10	ND <10
G130	140	210	ND <2	ND <2	ND <5	ND <5	ND <5	ND <5	ND <5	ND <5	ND <10	ND <10	ND <10	ND <10
G131	10	20	ND <2	ND <2	ND <5	ND <5	ND <5	ND <5	ND <5	ND <5	ND <10	ND <10	ND <10	ND <10
G133	ND <10	23	ND <2	ND <2	ND <5	ND <5	ND <5	ND <5	ND <5	ND <5	ND <10	ND <10	ND <10	ND <10
R134	180	340	ND <2	ND <2	ND <5	ND <5	ND <5	ND <5	ND <5	ND <5	ND <10	ND <10	ND <10	ND <10
G137	12	51	ND <2	ND <2	ND <5	ND <5	ND <5	ND <5	ND <5	ND <5	ND <10	10	ND <10	ND <10
G141	ND <10	ND <10	ND <2	42	ND <5	ND <5	ND <5	ND <5	ND <5	ND <5	ND <10	ND <10	ND <10	13
R144	ND <10	ND <10	ND <2	160	ND <5	88	ND <5	ND <5	ND <5	ND <5	ND <10	ND <10	ND <10	ND <10

Note: [1]The current IEPA facility permit modification effective February 17, 1994 established the vinyl chloride PQL at 10 ug/l. However, WMII anlaytical program report vinly chloride at or above 2 ug/l.

Therefore, WMII proposes to reduce the number of upgradient groundwater monitoring wells in the Detection Monitoring Program from four to two wells, R112 and R114. These wells are in upgradient off-site locations and, therefore, are not within the Point of Compliance. R111 and R113 may be maintained as piezometers and/or may be retained as part of Laraway RDF's solid waste permit. Former upgradient monitoring wells which will not be used as piezometers and/or solid waste monitoring wells will be abandoned and plugged in accordance with the RCRA Permit and with applicable water well codes. Changes in use from upgradient monitoring wells to piezometers or from piezometers to monitoring wells will be made by a Class 1 Permit Modification.

WMII requests a Class 2 Modification to the RCRA Part B Post-Closure Permit to remove upgradient groundwater monitoring wells R111 and R113 from the Detection Monitoring Program as described in sub-section 5.2.2 of this submission.

5.2.2.1 Other Upgradient Wells

Seven (7) other existing groundwater monitoring wells (G145, G146, G147, G148, G149, G52S and G52D), are actually in upgradient groundwater locations relative to the Closed RCRA Unit. Historically these seven monitoring wells have not been identified as upgradient monitoring wells and they have been incorporated in establishing the Point of Compliance for the Closed RCRA Unit. These groundwater monitoring wells were included in the original permit application simply because they were existing monitoring wells at the time of the original permit application.

Contaminants have not been measured in any of these upgradient groundwater monitoring wells. Because of their upgradient location, they serve no useful purpose in this now mature monitoring program.

WMII requests a Class 2 Modification to the RCRA Part B Post-Closure Permit to remove upgradient groundwater monitoring wells G145, G146, G147,G148, G149, G52S and G52D from the Detection Monitoring Program.

NOTE: Some of these monitoring wells may be maintained as piezometers and/or may be retained as part of Laraway RDF solid waste permit groundwater monitoring program. Former upgradient monitoring wells which will not be used as piezometers and/or solid waste monitoring wells will be abandoned and plugged in accordance with the RCRA Permit and with applicable well codes.

5.2.2.2 Detection Monitoring Program - Monitoring Wells

The Detection Monitoring Program proposed groundwater monitoring wells are provided in Table 5-2. Each Point of Compliance monitoring well is noted. Figure 5-1 shows the locations of these RCRA monitoring wells. Figure 5-2 is provided for reference which shows the existing RCRA monitoring well locations.

TABLE 5-2
DETECTION MONITORING PROGRAM
PROPOSED GROUNDWATER MONITORING WELLS

R122 (1)
G123 (1)
G124 (1)
G125 (1)
G126 (1)
G127 (1)
A128 (1)
R29S (1)
R29D (1)
G130 (1)
G131 (1)
G132 (1)
G133 (1)
R134 (1)
G135 (1)
G136 (1)
G137 (1)
R139 (1)
R40S (1)
R4D2 (1)
G141 (1)
G142 (1)
G143 (1)
R144 (1)
G161(1)
G53S (1)
G53D (1)
R112 (2)
R114 (2)

(1) Point of Compliance Groundwater Monitoring Well
(2) Upgradient Groundwater Monitoring Well

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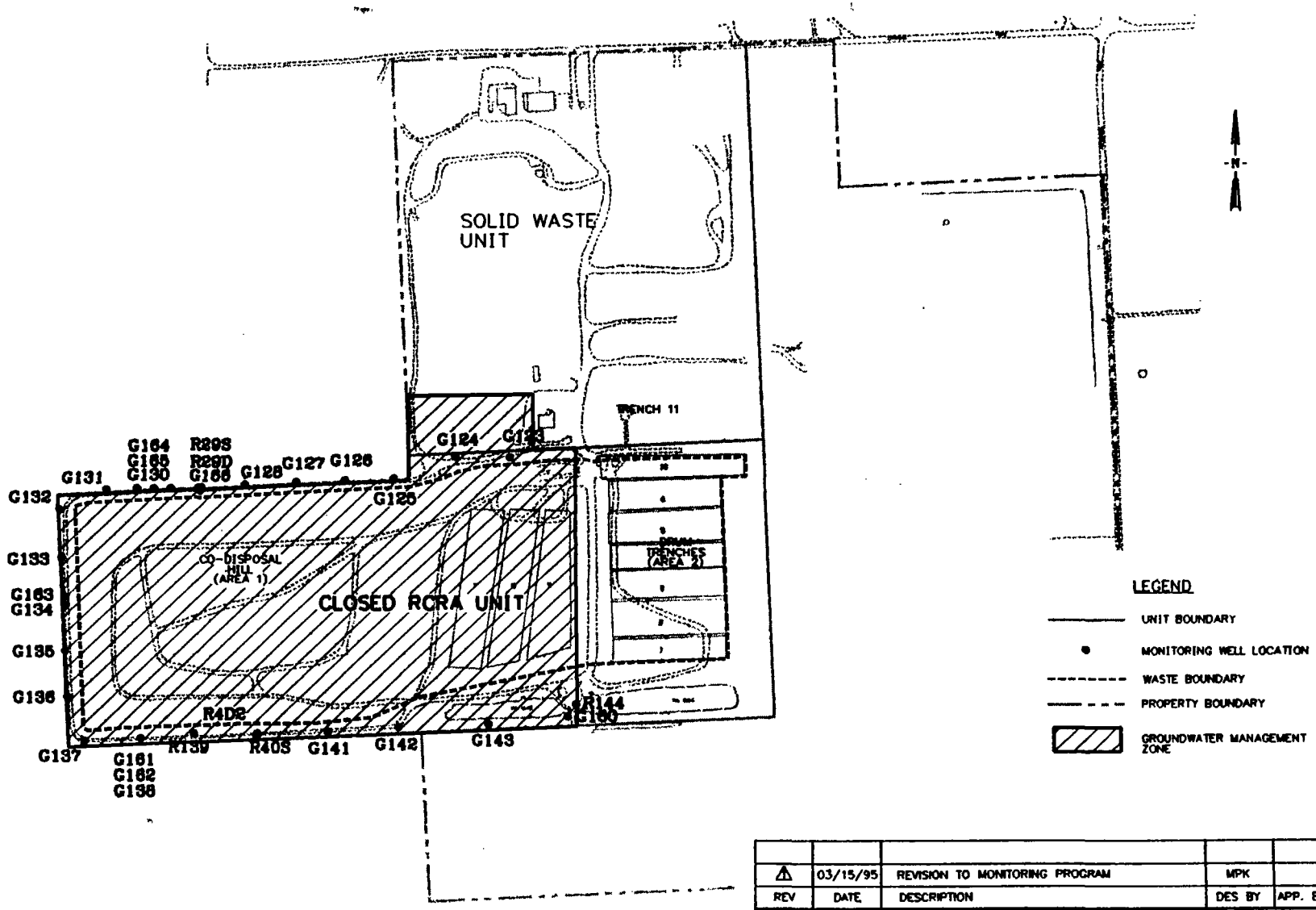

REV	DATE	DESCRIPTION	DES BY	APP. BY
1	03/15/95	REVISION TO MONITORING PROGRAM	MPK	

PROJECT NO	73911.100	LARAWAY RECYCLING AND DISPOSAL FACILITY WILL COUNTY, ILLINOIS
DATE	05/25/94	
DES BY		PROPOSED RCRA GROUNDWATER MONITORING WELL LOCATIONS CORRECTIVE ACTION MONITORING
DRN BY	RJK 05/25/94	
CHK BY		
APP BY		

ALL DRAWINGS ARE NOT TO SCALE EXCEPT WHERE NOTED.

PREPARED BY:
RUST ENVIRONMENT & INFRASTRUCTURE
SOLID WASTE DIVISION - NAPERVILLE

Waste Management of Illinois, Inc.

SHEET 1 OF 1
DRAWING NO
FIGURE 5-1A

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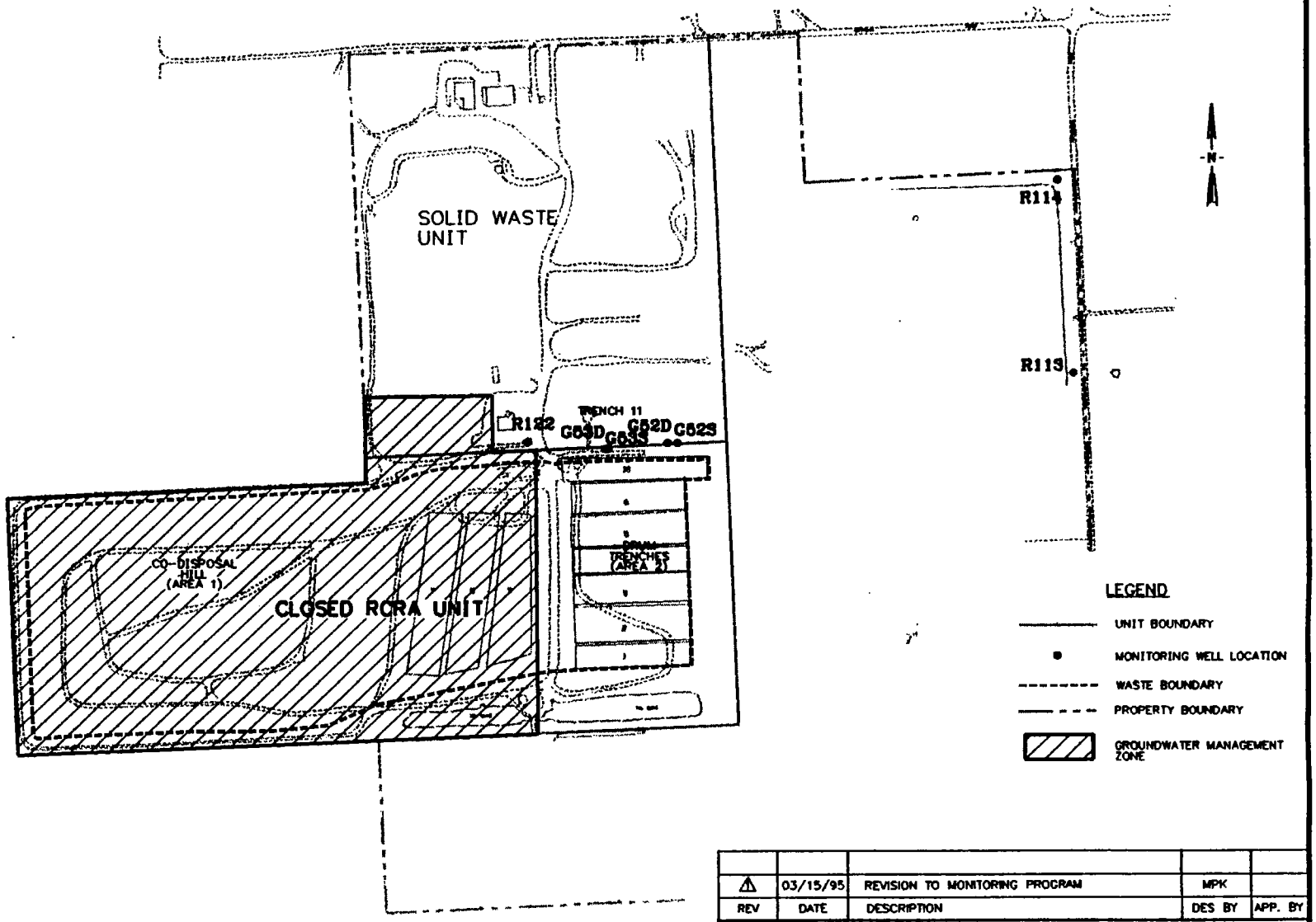


REV	DATE	DESCRIPTION	DES BY	APP. BY
1	03/15/95	REVISION TO MONITORING PROGRAM	MPK	

PROJECT NO	73911.100	LARAWAY RECYCLING AND DISPOSAL FACILITY WILL COUNTY, ILLINOIS
DATE	03/14/95	
DES BY		PROPOSED RCRA GROUNDWATER MONITORING WELL LOCATIONS INDICATOR MONITORING WELLS
DRN BY	BLJ 03/15/95	
CHK BY		
APP BY		

ALL DRAWINGS ARE NOT TO SCALE EXCEPT WHERE NOTED.

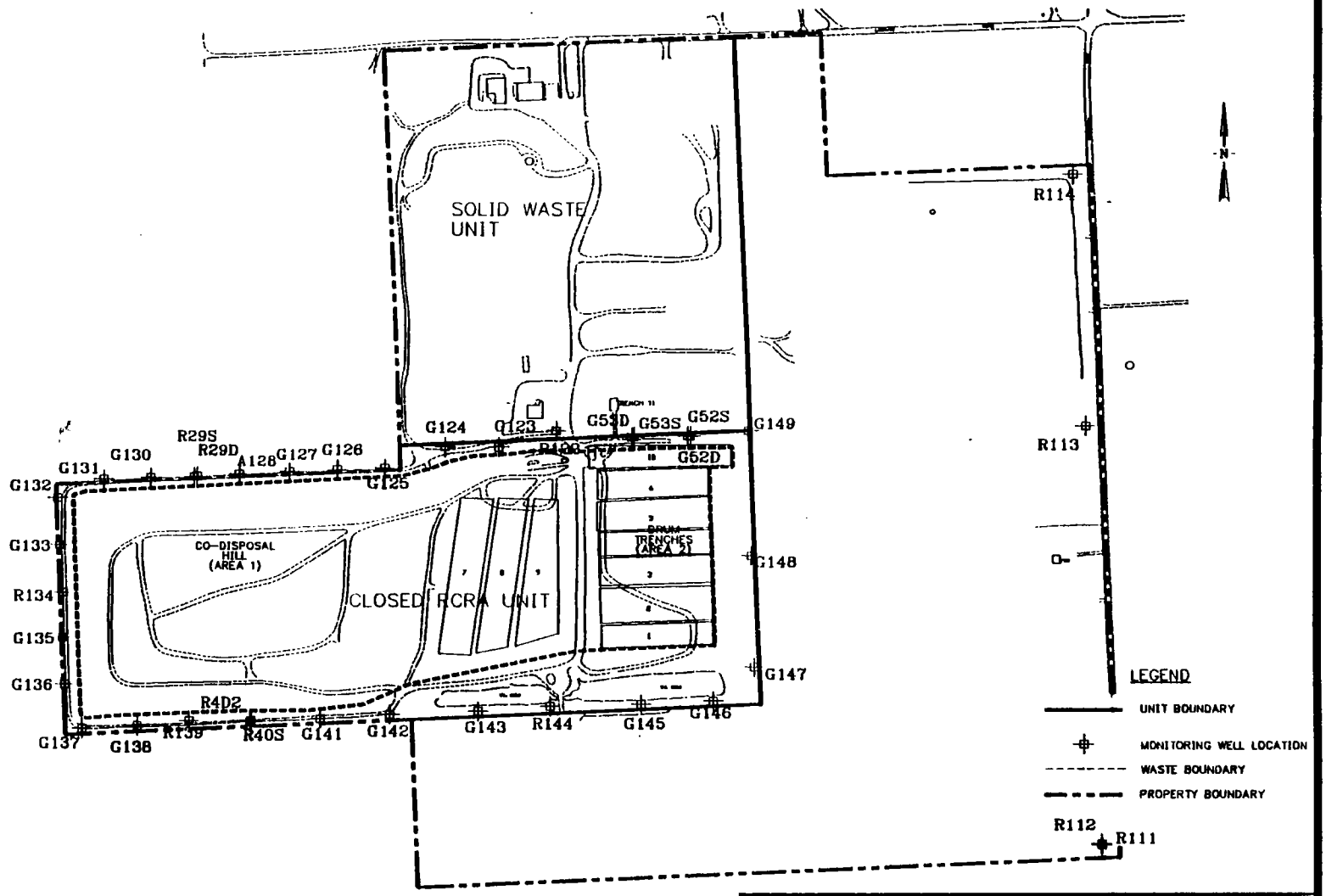
SCALE IN FEET

PREPARED BY:
RUST ENVIRONMENT & INFRASTRUCTURE
SOLID WASTE DIVISION - NAPERVILLE

Waste Management of Illinois, Inc.

SHEET 1 OF 1
DRAWING NO
FIGURE 5-1B

CADD FILE: 2295FG52 PLOT DATE: 06/15/94/AKW



PROJECT NO	72295.200		LARAWAY RECYCLING AND DISPOSAL FACILITY WILL COUNTY, ILLINOIS
DATE	05/25/94		
DES BY			EXISTING RCRA GROUNDWATER MONITORING WELL LOCATIONS
DRN BY	RJK	05/25/94	
CHK BY			
APP BY			

ALL DRAWINGS ARE NOT TO SCALE EXCEPT WHERE NOTED.

PREPARED BY: RUST ENVIRONMENT & INFRASTRUCTURE — SOLID WASTE DIVISION – NAPERVILLE

Waste Management of Illinois, Inc.

SHEET 1 OF 1

DRAWING NO

FIGURE 5-2

WMII requests a Class 2 Modification to the RCRA Part B Post Closure Permit to revise the Detection Monitoring Program monitoring well list to include monitoring wells R122, G123, G124, G125, G126, G127, A128, R29S, R29D, G130, G131, G132, G133, R134, G135, G136, G137, R139, R40S, R4D2, G141, G142, G143, R144, G161, G53S, G53D, R112 and R114.

5.2.3 Detection Monitoring Program Point of Compliance

Section I.B.1 of the current permit defines the Detection Monitoring Program Point of Compliance as ".... the vertical surface delineated by an imaginary lime that connects the monitoring points identified in section I.B.2. below (excluding upgradient wells), and which circumscribes (emphasis added) Disposal Areas 1 and 2. ..."

In sub-section 5.2.2.1 of this application WMII has proposed to remove seven monitoring well from the Detection Monitoring Program as currently specified in section I.B.2. of the permit. Removal of the seven monitoring wells has two effects upon the present definition of the Point of Compliance which are:

1. Physical reference locations for establishing the Point of Compliance in the area upgradient of the Closed RCRA Unit will be eliminated.

2. Absent reference locations around the entire Closed RCRA Unit, a imaginary lime circumscribing the Closed RCRA Unit cannot be established.

35 IAC 724.195(a) requires that " .... the Point of Compliance is a vertical surface located at the hydraulically downgradient limit of the waste management area ....". From this requirement, WMII believes that Laraway RDF Point of Compliance should be defined using the downgradient monitoring wells in the list proposed in sub-section 5.2.2.2 of this submission.

WMII requests a Class 2 Modification to the RCRA Part B Post Closure Permit to define the Detection Monitoring Point of Compliance as the vertical surface delineated by an imaginary lime that connects the monitoring points proposed in sub-section 5.2.2.2 and Table 5-2 of this submission (excluding upgradient wells), and which are at the hydraulically downgradient limit of the Closed RCRA Unit.

5.2.4 Monitoring Parameters

Section I.C.1 of the Permit lists the parameters to be analyzed during the Detection Monitoring Program. Recognizing that Detection Monitoring will resume only after Corrective Action is complete, WMII proposes a revised list of monitoring parameters for the Detection Monitoring Program. The proposed list is based on mobility and deductibility as well as being representative of wastes which have been accepted at Laraway RDF. WMII proposes to analyze for specified constituents including VOCs, p-dioxane, and chlorides.

VOCs represent all potential organic contaminants and chlorides represent all potential inorganic contaminants. P-dioxane is included because it has been present in past sampling events and it is highly mobile. Table 5-3 lists the parameters proposed to be analyzed for during the Detection Monitoring Program. PQLs for each parameter are also listed.

WMII requests a Class 2 Modification to establish the monitoring parameters identified in Table 5-3 into the permit for the Detection Monitoring Program.

Section I.C.2 of the Permit describes how background will be established for each constituent. Since all parameters listed on Table 5-3 have already been analyzed for over a period of more than one year, re-establishment of background will not be necessary. Background for the VOCs will be established at the PQL for each parameter.

Because chlorides are naturally occurring and have been detected in all upgradient groundwater monitoring wells, statistical evaluation is not proposed. Historical values for chlorides at each well will be graphed to show trends over time.

WMII requests a Class 2 Modification to incorporate these changes to the background establishment procedures and evaluation of chloride by trend chart.

5.2.5 Sampling and Analytical Procedures

Sampling and analytical procedures are described in the Groundwater Monitoring Plan which was included in the original RCRA Part B Post-Closure Permit Application. As stated in the approved Post-Closure Permit Application, the Groundwater Monitoring Plan presented was an example plan and may be revised or updated from time to time to incorporate changes to the groundwater monitoring program(s). Upon approval of this Permit Modification Application, WMII will revise the Groundwater Monitoring Plan to include appropriate changes. The updated Groundwater Monitoring Plan will be sent to IEPA for informational purposes, as a Class 1 Permit Modification, within 90-days of IEPA's approval of this Permit Modification Application. WMII has developed an up-dated Table of Contents for the example Groundwater Monitoring Plan to include appropriate changes. See Attachment 5B.

WMII requests a Class 1(*) Permit Modification to incorporate the up-dated Table of Contents of the Groundwater Monitoring Plan in anticipation of the revised plan.

A updated Plan will also be sent to IEPA within 90-days of Laraway RDF's return to the Detection Monitoring Program as a Class 1 Permit Modification.

TABLE 5-3
DETECTION MONITORING PROGRAM
PROPOSED MONITORING PARAMETERS

PARAMETER	PQL (ug/l)	ACTION LIMIT[1]
1,2-Dichloropropane	5	10
Toluene	5	10
Benzene	5	10
Chlorobenzene	5	10
Chloroethane	10	20
Chloromethane	10	20
Methylene Chloride	5	10
Methyl Ethyl Ketone	10	20
Tetrachloroethylene	5	10
Trichlorofluoromethane	5	10
1,1-Dichloroethane	5	10
1,1,1-Trichloroethane	5	10
1,1,2-Trichloroethane	5	10
1,2-Dichloroethane	5	10
Vinyl Chloride	2	4
Trichloroethylene	5	10
Ethyl Benzene	5	10
1,2-trans-Dichloroethylene	5	10
Xylene	5	10
Acetone	100	200
Isobutanol	50	100
ortho-Dichlorobenzene	5	10
Carbon Disulfide	5	10
Dichlorodifluoromethane	5	10
p-Dioxane	10	20
Chlorides	0.5 mg/l	Trend

[1] Generally two times the PQL. Chlorides are evaluated based on confirmed trends.

Section I.D.6 of the Permit discusses purging requirements. Based on past experience, WMII proposes the following modifications to the purging procedures:

1. If a groundwater monitoring well pumps dry at any time, it should be considered a low yielding monitoring well.

2. A minimum of one pump casing volume should be obtained from monitoring wells. If a monitoring well goes dry before one pump casing volume is obtained, the sample could be considered non-representative of the formation water. This could contribute to concentration fluctuations of naturally occurring constituents.

3. If there are concerns about the representativeness of a sample, purging will continue until field parameters (i.e. pH, specific conductivity, temperature) are determined to fall within the normal ranges compared to previous events. If normal ranges are not achieved after three well volumes, a sample will be obtained but the abnormality will be noted on the field log and will be considered when data is being evaluated.

WMII requests a Class 1(*) Modification to allow greater flexibility and field interpretation in the monitoring well purging procedures.

5.2.6 Groundwater and Monitoring Well Bottom Elevations

Section I.E.3 of the Permit requires the bottom of each monitoring well to be measured annually. On occasion, dedicated pumps have become lodged in monitoring wells making well bottom measurements impossible. Recognizing that achieving a performance standard is the goal, noting where the bottom elevation has changed in a monitoring well is not as important as its ability to yield representative samples. Non-representative conditions will be readily noticed via atypical field measurements (i.e. pH, specific conductivity). In addition, 35 IAC 724 regulations do not establish requirements determine well bottom elevations. Therefore, unless a groundwater monitoring well is damaged or otherwise unfit for obtaining representative samples, WMII proposes to continue using the monitoring well having a lodged pump without measuring the bottom elevation of the monitoring well.

For monitoring wells having a lodged pump, WMII proposes to determine the pump position relative to the well screen instead of measuring the bottom elevation of the impacted monitoring well. To determine that the pump has not been displaced beyond the vertical distance of the well screen, WMII will determine the distance from the top of the pump to the top of the well casing, and will add the length of the pump (based on pump installation specifications) to calculate the pump elevation. The resulting pump elevation will be compared to well construction records to determine the relative pump/well screen position. If the pump has been displaced beyond the well screen and the pump cannot be removed, then the well will be replaced.

WMII requests a Class 1(*) Modification to allow (for monitoring wells with lodged pumps), determination of the pump elevation relative to the well screen instead of determination of the bottom elevation of the monitoring well using the method described in sub-section 5.2.6 of this submission.

WMII also requests a Class 1(*) Modification to report either the pump elevation or monitoring well bottom elevation, as appropriate, as described in sub-section 5.2.6 of this submission on October 15 rather than July 15, of each year

5.2.7 Statistical Procedures

Section I.F.1 of the Permit describes the statistical procedure to be used for parameters which were detected in background. Of the proposed list of constituents, only chlorides have been detected in upgradient groundwater monitoring wells.

However, while chloride is an excellent first indicator of potential contamination, it is an inappropriate constituent for statistical evaluation. This is due to its propensity to exhibit false positives because it is naturally occurring and variable according to natural conditions. WMII proposes to conduct trend analyses of chloride rather than statistical evaluation. Trends will be graphed for each groundwater monitoring well plotting concentrations over time and concentration verses groundwater elevation. Comparisons will also be made of concentrations verses screen length and/or unit monitored as well as graphical comparisons to upgradient wells.

WMII requests a Class 1(*) Modification to incorporate this change to the statistical procedure into the permit to evaluate chloride and other natural occurring parameters by trend plotting.

Section I.F.2 of the Permit describes the statistical procedure to be used for parameters which have not been detected in background. This condition applies to p-dioxane and to VOC's as discussed above in sub-section 5.2.4 of this submission. Section I.F.2 of the current Permit requires that a fresh sample be collected from a monitoring well when the statistical test is exceeded.

WMII experience has identified certain factors associated with data management, and not the actual groundwater sample, that may cause the results of a sampling event to appear to exceed a statistical test, when in fact the standard may not have been exceeded. Should this be the situation, WMII believes that a re-sample is not necessary and therefore should not be required.

Figure 5-3, Data Validation Process Flow Chart of this submission presents relevant factors which WMII believes should be considered in the event that preliminary data analysis may indicate that a statistical test is exceeded. Upon completion of the proposed Data Verification Process, WMII will re-sample monitoring well(s) for which exceedence of statistical criteria cannot be properly explained by application of the Data Validation Process.

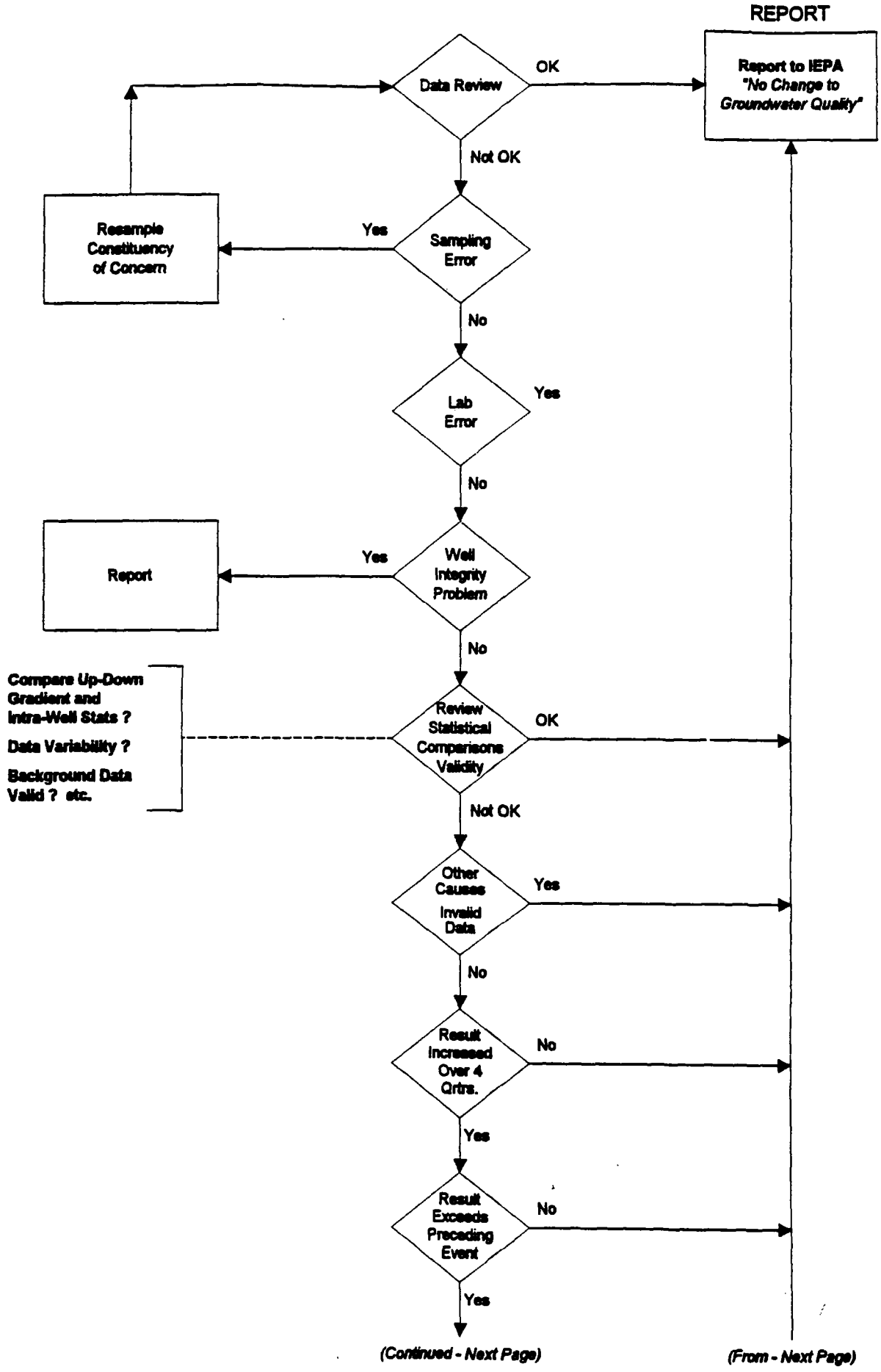
WMII request a Class 1(*) Modification of the Permit to incorporate the data evaluation process outlined in Figure 5-3, Data Validation Process Flow Chart of this submission

WMII request a Class 1(*) Modification to Permit Section I.F.2 to change the condition language from, "..the Permittee shall immediately collect a fresh sample...",to"...the Permittee may immediately collect a fresh sample..".

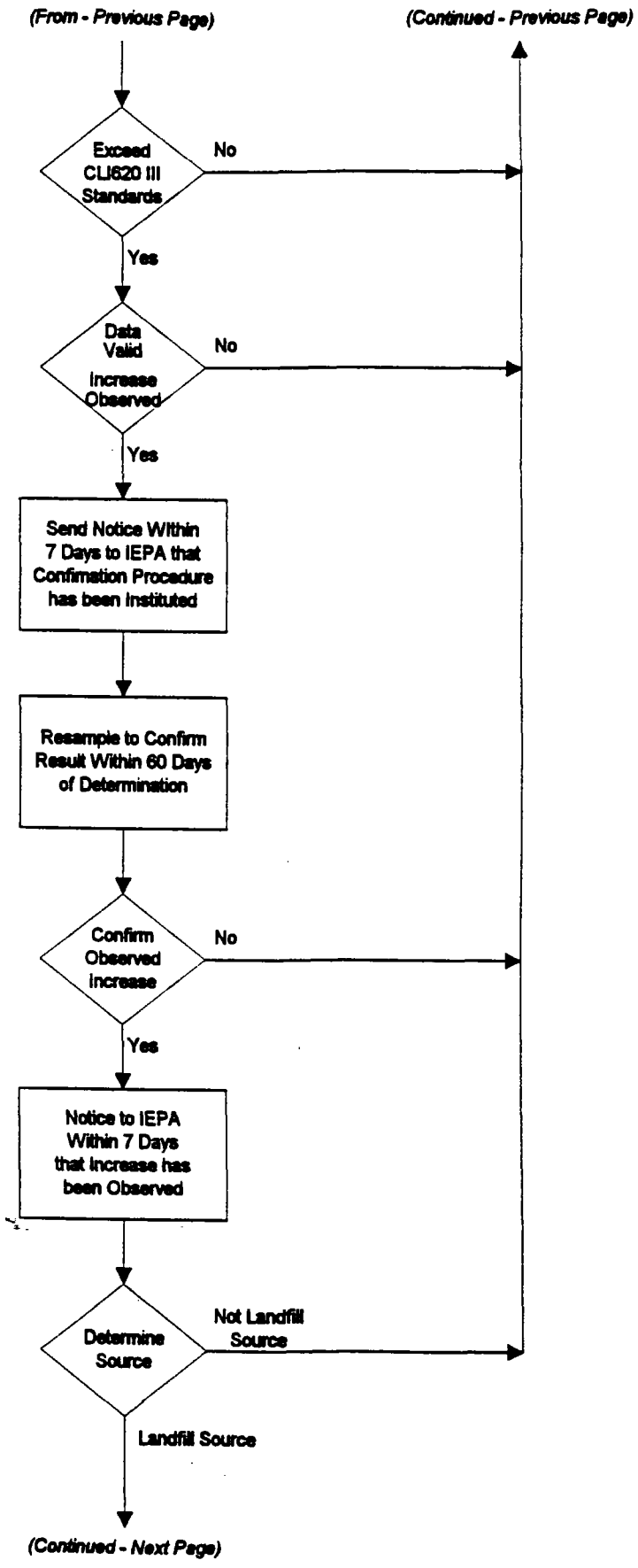
Section I.F.3 of the Permit describes the procedures to evaluate methylene chloride data. This condition was included in the original Application and Permit because methylene chloride was frequently detected as a laboratory artifact. However, since the issuance of the Permit, WMII has changed laboratories and is now using the services of the Environmental Monitoring Laboratory (EML) in Geneva, Illinois for groundwater analysis. EML has not experienced methylene chloride as an artifact and methylene chloride has not been detected. This condition, therefore, is not considered necessary at this time.

WMII requests that the IEPA remove this condition and will not object to IEPA's ,removing this condition should IEPA wish to do so. [Note: If this condition is removed, the exception reference to methylene chloride in Section I.F.4 (a) of the permit should also be deleted].

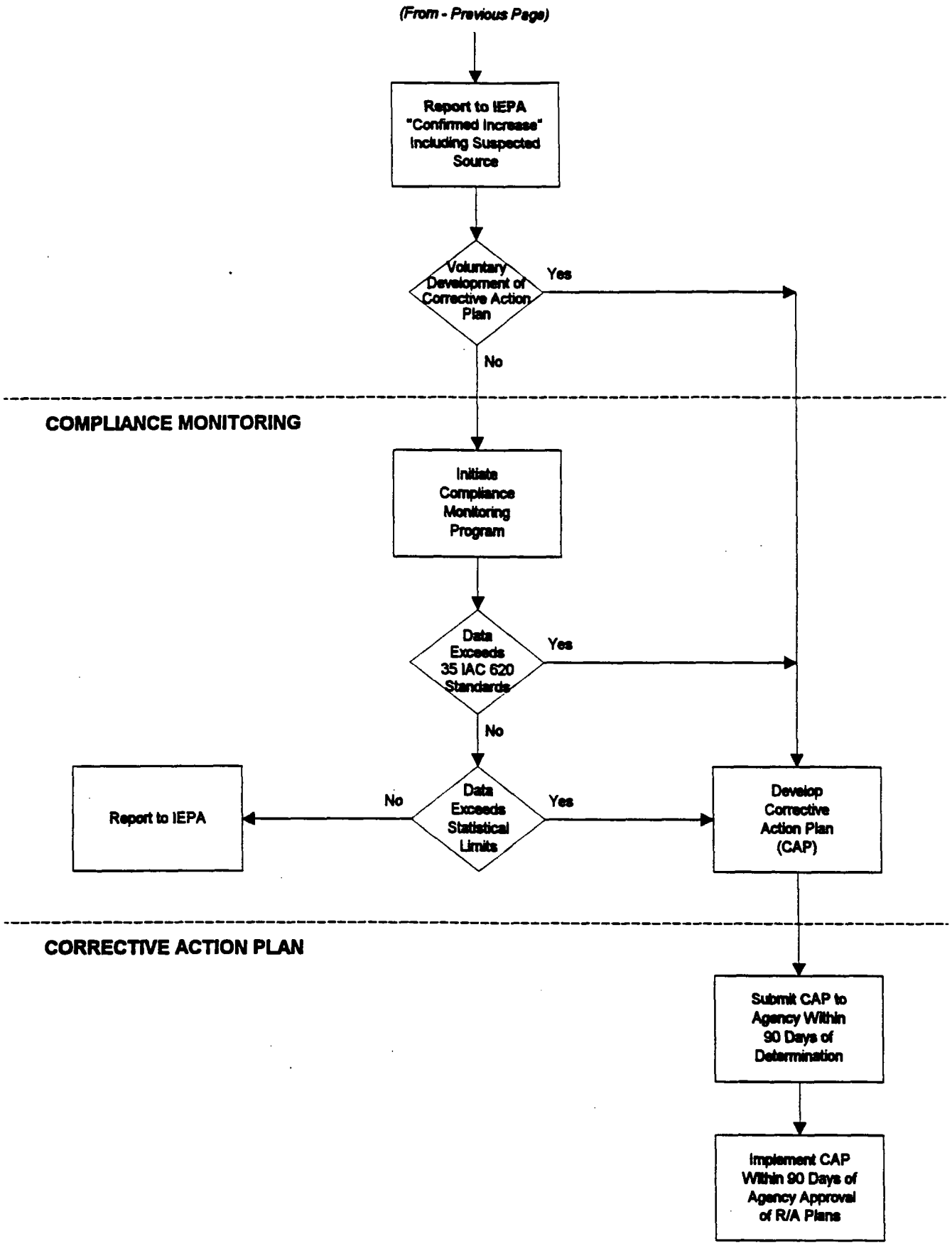
DATA VALIDATION PROCESS
GROUNDWATER QUALITY EVALUATION



DATA VALIDATION PROCESS



DATA VALIDATION PROCESS



5.2.8 Monitoring Program and Data Evaluation

Section I.G.2 of the Permit requires quarterly sampling and analysis of each groundwater monitoring well identified in Section I.B.2, both upgradient as well as downgradient. WMII has proposed to maintain two upgradient monitoring wells (R112 & R114) in order to obtain the required four samples per year. WMII proposes to alternate quarterly sampling of the upgradient monitoring wells as follows. R112 will be sampled and analyzed during the first and third quarter sampling events each year; R114 will be sampled and analyzed during the second and fourth quarter sampling events each year. Groundwater elevations will be obtained at both monitoring wells each quarter. Each subsequent sample year the monitoring wells will be sampled in a different sample quarter than the previous sample year.

WMII requests a Class 1 (*) Modification to incorporate this change into the permit to modify the upgradient sampling program to alternate quarterly sampling of upgradient wells.

Section I.G.5 of the Permit discusses special monitoring for groundwater monitoring wells R40D and G129. As discussed with IEPA during work associated with the Temporary Authorization, there have been no exceedences of constituents in the groundwater at the R40 location (neither in R40S nor R4D2) for more than four quarters. Therefore WMII believes that there is no further need for special conditions at the R40D location, and that the existing permit condition has been met. Implementation of the Corrective Action Program proposed in sub-section 5.4 of this submission will remediate the groundwater conditions at the G129 location. Therefore WMII also believes that there is no further need for special conditions at the G129 location after implementation of the Corrective Action Program.

WMII requests a Class 2 Modification to remove the special permit condition I.G.5 described above from the permit.

5.2.9 Reporting and Recordkeeping

Section I.H.4.3 specifies that monitoring results must be submitted each quarter (April 15, July 15, October 15, January 15). WMII believes that IEPA would benefit from a reduction in the frequency of groundwater monitoring submittals which are quite detailed and require extensive time to process and review. Therefore, WMII proposes to reduce the frequency that groundwater monitoring results are submitted from quarterly to semi-annual submissions. It is further proposed that fourth quarter and first quarter data will be submitted by April 15; second quarter and third quarter data will be submitted by October 15. No reduction of groundwater quality data obtained or provided to IEPA would result from implementation of the proposed change in reporting frequency.

WMII request a Class 1 (*) Modification to allow semi-annual groundwater monitoring result submittals to IEPA as described in sub-section 5.2.9 of this submission.

Section I.H.4.b of the Permit specifies that if there has been a statistically significant "change" for any of the parameters specified in Condition I.G of the permit, all monitoring wells must be

sampled for Appendix I constituents. As a matter of clarification, WMII understands that since it was not the intent of USEPA to require excessive analysis simply for analysis sake, it is not necessary to analyze for the entire Appendix I list for all monitoring wells.

WMII has performed Appendix I analyses of all monitoring wells at Laraway RDF twice (4/92 and 7/93). The majority of Appendix I parameters have not been detected in the groundwater during these sampling and analysis events.

WMII has performed Appendix I analysis of Laraway RDF leachate. Since the leachate samples were collected at various locations within the landfill and not composite, the resulting composition data is considered representative of the leachate. Many Appendix I constituents have not been detected in Laraway leachate during these sampling and analysis events.

Therefore, should it be necessary to implement the Section I.H.4.b Appendix I sampling requirements of the Permit, WMII proposes to analyze all "changed" point of compliance wells located in the down gradient position for the Detection Monitoring Program for the list of Appendix I Surrogate Parameters proposed in Table 5-4 of this submission. This site-specific Appendix I list excludes parameters not detected in Laraway leachate. However surrogate parameters are included which are representative of identified Class/Family of Appendix I constituents based on mobility, persistence, and deductibility. Support for the Appendix I surrogate list is provided in Attachment 5C (Discussion of Appendix I Surrogate Selection). If a surrogate parameter is detected, analyses for the Class/Family of Appendix I constituents the surrogate represents (less those parameters not detected in Laraway leachate) will be performed.

WMII requests a Class 2 Modification to establish and authorize the proposed Appendix I Surrogate Monitoring Parameter List as presented in Table 5-4, and the implementation of procedures described in sub-section 5.2.9 of this submission

Section I.H.4.d of the Permit requires that, under the situations described, a permit modification must be submitted to establish, and presumably, modify the Compliance Monitoring Program. WMII assumes that a Class 1 Modification is adequate since the Permit already contains a Compliance Monitoring Program (Section I.A).

WMII requests, for clarification, that language of Permit Section I.H.4.d be revised to state that a Class 1 Permit Modification will be required to establish or modify the Compliance Monitoring Program at Laraway RDF.

5.2.10 Request for Permit Modification

No modifications are requested.

TABLE 5-4

PROPOSED APPENDIX I SURROGATE MONITORING PARAMETERS

SURROGATE ANALYTE	ACTION LIMIT[1]	CLASS/FAMILY REPRESENTED
Total Phenols	20 ug/l	Base/Neutral SVOCs
Vinyl Chloride	4 ug/l	VOCs/Herbicides[3]/Pesticides[3]
p-Dioxane	20 ug/l	Heated Purge VOCs
Chlorides	NA[2]	Inorganics

1 Two times the PQL.
2 Not applicable. To be evaluated based on trends both inter-well and intra well comparisons.
3 Note: VOC parameter was chosen as a detection surrogate analyte for pesticides and herbicides as the VOC is more mobile for initial detection.

5.3 COMPLIANCE MONITORING PROGRAM

WMII's understanding of the use of the Compliance Monitoring Program as required by 35 IAC 724.199 is as follows. Should the Detection Monitoring Program indicate that a statistically significant increase of hazardous constituents has occurred in the groundwater, the Compliance Monitoring Program would be implemented to determine whether groundwater quality is in compliance with the groundwater protection standard specified by 35 IAC 724.192.

If it is determined by either the Detection Monitoring Program or Compliance Monitoring Program that the facility is not in compliance with the groundwater protection standard, a Corrective Action Program must be initiated.

A Compliance Monitoring Program may not be required in the event that a facility chooses to initiate a Corrective Action Program directly following a Detection Monitoring Program. 35 IAC 724.200(d) allows for the use of a Compliance Monitoring Program to demonstrate the effectiveness of the Corrective Action Program and determination of compliance with the groundwater protection standard specified in 35 IAC 724.192. However, a Compliance Monitoring Program may not be the appropriate monitoring program to conduct during the Corrective Action Program. This is the scenario which has actually occurred at Laraway. Upon approval of this Class 3 Modification for a Corrective Action Program, WMII will implement the Corrective Action Groundwater Monitoring Program described in Section 5.4. Upon successful completion of the Corrective Action Program, WMII will revert back to the Detection Monitoring Program.

The Compliance Monitoring Program described in this Section is presented as a precautionary measure. Future implementation of the Compliance Monitoring Program is not anticipated at Laraway RDF because the Corrective Action Program is expected to achieve and establish groundwater quality which is in compliance with the groundwater protection standard.

5.3.1 Summary

Section I.G.5 (Detection Monitoring Program) of the Permit requires that the Compliance Monitoring Program be implemented if certain events associated with the R40D location (now replaced by monitoring well R4D2) occurred. Since the specified events at R40D (R4D2) have not occurred, Laraway RDF has remained in the Detection Monitoring Program even though Appendix I events were conducted during this time.

<u>WMII requests for reasons of establishing permit clarity that the existing Section I.G.5. Permit summary text be deleted.</u>

5.3.2 Groundwater Monitoring Well Location and Construction

Section I.A.B.2 of the Permit lists the groundwater monitoring wells to be included in the Compliance Monitoring Program. Four upgradient monitoring wells (R111, R112, R113, R114) were initially proposed to ensure that sufficient data could be quickly generated for purposes of

establishing background. From a practical as well as regulatory basis, there is no need for quarterly monitoring of all four upgradient monitoring wells. First, for purposes of statistical evaluation, background has been established long ago. Second, there have been no indications that upgradient monitoring wells are being adversely impacted from either off-site or on-site sources. The groundwater quality in these monitoring wells has remained fairly consistent throughout the life of the Permit. Third, although the regulations specify a minimum number of samples (4) and a minimum frequency (semi-annual), they do not specify the number of upgradient monitoring wells required to be in a Compliance Monitoring Program.

Therefore, WMII proposes to reduce the number of upgradient groundwater monitoring wells in the Compliance Monitoring Program from four to two wells, R112 and R114. These wells are in upgradient off-site locations and, therefore, are not within the Point of Compliance. R111 and R113 may be maintained as piezometers and/or may be retained as part of Laraway RDF's solid waste permit. Former upgradient monitoring wells which will not be used as piezometers and/or solid waste monitoring wells will be abandoned and plugged in accordance with the RCRA Permit and with applicable water well codes. Changes in use from upgradient monitoring wells to piezometers or from piezometers to monitoring wells will be made by a Class 1 Permit Modification.

WMII requests a Class 2 Modification to the RCRA Part B Post-Closure Permit to remove upgradient groundwater monitoring wells R111 and R113 from the Compliance Monitoring Program as described in sub-section 5.3.2 of this submission.

5.3.2.1 Other Upgradient Wells

Seven (7) other existing groundwater monitoring wells (G145, G146, G147, G148, G149, G52S and G52D), are actually in upgradient groundwater locations relative to the Closed RCRA Unit. Historically these seven monitoring wells have not been identified as upgradient monitoring wells and they have been incorporated in establishing the Point of Compliance for the Closed RCRA Unit. These groundwater monitoring wells were included in the original permit application simply because they were existing monitoring wells at the time of the original permit application.

WMII requests a Class 2 Modification to the RCRA Part B Post-Closure Permit to remove upgradient groundwater monitoring wells G145, G146, G147,G148, G149, G52S and G52D from the Compliance Monitoring Program.

NOTE: Some of these monitoring wells may be maintained as piezometers and/or may be retained as part of Laraway RDF solid waste permit groundwater monitoring program. Former upgradient monitoring wells which will not be used as piezometers and/or solid waste monitoring wells will be abandoned and plugged in accordance with the RCRA Permit and with applicable well codes.

5.3.2.2 Compliance Monitoring Program - Monitoring Wells

The Compliance Monitoring Program proposed groundwater monitoring wells are provided in Table 5-5. Each Point of Compliance monitoring well is noted. Figure 5-1 shows the locations of these RCRA monitoring wells. Figure 5-2 is provided for reference which shows the existing RCRA monitoring well locations.

WMII requests a Class 2 Modification to the RCRA Part B Post Closure Permit to revise the Compliance Monitoring Program monitoring well list to include monitoring wells R122, G123, G124, G125, G126, G127, A128, R29S, R29D, G130, G131, G132, G133, R134, G135, G136, G137, R139, R40S, R4D2, G141, G142, G143, R144, G161, G53S, G53D, R112 and R114.

TABLE 5-5
COMPLIANCE MONITORING PROGRAM
PROPOSED GROUNDWATER MONITORING WELLS

R122 (1)
G123 (1)
G124 (1)
G125 (1)
G126 (1)
G127 (1)
A128 (1)
R29S (1)
R29D (1)
G130 (1)
G131 (1)
G132 (1)
G133 (1)
R134 (1)
G135 (1)
G136 (1)
G137 (1)
R139 (1)
R40S (1)
R4D2 (1)
G141 (1)
G142 (1)
G143 (1)
R144 (1)
G161(1)
G53S (1)
G53D (1)
R112 (2)
R114 (2)

(1) Point of Compliance Groundwater Monitoring Well
(2) Upgradient Groundwater Monitoring Well

5.3.3 Compliance Monitoring Program Point of Compliance

Section I.A.B.1 of the current permit defines the Compliance Monitoring Program Point of Compliance as ".... the vertical surface delineated by an imaginary lime that connects the monitoring points identified in section I.B.2. below (excluding upgradient wells), and which circumscribes (emphasis added) Disposal Areas 1 and 2. ..."

In sub-section 5.3.2.1 of this application WMII has proposed to remove seven monitoring well from the Compliance Monitoring Program as currently specified in section I.A.B.2. of the permit. Removal of the seven monitoring wells has two effects upon the present definition of the Point of Compliance which are:

1. Physical reference locations for establishing the Point of Compliance in the area upgradient of the Closed RCRA Unit will be eliminated.

2. Absent reference locations around the entire Closed RCRA Unit, a imaginary lime circumscribing the Closed RCRA Unit cannot be established.

35 IAC 724.195(a) requires that " .... the Point of Compliance is a vertical surface located at the hydraulically downgradient limit of the waste management area ....". From this requirement, WMII believes that Laraway RDF Point of Compliance should be defined using the downgradient monitoring wells in the list proposed in sub-section 5.2.2.2 of this submission.

WMII requests a Class 2 Modification to the RCRA Part B Post Closure Permit to define the Compliance Monitoring Point of Compliance as the vertical surface delineated by an imaginary line that connects the monitoring points proposed in sub-section 5.3.2.2 and Table 5-5 of this submission (excluding upgradient wells), and which are at the hydraulically downgradient limit of the Closed RCRA Unit.

5.3.4 Monitoring Parameters

Section I.A.C.1 of the Permit list the parameters to be analyzed for during the Compliance Monitoring Program. WMII proposes a revised list of monitoring parameters which will include VOCs, p-dioxane, and chlorides (as listed on Table 5-6). In addition to these parameters, any constituent detected during the Appendix I monitoring program will be added to the Compliance Monitoring Program as required by 35 IAC 274.199(g). In the event that an Appendix I constituent which is included in the Laraway RDF Compliance Monitoring Program Parameter list is not detected during four consecutive sampling events, that parameter will be deleted from the Compliance Monitoring Program and the deletion will be submitted to IEPA in a Class 1(*) Permit Modification.

WMII requests a Class 2 Modification to establish the monitoring parameters identified in Table 5-6 of this submission for the Compliance Monitoring Program.

Background has been established at Laraway RDF for many groundwater monitoring parameters including the VOCs and p-dioxane. Existing data will be used, as applicable, to calculate background values for other Compliance Monitoring Program parameters to be determined based on Appendix I sampling and/or on Detection Monitoring and/or Correction Action Monitoring. This subject has been discussed more fully in sub-section 5.2.4 of this submission.

5.3.5 Sampling and Analytical Procedures

As previously discussed in sub-section 5.2.5, sampling and analytical procedures are described in the Groundwater Monitoring Plan which was included in the original RCRA Part B Post-Closure Permit Application. As stated in the approved Post-Closure Permit Application, the Groundwater Monitoring Plan presented was an example plan and may be revised or updated from time to time to incorporate changes to the groundwater monitoring program(s). Upon approval of this Permit Modification Application, WMII will revise the Groundwater Monitoring Plan to include appropriate changes. The updated Groundwater Monitoring Plan will be sent to IEPA for informational purposes, as a Class 1 Permit Modification, within 90-days of IEPA's approval of this Permit Modification Application. WMII has developed an up-dated Table of Contents for the example Groundwater Monitoring Plan to include appropriate changes. See Attachment 5B.

A updated Plan will also be sent to IEPA within 90-days of Laraway RDF's return to the Detection Monitoring Program as a Class 1 Permit Modification.

Section I.A.D.6 of the Permit discusses purging requirements. Based on past experience, WMII proposes the following modifications to the purging procedures:

1. If a groundwater monitoring well pumps dry at any time, it should be considered a low yielding monitoring well.

2. A minimum of one pump casing volume should be obtained from monitoring wells. If a monitoring well goes dry before one pump casing volume is obtained, the sample could be considered non-representative of the formation water. This could contribute to concentration fluctuations of naturally occurring constituents.

3. If there are concerns about the representativeness of a sample, purging will continue until field parameters (i.e. pH, specific conductivity, temperature) are determined to fall within the normal ranges compared to previous events. If normal ranges are not achieved after three well volumes, a sample will be obtained but the abnormality will be noted on the field log and will be considered when data is being evaluated.

<u>WMII requests a Class 1(*) Modification to allow greater flexibility and field interpretation in the well purging procedures as described in sub-section 5.3.5 of this submission</u>

WMII requests a Class 2 Modification to allow greater flexibility in establishing appropriate background values for naturally occurring constituents such as chlorides.

TABLE 5-6
COMPLIANCE MONITORING PROGRAM
PROPOSED MONITORING PARAMETERS

PARAMETER	PQL (ug/l)	ACTION LIMIT[1]
1,2-Dichloropropane	5	10
Toluene	5	10
Benzene	5	10
Chlorobenzene	5	10
Chloroethane	10	20
Chloromethane	10	20
Methylene Chloride	5	10
Methyl Ethyl Ketone	10	20
Tetrachloroethylene	5	10
Trichlorofluoromethane	5	10
1,1-Dichloroethane	5	10
1,1,1-Trichloroethane	5	10
1,1,2-Trichloroethane	5	10
1,2-Dichloroethane	5	10
Vinyl Chloride	2	4
Trichloroethylene	5	10
Ethyl Benzene	5	10
1,2-trans-Dichloroethylene	5	10
Xylene	5	10
Acetone	100	200
Isobutanol	50	100
ortho-Dichlorobenzene	5	10
Carbon Disulfide	5	10
Dichlorodifluoromethane	5	10
p-Dioxane	10	20
Chlorides	0.5 mg/l	Trend

[1] Generally two times the PQL. Chlorides are evaluated based on confirmed trends.

5.3.6 Groundwater and Monitoring Well Bottom Elevations

Section I.A.E.3 of the Permit requires the bottom of each monitoring well to be measured annually. As discussed in sub-section 5.2.6 of this submission, on occasion dedicated pumps have become lodged in monitoring wells making well bottom measurements impossible. Recognizing that achieving a performance standard is the goal, noting where the bottom elevation has changed in a monitoring well is not as important as its ability to yield representative samples. Non-representative conditions will be readily noticed via atypical field measurements (i.e. pH, specific conductivity). In addition, 35 IAC 724 regulations do not establish requirements determine well bottom elevations. Therefore, unless a groundwater monitoring well is damaged or otherwise unfit for obtaining representative samples, WMII proposes to continue using the monitoring well having a lodged pump without measuring the bottom elevation of the monitoring well.

For monitoring wells having a lodged pump, WMII proposes to determine the pump position relative to the well screen instead of measuring the bottom elevation of the impacted monitoring well. To determine that the pump has not been displaced beyond the vertical distance of the well screen, WMII will determine the distance from the top of the pump to the top of the well casing, and will add the length of the pump (based on pump installation specifications) to calculate the pump elevation. The resulting pump elevation will be compared to well construction records to determine the relative pump/well screen position. If the pump has been displaced beyond the well screen and the pump cannot be removed, then the well will be replaced.

WMII requests a Class 1(*) Modification to allow (for monitoring wells with lodged pumps), determination of the pump elevation relative to the well screen instead of determination of the bottom elevation of the monitoring well using the method described in sub-section 5.3.6 of this submission

5.3.7 Statistical Procedures

Section I.A.F.1 of the Permit describes the statistical procedure to be used for parameters which were detected in background. Of the proposed list of constituents, only chlorides have been detected in upgradient groundwater monitoring wells (reference is to the Detection Monitoring Program).

However, while chloride is an excellent first indicator of potential contamination, it is an inappropriate constituent for statistical evaluation. This is due to its propensity to exhibit false positives because it is naturally occurring and variable according to natural conditions. WMII proposes to conduct trend analyses of chloride rather than statistical evaluation. Trends will be graphed for each groundwater monitoring well plotting concentrations over time and concentration verses groundwater elevation. Comparisons will also be made of concentrations verses screen length and/or unit monitored as well as graphical comparisons to upgradient wells.

WMII requests a Class 1(*) Modification to incorporate this change to the statistical procedure into the permit to evaluate chloride and other natural occurring parameters by trend plotting.

Section I.A.F.2 of the Permit describes the statistical procedure to be used for parameters which have not been detected in background. This condition applies to p-dioxane and to VOC's as discussed above in sub-section 5.3.4 of this submission. Section I.A.F.2 of the current Permit requires that a fresh sample be collected from a monitoring well when the statistical test is exceeded.

WMII experience has identified certain factors associated with data management, and not the actual groundwater sample, that may cause the results of a sampling event to appear to exceed a statistical test, when in fact the standard may not have been exceeded. Should this be the situation, WMII believes that a re-sample is not necessary and therefore should not be required.

Figure 5-3, Data Validation Process Flow Chart, of this submission presents relevant factors which WMII believes should be considered in the event that preliminary data analysis may indicate that a statistical test is exceeded. Upon completion of the proposed Data Verification Process, WMII will re-sample monitoring well(s) for which exceedence of statistical criteria cannot be properly explained by application of the Data Validation Process.

WMII request a Class 1(*) Modification of the Permit to incorporate the data evaluation process outlined in Figure 5-3, Data Validation Process Flow Chart of this submission

WMII request a Class 1(*) Modification to Permit Section I.A.F.2 to change the condition language from, "..the Permittee shall immediately collect a fresh sample...",to"...the Permittee may immediately collect a fresh sample..".

Section I.A.F.3 of the Permit describes the procedures to evaluate methylene chloride data. This condition was included in the original Application and Permit because methylene chloride was frequently detected as a laboratory artifact. However, since the issuance of the Permit, WMII has changed laboratories and is now using the services of the Environmental Monitoring Laboratory (EML) in Geneva, Illinois for groundwater analysis. EML has not experienced methylene chloride as an artifact. This condition, therefore, is not considered necessary at this time.

WMII requests that the IEPA remove this condition and will not object to IEPA's ,removing this condition should IEPA wish to do so. [Note: If this condition is removed, the exception reference to methylene chloride in Section I.A.F.4 (a) of the permit should also be deleted].

5.3.8 Monitoring Program and Data Evaluation

As discussed in sub-section 5.2.8, WMII requests a Class 1(*) Modification to allow upgradient monitoring wells to be sampled on a rotating basis (i.e. R112 first and third quarters, R114 second and fourth quarters).

Section I.A.G.5 of the current Permit requires groundwater from monitoring points at the Point of Compliance to be analyzed for Appendix I constituents on an annual basis. WMII proposes the following Appendix I program:

1. In addition to the list of parameters identified in Section I.A.C.1 of the current Permit, the Point of Compliance monitoring wells will be sampled and analyzed for the parameters listed on Table 5-4 of this submission. This additional analyses will be conducted annually during the Compliance Monitoring Program. The Table 5-4 surrogate parameters which represent noted Class/Families of Appendix I constituents. Based on the mobility, persistence and deductibility of the proposed surrogates, these compounds are most likely to be detected before other compounds (in the Class/Family the surrogate represents). Attachment 5C (Discussion of Appendix I Surrogate Selection) provides additional support for the use of these surrogates.

2. To confirm the effectiveness of using the proposed Appendix I Surrogate Monitoring Parameters, a complete Appendix I analyses will be conducted on groundwater from the Point of Compliance monitoring wells once every five years during the Compliance Monitoring Program. Appendix I constituents which have not been detected in representative leachate samples will be eliminated from the Appendix I list. In order to determine which parameters can be deleted, representative samples of leachate will be obtained and analyzed for the entire Appendix I list no more frequently than once every three years and no less frequently than once every five years. Sample location will be selected to represent spacial variations in the co-disposal hill and drum trenches and the samples will not be composite.
3. If a Table 5-4 surrogate is detected in groundwater above its action limit, as shown on Table 5-4, analyses for the entire Class/Family of Appendix I constituents which the surrogate represents (less any constituent not detected in leachate) will be conducted during the next quarterly sampling event. Constituents detected during this event will be added to the routine quarterly events and evaluated in the same manner as the routine list.

NOTE: Existing background data may be used in the evaluation. Depending upon the conditions, current technology, or other factors, it may be appropriate to develop new and/or additional background data. Should this be required, WMII will submit a Class 1 (*) Modification describing the proposed methods for establishing background and for comparing the parameter to the newly established background.

WMII requests a Class 2 Modification to establish and authorize the proposed Appendix I Surrogate Monitoring Parameter List as presented in Table 5-4, and the implementation of procedures described in sub-section 5.3.8 of this submission.

5.3.9 Schedule, Reporting, and Recordkeeping

Compliance Monitoring Program data, documentation, and statistical evaluations will be entered into the Laraway RDF operating record. Sampling will be conducted and data will be submitted to IEPA on the same schedule as identified under the Detection Monitoring Program (sub-section 5.2.9 of this submission). In the event of a statistically significant increase in the concentration of groundwater monitoring parameter(s), WMII will notify IEPA within 7 days of the confirmation of the increase. If appropriate, WMII may implement the Corrective Action Program.

5.4 CORRECTIVE ACTION PROGRAM

5.4.1 Summary

Through implementation of the Detection Monitoring Program, WMII has determined that hazardous constituents are being released from the Laraway RDF Closed RCRA Unit, and that the constituents are impacting groundwater at the facility. WMII has conducted a number of site investigations and scientific studies to determine the probable source, extent and rate of migration of contaminants into the groundwater at Laraway RDF. The site-specific hydrogeology has been reviewed and augmented. As described in Section 11 of this submission, the purpose of these investigations was to develop sufficient information to design an effective Corrective Action Program as required by 35 IAC 703.185 - Groundwater Protection Information, 35 IAC 724.191 - Required Programs and 35 IAC 724.200 - Corrective Action Program.

The proposed Correction Action Program includes both a system designed to provide containment, extraction and treatment of groundwater as well as to provide a groundwater monitoring program to determine the effectiveness of the Corrective Action Program.

Groundwater treatment equipment and the overall treatment process design has been selected to be versatile in order to efficiently respond to potentially changing groundwater conditions which may occur at Laraway RDF. The treatment process is of a modular type which can be expanded in phases to provide a variety of treatment capabilities. The first module or Phase 1 has been designed to treat groundwater constituents currently present in groundwater at Laraway RDF. Additional treatment capabilities will be incorporated into the process when and if necessary.

WMII will submit a Class 1 Permit Modification to IEPA to authorize additional treatment capabilities as needed.

Correspondingly, this supporting permit application has been structured to minimize future permitting efforts which may be associated with permitting potential treatment process additions should groundwater conditions at Laraway RDF warrant.

5.4.1.1 Areas of Concern

Low level volatile organic compounds have been detected at a number of the Point of Compliance monitoring wells as established in the Permit. Table 5-1 identifies the affected Point of Compliance monitoring wells, the constituents which have shown statistically significant exceedence in concentration and the range (high/low) of measured constituent concentration. Complete data summaries for each monitoring well is provided in Attachment 5A.

Of special note are the R40 series monitoring wells which have been identified in the Permit as a suspect location. Hazardous constituent concentration have not exceeded permit limits for

more than four quarters and, therefore, the R40 series monitoring wells are not considered a problem at this time.

Hazardous constituents have been found at other monitoring wells but measured concentrations have either always been below Permit limits or have been below Permit limits for more than four quarters.

5.4.1.1.1 R29 Location

Organic constituents including p-dioxane, vinyl chloride, dichlorodifluoromethane, trichlorofluoromethane have been consistently present at the two R29 location (R29S and R29D). Localized corrective action (i.e. pumping a monitoring well) which was approved by IEPA in a Temporary Authorization Letter dated May 29, 1992, has provided short-term removal of the constituents. When pumping discontinued, however, the constituents continued to be present in the groundwater. A greater number of constituents exhibiting higher concentrations are present at the R29 locations than at other monitoring well locations at Laraway RDF..

5.4.1.1.2 Other Co-Disposal Hill Locations

P-dioxane is the most commonly detected constituent in other impacted monitoring wells, having been detected above Permit limits in seven other program monitoring wells in addition to the two R29 monitoring wells. The next most common constituent is vinyl chloride, which has been detected above Permit limits in four program monitoring wells. These constituents are good indicators due to their mobility. No other organic constituents have been detected significantly above the detection limit. The Point of Compliance is located very near the Laraway property line on part of the north, the west, and part of the south sides of Area 1. WMII has attempted to obtain approval to investigate groundwater beyond the Point of Compliance but has been denied access by the property owners.

5.4.1.1.3 R144 Location

The contaminants detected in R144 exhibited a different fingerprint than any other monitoring well. While investigating the R144 location, stained soils were observed. Samples of the soils were submitted to the laboratory for chemical analyses. The results indicated constituents typical of petroleum products. WMII notified USEPA that a new Solid Waste Management Unit (SWMU) had been identified. Because the SWMU is located within the limits of the closed RCRA unit, USEPA directed WMII to address the SWMU as part of the Class 3 Modification under IEPA's management.

IEPA requested a Plan to Investigate the area and WMII submitted the Plan. WMII will implement the Plan upon IEPA's approval. Based on the findings of the investigation, WMII expects to submit other plans and reports associated with the SWMU. Should the area require remediation which would impact either the closed RCRA unit or groundwater, WMII will submit the plans for remediation in a Class 1(*) Modification. Possible activities to be addressed in a Class 1 (*) Modification include; (1) excavating the stained soil disposing off-site and/or

reconsolidating it in the closed RCRA unit thereby requiring repair and recertification of the cap; (2) additional groundwater extraction wells to be located in the vicinity of R144; (3) replacing R144.

5.4.1.1.4 Other Concerns - Landfill Gas

WMII has started monitoring for methane gas in groundwater monitoring wells at Laraway. Landfill gas has been shown to impact groundwater in monitoring wells both at Laraway and at other WMII landfills. Correlations observed between gas detected in monitoring wells and contaminants detected in groundwater at that monitoring well and/or nearby monitoring wells will be considered as part of the groundwater evaluation process. If appropriate, modifications to the gas management system may be implemented before some of the more restrictive groundwater Permit conditions are implemented. Should WMII observe a gas/groundwater correlation where modifications to the gas management system is appropriate, WMII will notify IEPA of its intent by a Class 1 Modification. (Gas management is discussed in Section 6).

5.4.1.1.5 Groundwater Monitoring Well G141

WMII has implemented the required two month sampling event(s) as specified by the interim groundwater monitoring program (Requirement Number 4, of the IEPA May 27, 1993 Temporary Authorization). Groundwater monitoring well G141 has been included in the interim monitoring program. The constituent chloroethane was reported for groundwater sampled at monitoring well G141 during the February 1994 sampling event. Prior to this event chloroethane has not been reported for G141 or for any other RCRA groundwater monitoring well at Laraway RDF.

Methane gas has been reported present in groundwater monitoring well G141 and is known to be present at other locations near monitoring well G141.

WMII believes that the presents of methane gas is associated with, and is causing a false indication of chloroethane in groundwater samples taken from monitoring well G141. WMII will continue to evaluate G141 groundwater data and determine if chloroethane is actually present at concentrations which are statistically significant. In the event that statistically significant concentrations of this constituent are confirmed for the G141 monitoring location, the Corrective Action Program provided in this submission will be properly revised to address developing groundwater conditions at the G141 monitoring well location.

<u>WMII will request IEPA to authorize future revision to the Corrective Action Program as appropriate to address potential changing groundwater conditions in the vicinity of groundwater monitoring well G141 as a Class 1(*) Permit Modification</u>

5.4.2 Proposed Corrective Action Program

Following is a general description of the proposed Corrective Action Program which will implement groundwater extraction, containment, and treatment. A detailed description of the

anticipated design is provided in Section 11 of this submission. The design description provided may be modified as necessary based on field conditions, availability of equipment, operational constraints, changing technology, and regulatory factors.

Implementation of the Corrective Action Program is anticipated to achieve a performance standard which will prevent contaminants from exceeding the permit limits beyond the Point of Compliances and to treat groundwater to meet acceptable discharge or disposal limits, if needed. Modifications to the initial design as well as modifications or repairs made after construction which conform with the performance standard will be made without further modifications to the Permit.

As-built drawings will be submitted to IEPA upon completion of construction and after any major modification and/or repair as a Class 1 Permit Modification.

5.4.2.1 Purpose of Corrective Action Program

The purpose of this Corrective Action Program is as follows:

1. Contain and prevent organic contaminants released into the groundwater beneath the Closed RCRA Unit from exceeding the groundwater protection standard beyond the Point of Compliance.

2. Extract groundwater to control the groundwater flow at the Point of Compliance.

3. Compliant discharge of groundwater which has been extracted by operation of the Corrective Action Program as required by the National Pollution Discharge Elimination System (NPDES) permit or other acceptable discharge or disposal.

4. Establish a Groundwater Management Zone, pursuant to 35 IAC 620.250, to mitigate groundwater in the uppermost transmissive zone of the aquifer under Laraway RDF and the off-site groundwater which has been impaired by the release of constituents from the Closed RCRA Unit.

5. Continue mitigation of groundwater in the uppermost transmissive zone of the aquifer within the Groundwater Management Zone during the period of time necessary for completion of the Corrective Action Program and until attainment of applicable groundwater standards as specified in 35 IAC 620.450(a)(4).

Further discussion regarding implementation of a Groundwater Management Zone is provided in sub-section 11.2.7 of this submission.

5.4.2.2 Description of Corrective Action System

The Corrective Action System consists of a series of groundwater extraction wells strategically located around Area 1. The locations of the extraction wells were selected based on pump tests

performed at the site in late 1993. Groundwater will be pumped from the extraction wells to a forcemain located around Area 1. Based on the pump test and on a model, a pumping rate of 5-gallons per minute is expected to be adequate to maintain the desired inward gradient. Pumping rates can be adjusted as necessary to achieve the goals of corrective action, for example, to maintain the inward gradient.

Groundwater will move through the forcemain to the treatment building. The forcemain may be located within the limits of the landfill or just outside the landfill limits. Excavations into the landfill cap will be repaired to approved RCRA closure standards, tested in accordance with the closure plan, and certified by an Illinois Registered Professional Engineer.

Three Phases of treatment are discussed in the design. Phase I consists of groundwater extraction and partial air sparging with heat enhancement. This Phase will be constructed and pilot tests will be conducted prior to constructing subsequent Phases. If the treated groundwater meets the NPDES (or other discharge limits) after Phase I treatment, other treatment Phases may not be built.

Phase II consists of air stripping. Phase III consists of clarification/flocculation/solids removal followed by UV/ozonation. Either or both of these Phases may be or may not be necessary. Should additional Phases and/or modifications to the described Phases be necessary during the operational life of the system, WMII will notify IEPA by a Class 1 Modification and will provide as-build drawings of the changes.

5.4.2.3 Management of Treatment By-Products

The Groundwater Containment, Extraction, and Treatment System will result in treated groundwater which is expected to be discharged in accordance with a NPDES permit. A copy of the NPDES permit is provided in Attachment 5D. Alternate disposal methods (e.g. discharge to a municipal treatment works, disposal through a commercial treatment facility, etc.) may be utilized.

Treated groundwater will be stored on-site in frac tank containers or portable tank/containers during the start-up of each new Phase or significant modification pending results of analysis. Groundwater may need to be stored for the period of time required to install additional treatment Phases. Storage is not expected to exceed 90-days. Appropriate secondary containment will be provided if applicable. Upon full operation of the System, storage of groundwater for more than a few days is not anticipated.

If Phase III is implemented, a filter cake from sludge dewatering will be generated. Also, at times accumulation tanks will be changed and a sludge may be generated. The sludge will be managed as a special (pollution control) waste and disposed of in the Closed RCRA Unit or at permitted off-site facility as appropriate.

5.4.2.4 Modifications to Corrective Action System

During the operation of the Groundwater Containment, Extraction, and Treatment System, modifications to address higher or lower flow, different contaminants, and/or higher levels of contaminants may be required. Modifications and/or repairs are expected to be made to the system throughout the operating life. WMII will notify IEPA of significant improvements, modifications, upgrades, and repairs via Class 1 Modifications to the Permit. There will be no Permit Modifications required for routine improvements, modifications, upgrades, and repairs.

5.4.2.5 Testing

During the pilot programs of the Groundwater Containment, Extraction, and Treatment System, testing of treated groundwater will occur on a batch basis for a minimum of four (4) batches. When four (4) consecutive batches meet the NPDES discharge requirements, testing will revert to the routine testing required under the NPDES permit.

Pilot testing will be conducted immediately following the installation of any new Phase or significant modification.

5.4.2.6 Corrective Action Schedule, Reporting, Recordkeeping

Upon approval of this Class 3 Modification Application, WMII will commence construction of the Groundwater Containment, Extraction, and Treatment System, weather permitting. Construction of the extraction wells, force main and Phase I treatment is expected to take approximately four months. Pilot testing of Phase I will occur as soon as possible (weather permitting) following completion of construction of Phase I. Should the test results after Phase I treatment indicate that additional treatment is necessary, Phases II and/or III will be constructed. Construction of Phase II is expected to take approximately two months. Construction of Phase III is expected to take approximately two months. Construction and pilot testing may be delayed due to inclement weather and/or winter weather conditions which may impair good construction practices.

As described in Section 11, as the development of the Laraway RDF solid waste landfill progresses, the treatment building will be relocated on-site. The Groundwater Containment, Extraction, and Treatment System will be shut-off during the relocation. Relocation is expected to take no more than sixty days. As discussed in Section 11, a system shut-down of sixty days will not adversely impact groundwater by allowing releases beyond the point of compliance.

As indicated in Section 11, the Corrective Action Program is expected to operate for eleven years. The operating schedule will be adjusted based on the results of the groundwater monitoring as described in the following subsection.

As-built drawings, data, and other documentation associated with the Groundwater Containment, Extraction, and Treatment System will be incorporated into the Laraway RDF operating record. WMII will prepare an annual report describing the results and effectiveness of the Corrective Action Program during that year. The annual report will be submitted to IEPA by October 15 of each year.

5.4.3 Corrective Action Groundwater Monitoring Program

5.4.3.1 Summary

During the operation of the Groundwater Containment, Extraction, and Treatment System, groundwater will be monitored in order to demonstrate the effectiveness of the Corrective Action Program and to determine compliance with the groundwater protection standard as described in sub-section 5.4.3.2 of this submission.

5.4.3.2 Groundwater Protection Standard

There are two components associated with the groundwater protection standard at Laraway. These components include; (1) groundwater flow direction; and (2) quality of groundwater.

As described in Section 11 of this submission, the design of the Groundwater Containment, Extraction, and Treatment System will cause an inward gradient thereby containing contaminants from migrating beyond the Point of Compliance. As such, a routine demonstration (at least quarterly) showing groundwater direction is critical during implementation of the Correction Action Program. This demonstration will be achieved by obtaining groundwater elevations at program monitoring wells, plotting the elevations on a groundwater contour map, and evaluating the results. As long as contaminants are being contained at the Corrective Point of Compliance, the groundwater protection standard will be achieved.

In addition, groundwater quality will be monitored by sampling and analyzing representative groundwater samples. The proposed Groundwater Containment, Extraction, and Treatment System can cause changes in the composition of groundwater surrounding monitoring well screens which are located in the vicinity of the groundwater extraction wells. By constant pumping, groundwater elevations will be reduced and mixed and, therefore, will not be representative of a static groundwater quality condition. Monitoring each well in the current groundwater monitoring system, is, therefore not appropriate. To accommodate for this situation, WMII is proposing a routine, multi-faceted Corrective Action Groundwater Monitoring Program composed of four component monitoring programs, which are: the Observation Monitoring Program and the Indicator Monitoring Program. A brief description of each component monitoring program is presented in this sub-section, and detailed descriptions are provided later in this section.

1. <u>Observation Monitoring Program(Quarterly)</u>

   This program will only monitor groundwater elevations to confirm that an inward gradient is being maintained. Elevations of all groundwater monitoring wells in the Corrective Action Groundwater Monitoring Program will be obtained and evaluated at least monthly for an initial period of 3 1/2 months. Then as long as the extraction system is in operation, the elevations will be taken on a quarterly schedule.

2. Indicator Monitoring Program (Quarterly)

A. Extraction System Monitoring
A groundwater sample will be obtained from the extraction system prior to treatment. This sample will be tested for an indicator parameter (p-dioxane). If p-dioxane levels fall within an expected range, as discussed in sub-section 5.4.3.4, no additional groundwater sampling and analysis will be performed. After the initial start-up of the System, the Indicator Monitoring Program will be conducted quarterly. More frequent monitoring may occur at start-up.

If the Indicator sample exceeds either the high or low ends of the expected range, additional sampling and analysis may be conducted. Additional Indicator Monitoring Program sampling will not be necessary if the exceedence occurs in a quarter when the Static Condition Monitoring Program is occurring.

The purpose for the extraction system Indicator Monitoring Program is to identify noticeable changes (indications) in groundwater quality discharged during Corrective Action. Additional sampling and analysis can be performed to investigate noticeable changes.

B. Non-GMZ Monitoring Wells
Groundwater monitoring wells not located in the Groundwater Management Zone as defined in this Permit (see Section 11) will be monitored pursuant to the Detection Monitoring Program (See Section 5.2). The wells may be sampled during static or dynamic pump conditions of the groundwater extraction system.

C. GMZ Monitoring Wells
Groundwater monitoring wells located within the groundwater management zone (GMZ) will be monitored for the following parameters:

chloromethane	P-Dioxane
chloroethane	vinyl chloride
	Trans 1,2, DCE
	Dichlorodifloromethane
	Trichlorefluoromethane

5.4.3.3 Groundwater Monitoring Well Location and Construction

The uppermost aquifer at Laraway RDF has been defined as a composite zone consisting of the outwash sand and gravel deposits, and the underlying weathered, fractured, and/or jointed Silurian dolomite. As a matter of clarification and for purposes of the Corrective Action

Groundwater Monitoring Program, contaminants have been found only in the upper zones of the aquifer (i.e. the outwash and the weathered dolomite). Recent investigations have shown no contamination in the deeper zones of the aquifer (i.e. fractured and/or jointed dolomite).

Corrective Action Program groundwater monitoring wells and locations will be maintained throughout the Corrective Action Groundwater Monitoring Program. Replacement monitoring wells will be installed, developed, and documented in accordance with the monitoring well construction conditions included in the Permit. Deleted monitoring wells will be abandoned, plugged, and documented in accordance with the well abandonment conditions included in the Permit and applicable water well codes.

5.4.3.3.1 Corrective Action Program - Monitoring Wells

The Corrective Action Program proposed groundwater monitoring wells are provided in Table 5-7. Each Point of Compliance monitoring well is noted. Figure 5-1 shows the locations of these RCRA monitoring wells. Figure 5-2 is provided for reference which shows the existing RCRA monitoring well locations.

WMII requests a Class 3 Modification to the RCRA Part B Post Closure Permit to define the Corrective Action Program monitoring well list to include monitoring wells G123, G124, G125, G126, G127, A128, R29S, R29D, G130, G131, G132, G133, R134, G135, G136, G137, R139, R40S, R4D2, G141, G142, G143, G144, G160, G161, G162, G163, G164, G165, G166.

5.4.3.3.1.1 Observation Monitoring Program Monitoring Wells

Groundwater elevations will be obtained at each of the monitoring wells listed in Table 5-7 during the Observation Monitoring Program.

5.4.3.3.1.2 Extraction System Indicator Monitoring Program Monitoring Location

A dedicated pipeline (force main) is proposed to transport extracted groundwater from the extraction wells to the treatment process. The force main will be equipped with a sampling port. A sample of groundwater will be obtained from the sampling port prior to water entering the treatment building. The sample will be analyzed for p-dioxane to determine the quality of the groundwater combined from all extraction wells at that time. P-dioxane concentrations within the range proposed in sub-section 5.4.3.4 of this submission are considered to indicate that the Corrective Action Program is performing to plan. Based on the results of the analysis, adjustments and/or modifications to the Groundwater Containment, Extraction, and Treatment System may be implemented.

The approximate locations of the extraction wells, force main, force main sampling port and treatment building are discussed and illustrated in Section 11 of this submission.

TABLE 5-7
PROPOSED CORRECTIVE ACTION GROUNDWATER MONITORING WELLS

WELL No.
~~R122 (1)~~
G123 (1)
G124 (1)
G125 (1)
G126 (1)
G127 (1)
A128 (1)
R29S (1)
R29D (1)
G130 (1)
G131 (1)
G132 (1)
G133 (1)
R134 (1)
G135 (1)
G136 (1)
G137 (1)
R139 (1)
R40S (1)
R4D2 (1)
G141 (1)
G142 (1)
G143 (1)
R144 (1)
G160(1)
G161(1)
G162(1)
G163(1)
G164(1)
G165(1)
G166(1)

(1) Point of Compliance Groundwater Monitoring Well

TABLE 5-7A

PROPOSED INDICATOR MONITORING GROUNDWATER MONITORING WELLS

R114
R113
R122
G520
G535
G525
G530

5.4.3.4 Monitoring Parameters

Each constituent monitoring program in the Corrective Action Groundwater Monitoring Program will have a list of parameters to be analyzed for. Under the Observation Monitoring Program, and Indicator Monitoring Program, data will be reviewed for purposes of monitoring the prgress and effectiveness of the Groundwater Containment, Extraction, and Treatment System. Additional parameters may be added based on the results of these Procedures. Statistical evaluation of data from these procedures is not proposed. Establishment of a background value, therefore, is not applicable.

5.4.3.4.1 Observation Monitoring Program

This program will monitor for the critical physical parameter rather than chemical parameters. To monitor the effectiveness of the Groundwater Containment, Extraction, and Treatment System's ability to contain contaminants, this procedure will monitor for groundwater elevations to determine if an adequate inward gradient is being maintained.

5.4.3.4.2 Indicator Monitoring Program

A. Extraction System Monitoring

P-dioxane has been selected as an appropriate indicator parameter to be used in this monitoring program. P-dioxane is the most commonly detected constituent in impacted monitoring wells at Laraway RDF, it is highly mobile and detectable, and it is prevalent in Laraway RDF's leachate.

B. Non GMZ Monitoring Wells - See Detection Monitoring Program

C. GMZ Monitoring Wells

The following parameters will be analyzed:
P-Dioxane, Vinyl Chloride, T-12, DCE.TCFM, DC DFM.CMA,.CEA

TABLE 5-9

CORRECTIVE ACTION MONITORING PROGRAM
PROPOSED INDICATOR MONITORING PROGRAM PARAMETERS
(APPENDIX I SURROGATE MONITORING PARAMETERS)

SURROGATE ANALYTE	ACTION LIMIT[1]	CLASS/FAMILY REPRESENTED
Total Phenols	20 ug/l	Base/Neutral SVOCs
Vinyl Chloride	4 ug/l	VOCs/Herbicides[3]/Pesticides[3]
p-Dioxane	20 ug/l	Heated Purge VOCs
Chlorides	NA[2]	Inorganics

1 Two times the PQL.
2 Not applicable. To be evaluated based on trends both inter-well and intra well comparisons.
3 Note: A VOC parameter was chosen as a detection surrogate analyte for pesticides and herbicides as the VOC is more mobile for initial detection.

Many WMII facilities have developed extensive historical groundwater data through implementation of various groundwater monitoring programs. From this historical data, WMII has observed naturally occurring changes in groundwater chemistry over extended periods of time. The changes are probably due to climatic conditions (e.g. droughts, floods, etc.) which change the position of groundwater in the geologic formation causing more or less of the naturally occurring constituents to be present in groundwater. Though these changes are subtle, they can be sufficient to cause statistical false positives when comparing Point of Compliance values to an inflexible upgradient background value which was based on a limited period of time.

Considering the potential for naturally occurring changes in groundwater chemistry to affect Laraway RDF upgradient groundwater data, WMII may periodically adjust Laraway RDF background values by incorporating appropriate additional upgradient data.

WMII will notify IEPA that background has been adjusted by a Class 1 Permit Modification submission.

Similarly, for some naturally occurring constituents substantial fluctuations have been observed at individual monitoring wells over time. There may be a correlation between long well screens and wide fluctuations. In these situations, background for the naturally occurring parameter(s) is more appropriately established for individual monitoring wells.

For parameters which have not been quantified or are quantified in less than 10% of the upgradient samples, background will be established at the two times the PQL.

5.4.3.5 Sampling and Analytical Procedures

Sampling and analyses for the Corrective Action Monitoring Program will conform to the Permit conditions for Detection Monitoring and Compliance Monitoring as modified herein.

5.4.3.6 Groundwater Elevation

Groundwater elevations will be obtained from each Corrective Action Monitoring Program monitoring well on the following schedule:

1. After the initial start-up of the Groundwater Containment, Extraction, and Treatment System, elevations will be obtained from each monitoring well once each week for a total of two weeks. Groundwater contour maps will be generated for each event (2 events total).

2. Commencing after the second week after start-up, elevations will be obtained from each monitoring well once each month for a total of three months. Groundwater contour maps will be generated for each event (3 events total).

3. Commencing after 3 1/2-months after start-up, elevations will be obtained from each monitoring well once each quarter for the duration of the Corrective Action Program. Groundwater contour maps will be generated for each quarterly event.

5.4.3.7 Statistical Procedures

The dynamics inherently associated with a groundwater extraction system make statistical evaluation during Corrective Action impractical. Groundwater data (raw and/or trends) will be utilized for making adjustments, modifications, and/or improvements to the Groundwater Containment, Extraction, and Treatment System. Since three of the constituent Corrective Action Groundwater Monitoring Programs (Observation Monitoring Program, Indicator Monitoring Program, and Static Condition Monitoring Program) occur exclusively during Corrective Action, statistical evaluation is not proposed for these Programs. Other evaluation (e.g. trend analysis, comparison to established limits) are more appropriate. The evaluations are discussed in sub-section 5.4.3.8.

WMII requests that IEPA approve a Class 2 Permit Modification to authorize the use of trend analysis and comparison to established limits methods as the alternative procedure (statistical) to evaluate analytical data obtained through implementation of the Observation Monitoring Program, Indicator Monitoring Program of the Corrective Action Monitoring Program

Statistical evaluation of groundwater is appropriate, however, when it appears that Corrective Action is complete and the Groundwater Containment, Extraction, and Treatment System is shut off. The proposed statistical evaluation include the following:

For those parameters which have background values established, WMII will evaluate data using the Prediction Limit Test as described in the current Permit. Re-sampling may be conducted as described in the Permit and the statistical evaluation may be performed on the re-sample result.

For those parameters which have established the PQL as background, the measured concentration of each of the constituents present in a sample (or re-sample) collected from each monitoring well will be compared to the Action Limit. The Action Limit is defined as one of the following:

1. A value greater than two times the PQL when a single parameter is detected in a monitoring well; or

2. Values greater than one time the PQL when multiple parameters are detected in a monitoring well; or

3. An alternate concentration limit as approved by IEPA.

WMII requests that IEPA approve a Class 2 Permit Modification to authorize the method for statistical evaluation of data obtained through implementation of the Monitoring Program as proposed in this sub-section.

Field and trip blanks will be prepared, analyzed and evaluated in accordance with Section I.F.4 of Detection Monitoring , of the current Permit.

WMII requests that IEPA establish sampling requirements for management of field and trip blanks for the Corrective Action Program to be equal to requirements described in Section I.F.4 of the current Permit

5.4.3.8 Monitoring Program and Data Evaluation

5.4.3.8.1 Observation Monitoring Program

The Observation Monitoring Program will be conducted as described in 5.4.3.6 above (i.e. after start-up, weekly for 2 weeks, monthly for three months, quarterly thereafter). Data will be plotted on groundwater contour maps. The goal is to observe containment through the establishment of inward groundwater gradients.

If groundwater flow information indicates that containment is not being achieved, adjustments may be made to the Groundwater Containment, Extraction, and Treatment System to more aggressively extract groundwater.

5.4.3.8.2 Indicator Monitoring Program

A. Extraction System Monitoring

The Extraction Indicator Monitoring Program will be conducted weekly for the first month of operation of the Groundwater Containment, Extraction, and Treatment System. Monthly sampling and analyses will be conducted during the second, third and fourth months of operation. Commencing the fifth month of operation, sampling and analysis will be performed quarterly. Indicator parameter concentrations will be compared to the high and low range as proposed in Table 5-10. The goal is to operate the extraction/treatment process such that concentrations of the indicator parameters are consistently at the low limit of the proposed range. Operation within this concentration range and achievement of consistently observed inward groundwater gradients will indicate that the Corrective Action Program is achieving the desired objective, and that the program may be nearing completion.

If indicator parameters are present at concentrations above the high end of the proposed range, individual extraction wells may be sampled in the next quarter event in order to identify the location(s) where constituent levels are highest. Additional investigations around applicable extraction wells will include sampling adjacent groundwater monitoring wells for the Observation Monitoring Program

parameters. Based on the results, adjustments will be made to the Groundwater Containment, Extraction, and Treatment System in order to more aggressively contain groundwater. This event may also require that additional improvements be made to the gas and/or leachate management systems as discussed in Section 6 of this Permit Modification Application.

B. Non-GMZ Monitoring Wells

All wells located outside of the groundwater management zone (GMZ) will be monitored on an alternating quarterly schedule:

1st/3rd Quarters	2nd/4th Quarters
R114	R113
R122	G52D
G525	G535
G53D	

Each year the quarterly schedule will be reversed.

C. GMZ Monitoring Wells

All wells located within the GMZ will be monitored on an alternating quarterly schedule:

1st/3rd Quarters	2nd/4th Quarters
G123	G124
G125	G126
G127	G128
R290	G130
G131	R295
G133	G132
G135	R134
G137	G136
R405	R139
G141	R4DZ
G143	G142
G160	R144
G162	G161
G162	G163
G164	G165
G166	

TABLE 5-10: EXTRACTION SYSTEM INDICATOR MONITORING PROGRAM P-DIOXANE RANGES

Parameter	PQL (ug/l)	Range (ug/l)	
		Low[1]	*High*[2]
p-Dioxane	10	<20	770

1 Low range goal for p-dioxane established at two time the PQL because there is no 35 IAC 620 standard established for p-dioxane.

2 High range limits will be established at the highest concentration measured to date at Laraway RDF.

If a parameter is present at a concentration above statistically significant levels in the sample or re-sample, and if the new parameter is treatable by the Groundwater Containment, Extraction, and Treatment System (e.g. a new volatile organic), no additional activities are expected. If the new parameter is not treatable by the System (e.g. a metal), WMII will modify the system to add applicable treatment modules.

WMII will submit a Class 1(*) Permit Modification Application to IEPA to authorize modification to the Treatment System as appropriate to properly provide treatment for the new parameter requiring treatment

5.4.3.9 Reporting and Recordkeeping

All data collected during the Correction Action Program will be incorporated into the Laraway RDF operating record.

If new or revised background values are established during the Program, the values will be submitted to IEPA within thirty days of establishing the new or revised values.

Monitoring results from all Procedures will be reported to IEPA on a semi-annual basis. Table 5-11 summarizes the schedule of activities and reports.

WMII will notify IEPA whenever modifications to the proposed Groundwater Containment, Extraction, and Treatment System are made. Modification to the Permit are not expected for

reasonable modifications to the System. Reasonable modifications would include but are not limited to additional extraction wells, additional treatment module, pumps, less than 90-day storage tanks, extension of the forcemain, etc.

'ONITORING PROGRAM

Procedure	Stop Procedure	Period Sampling Event will be Conducted	Results to be Submitted to IEPA By
'System	At end of 2nd week	First week after System start-up	April 15
	At end of 3rd month	Third week after start-up	
nth	Indefinite	Fourth month after start-up	
stem	At end of 4th week	First 4 weeks after System start-up	First semi-annual report (April 15 or October 15, whichever follows first)
	At end of 4th month	Months 2, 3, and 4 after System start-up	First semi-annual report (April 15 or October 15, whichever follows first)
h	At start of Confirmation Monitoring Procedure	January - March	April 15
		April - June	October 15
		July - September	October 15
		October - December	April 15

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5.4.5 Termination of Corrective Action Program

Corrective Action will be considered complete when, for six consecutive monitoring events, there have been no statistically significant exceedences at any Program monitoring well as determined by implementation of the Monitoring Program. When this test has been met, Laraway will return to the Detection Monitoring Program as defined in the Permit including the changes requested in this Modification.

5.4.6 Request for Permit Modification

If WMII determines that the proposed Groundwater Containment, Extraction, and Treatment System together with reasonable modifications to the System are not adequate to correct the groundwater conditions, WMII will notify IEPA and will prepare a Class 2 Permit Modification to modify the Corrective Action Program. A Permit Modification will only be necessary when the additional corrective action deviates significantly from the Groundwater Containment, Extraction, and Treatment System (e.g. addition of a slurry wall, exhumation/removal of refuse, etc.).

B-141-M-7

Waste Management of Illinois - Crestwood
4655 W. 137th Street
Crestwood, Illinois 60445
708/489-9690 FAX 708/489-2196

File B.1.8.7

A Waste Management Company

July 28, 1994

Fed Express# 4520107896

Mr. Mark Crites
Illinois Environmental Protection Agency
1240 North Ninth Street
Springfield, Illinois 62794-9276

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RE: Coordinated Proposed Permit Version
Additional Information to Class 3 Permit Application
RCRA Part B Permit Log No. B-141-M-7
Laraway RDE, ID No. 1970450002
ILD074411745

Dear Mr. Crites:

We have submitted as additional information to the previous Class 3 Modification Permit Application for the RCRA unit the attached documents. Attached are two copies of the latest approved permit, issue date - October, 1992. One copy (Version 1) shows the proposed permit as revised in conjunction with the proposed permit modifications submitted in the Class 3 Modification Application for the RCRA Unit. The permit application was dated June 30, 1994. Version 1 includes all deleted narrative sections as well proposed narrative sections. The other copy (Version 2) includes the same proposed permit narrative sections as noted in the June 30th submittal to the IEPA. Also included for your review is a computer disk (Word Perfect 6.0A program) of each version.

We prepared the updated/revised permit version to provide to you a coordinated permit assuming that the proposed modifications (proposed in the June 30, 1994 permit application) were approved. We trust that this coordinated permit version will be helpful in your review of the proposed Class 3 Permit Modification.

Please contact me at (708) 489-9690 if you have any questions regarding this additional information and proposed permit version.

Very truly yours,

WASTE MANAGEMENT OF ILLINOIS, INC.

Francis R. Lewis

Francis R. Lewis
Staff Engineer

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IEPA-DLPC

cc: Bert Maline, w/att.
Mark Henke, w/att.
Jim Barry, w/att.
Bill Schubert, w/att.

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Waste Management, Inc. - Midwest
4655 W. 137th Street
Crestwood, Illinois 60445
708/489-9690

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June 28, 1994

Mr. Douglas W. Clay, P.E.
Hazardous Waste Branch Manager
Permit Section, Bureau of Land
Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, Illinois, 62794-9276

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Dear Mr. Clay,

Re: 1970450002--Will County
Waste Management of Illinois, Inc.
Laraway Recycling and Disposal Facility - EPA ID Number ILD074411745

The Illinois Environmental Protection Agency, May 27, 1993 Temporary Authorization issued to Waste Management of Illinois (WMII) for Laraway Recycling and Disposal Facility (Laraway RDF), WMII

The Illinois Environmental Protection Agency December 27, 1993 Temporary Authorization Extension Letter

WMII is submitting this document as Addendum No. 3, to the Class 2 and Class 3 Permit Modification Application which was originally submitted on August 14, 1992. Addendum No. 1 and Addendum No. 2 were submitted on November 6, 1992 and January 31, 1993 respectively.

This submission consists of four copies of the Modification Application titled:

RCRA PART B POST CLOSURE PERMIT
CORRECTIVE ACTION PROGRAM
CLASS 3 PERMIT MODIFICATION APPLICATION
AND
GENERAL CLASS 1, CLASS (*) AND CLASS 2
PERMIT MODIFICATION APPLICATION
JUNE 30, 1994

Each copy consists of a two volume set (Volume I and Volume II - Drawings). One separate set of application drawings is attached to facilitate IEPA review. Additionally, attached is a listing of requested Permit Modifications arranged by Class. Please refer to the Class Modification Determination section of this letter for further detail regarding this subject.

In accordance with comment 4 of the Illinois Environmental Protection Agency (IEPA) May 27, 1993 Temporary Authorization, WMII has developed and is submitting for IEPA approval, the attached Corrective Action Program for Laraway RDF. The submittal is in the format of Class 3 Permit Modification Application, requesting modification of the Laraway, RCRA Post-Closure Permit. The Corrective Action Program when approved by IEPA will become new Section I.B of the facility RCRA Post-Closure Permit. New Permit Section I.B will allow WMII to facilitate a timely implementation of corrective action measures at Laraway RDF in accordance with 35 IAC 703.280(e)(3), as specified in the Temporary Authorization.

The Proposed Corrective Action Program, when approved by IEPA, will also meet the requirements of 35 IAC 703.185-Groundwater Protection Information; 35 IAC 724.191-Required Programs; and, 35 IAC 724.200-Corrective Action Program.

Compliance with Notification Requirements

WMII is submitting this Permit Modification Application as Addendum No.3 to the original August 14, 1992 Permit Modification Application to incorporate a Corrective Action Program into the Laraway RDF RCRA Post Closure Permit. At the time of the original Permit Modification Application submittal, and in accordance with 35 IAC 703.282 and 35 IAC 703.283, as applicable, WMII provided required notifications and 60 day comment period to all persons on the facility mailing list maintained by the IEPA; to appropriate units of State and local government; and, to the general public via notification in a newspaper of general circulation in Will County, Illinois. WMII also held a public meeting on September 3, 1992 to discuss proposed modifications to Laraway RDF, RCRA Post-Closure Permit for the purpose of incorporating the proposed Corrective Action Program.

Addendum No. 3 continues the Corrective Action Program which was originally described in the August 14, 1992 submission. The current Corrective Action Program presented in this submission proposes a remediation design which has been refined to properly address and utilize current information which WMII has obtained through implementation of various investigations and studies at Laraway RDF. Many of the investigation and studies have been submitted to IEPA at the time of the work and are public record. WMII has properly identified referenced documents within the current Permit Modification Application. Additionally, this current Corrective Action Program, Permit Modification Application includes various related Permit Modification requests which are in general, supporting and/or associated with the proposed Corrective Action Program.

At this time WMII believes that the applicable notification; comment; and, public meeting requirements of 35 IAC 703.282 and 35 IAC 703.283 have been properly complied with. Therefore, for the reasons cited above, WMII requests that IEPA concur with WMII regarding this matter and proceed to complete modification of the Laraway RDF RCRA Post-Closure Permit without further or additional notification, comment period, or meeting. Please advise WMII should IEPA not concur with this request.

WMII will maintain a complete copy of this Permit Modification Application at Laraway RDF for use by the general public or any other interested person.

Corrective Action Program

Establishment of a Corrective Action Program at Laraway RDF to remediate groundwater is a major undertaking by WMII. Implementation of corrective action will impact all existing operations and procedures at the facility. The Corrective Action Program includes groundwater containment, extraction and treatment. Implementation of this groundwater Corrective Action Program is intended to prevent low level organic contaminants (as identified by 35 IAC 724.193) from exceeding the groundwater protection standard at the compliance point established by the Laraway RDF, RCRA Post-Closure Permit.

Class Modification Determination

WMII is requesting a Class 3 Permit Modification for incorporation of the Corrective Action Program into the Laraway RDF, RCRA Post-Closure Permit. As described in this letter and in the actual Permit Modification Application, a number of supporting Permit Modifications are also being requested in this submission. The supporting Modifications have been identified as Class 1; Class 1 with prior IEPA Approval; or, Class 2 within the application and on the attached summary sheet. WMII has provided these references to Class to assist IEPA with review of this submission. Since many of the supporting Permit Modification requests are applicable to existing programs, WMII requests that IEPA consider separation of supporting Permit Modification requests from the Primary Corrective Action Program Class 3 request as an optional approach to expedite issuances of the final Permit Modification(s). However, should IEPA determine that processing of requested Permit Modifications as an all inclusive Class 3 Modification would be most efficient, WMII requests that IEPA select this option.

With either option, WMII considers this submission as proper notification to IEPA of requested Class 1 Permit Modification requests as required by 35 IAC 703.281.

Groundwater Monitoring

Implementation of the Corrective Action Program will have notable impact to the facility Groundwater Monitoring Program. To properly accommodate and coordinate regulatory requirements for this program, WMII is proposing substantial revision via the Section 5 - Groundwater Monitoring submissions in the attached Permit Modification Application. Requested modifications to the Groundwater Monitoring Program begin with submission of a proposed Corrective Action Monitoring Program. To support this monitoring program, revisions are proposed for the Detection Monitoring Program and the Compliance Monitoring Program of the current Permit.

Other Modifications

Modification requests have been made to the Permit including the Post-Closure Program. Various other modifications have been requested within the text of each Application Section, and justification has been provided to support each modification request. WMII has requested general modifications of other Permit requirements within this submission for purposes of improved coordination of general operational requirements with the proposed Corrective Action Program. In the same manner as described above, the requested modification is provided within the text of Application Sections, and justification has been provided to support each modification request.

Groundwater Management Zone

As discussed within Section 11 - Corrective Action Program, of this submission, WMII is requesting that a Groundwater Management Zone be established for impaired groundwater below Laraway RDF and off-site groundwater. The term of the Groundwater Management Zone would be during the implementation of the Corrective Action Program, and until applicable groundwater standards are achieved as specified in the application.

WMII believes that when approved by the Illinois Environmental Protection Agency, the proposed permit modifications will result in a facility Permit which will insure that regulatory intent is implemented and compliant operation is achieved for the post-closure care of the Closed RCRA Unit at Laraway RDF.

Please consider this letter as formal request by WMII for IEPA modify the Laraway RDF Post Closure Permit as described in the attached Permit Modification Application.

A Waste Management Company

We trust that the information provided in this submission is sufficient for IEPA to approve the requested Permit Modifications. However, if further information is needed or if a meeting is necessary, please contact me at (708) 489-9690.

Sincerely,
Waste Management of Illinois

Francis R. Lewis

Francis R. Lewis
Environmental Engineer

Attachment

cc: Bert Maline
Ann Straw
William Schubert
Jim Berry

B-141-M-7

IISEPA

ATEC Associates, Inc.
2055 Army Trail Road, Suite 114
Addison, Illinois 60101-1478
[708] 916-7272, FAX # [708] 916-7013

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January 31, 1993

Mr. Lawrence W. Eastep, P.E.
Manager, Permit Section
Illinois Environmental Protection Agency
Division of Land Pollution Control
2200 Churchill Road
Springfield, Illinois 62794

RE: 1970450002 - Will County
Joliet/Laraway Recycling and Disposal Facility
ILD074411745
RCRA Part B Permit Class 2 & Class 3 Modification
Addendum No. 2

Dear Mr. Eastep:

On behalf of Waste Management of Illinois, Inc. (WMII), ATEC Associates, Inc. has enclosed an addendum to the referenced Permit modification application which was first submitted August 14, 1992, with Addendum No. 1 submitted November 6, 1992. This addendum was prepared in response to the IEPA's revised Part B Post-Closure Permit dated October 30, 1992 (effective December 4, 1992) regarding leachate sampling and analysis.

Today's changes to the modification application have been noted with double vertical lines drawn in the right margin indicating where changes have occurred in the text. (Single vertical lines note the changes in the November 6, 1992 addendum). For ease of revision, we are providing complete sets of sections 1 and 6. Please remove the existing sections 1 and 6 and replace with the revised sections. These changes have resulted in changes to the Table of Contents. Please remove the existing Table of Contents (pp i - iv) and replace with the revised Table of Contents.

A new Certification Statement applicable to today's revisions is provided.

If there are any questions, please call WMII's Ms. Laura Pechous (815/727-6148).

Sincerely,

Patrick Ries, P.E., CHMM
Environmental Division Manager

Rebecca Ries, CHMM
Senior Project Manager

CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations.

Vice President

LAURA A. PECHOUS
062-047309
LICENSED PROFESSIONAL ENGINEER OF ILLINOIS

Registered Professional Engineer

WASTE MANAGEMENT OF ILLINOIS, INC.
LARAWAY RECYCLING AND DISPOSAL FACILITY
(ILD074411745)
ELWOOD, ILLINOIS

RCRA PART B POST-CLOSURE PERMIT
CLASS 2 & CLASS 3 MODIFICATION APPLICATION

August 1992
Revised November 1992
Revised January 1993

LARAWAY RECYCLING AND DISPOSAL
RCRA PART B POST-CLOSURE PERMIT MODIFICATION

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rev. 1/31/93

LARAWAY
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rev. 1/31/93

SECTION 1 - INTRODUCTION

This document represents Waste Management of Illinois, Inc. (WMII) formal request for a Permit Modification (Modification) of the RCRA Part B Post-Closure Permit for the Laraway Recycling and Disposal facility in Elwood, Illinois.

The approved RCRA Part B Post-Closure Permit for Laraway contains provisions for the post-closure care and maintenance of two former RCRA units. These units, commonly known as Area 1 and Area 2, are closed land disposal units (D80). The units were closed in accordance with an IEPA approved closure plan and RCRA hazardous wastes were left in-place.

Groundwater has been monitored for both Area 1 (co-disposal hill) and Area 2 (drum trenches) during interim status and since the RCRA Part B Post-Closure Permit has been issued. The groundwater monitoring program contained in the RCRA Part B Post-Closure Permit includes provisions for a detection monitoring program and a compliance monitoring program.

When the Part B Post-Closure Permit was issued, two monitoring well locations were identified as requiring special monitoring prior to the final determination of whether or not these wells should be in detection monitoring. The two monitoring well locations include, R4D2 on the south side of the co-disposal hill and R29D on the north side of the co-disposal hill. In both cases, special monitoring was permitted because the contamination was believed to be the result of a spill or one time incident as opposed to a breach in the clay containment of the landfill.

The special monitoring of R4D2 is completed. Results indicate this special monitoring can be terminated because there have been two consecutive monitoring events with sampling results less than 10 ug/l (i.e. 2 times the PQL). As allowed in the Permit, R4D2 has been returned to detection monitoring. Therefore, R4D2 is not included in this permit modification.

The time frame for special monitoring of the R29D location has expired and R29D was returned to detection monitoring. Subsequent to returning R29D to detection monitoring, vinyl chloride, dichlorodifluoromethane, and trichlorofluoromethane were detected in R29D at levels which are significant when evaluating results in accordance with the Permit conditions.

Although this occurrence should cause the facility to submit a permit modification to establish a compliance monitoring program (see Section 724.198(g)(4) and Permit), WMII was instructed by IEPA to move straight to corrective action pursuant to 724.198(h). The reasoning behind moving in this direction was that, like R4D2, the organics detected in R29D may have been the result of a spill or one time incident that could be controlled and cleaned up quickly by pumping the groundwater near R29D and removing the contamination present. Also, we understand that IEPA believes that compliance monitoring may not be required at Laraway since Illinois has established groundwater standards. We also understand that we have the right to appeal to the Illinois Pollution Control Board to obtain adjusted standards.

Corrective action is, in fact, already occurring under Agency approval of a temporary authorization issued by IEPA on May 29, 1992. The temporary authorization allows groundwater pumping from well G129 while measuring and recording various parameters (i.e. levels, rates, volumes, etc.).

The approach for pumping groundwater at R29D location, monitoring the performance of the pumping, and determining when pumping should be terminated based on analytical results from well R29D is described in this Permit application. The procedure is similar to that previously approved by IEPA for well R4D2.

As specified in the Permit, upon determining that a statistically significant change had occurred in R29D, WMII conducted Appendix I analyses at all RCRA wells. A limited number of Appendix I parameters were detected at low levels in several wells. As allowed in the Permit, the affected wells were re-sampled and groundwater analyzed for the detected parameters. Based on the re-sampling results, para-dioxane has been detected in four wells (G130, R134, R29D, and R29S) at levels which WMII has determined will require corrective action. The proposed corrective action procedure for the wells affected by para-dioxane and for which a Class III Modification is requested is described in this Permit application.

Third quarter sampling detected vinyl chloride in R144 and 1,1-dichloroethane in R40S. This occurred after the original application for a permit modification was submitted. As discussed with the Agency, to expedited the permitting process and to allow for prompt corrective action, WMII has provided an addendum to the permit modification to address these recent occurrences. WMII will continue to investigate the causes for these occurrences and will evaluate alternative remedial technologies if appropriate.

The proposed corrective action for which a Class 3 Permit Modification is requested for the additional parameter in R144 and the additional well R40S is described herein.

The Permit specifies that during detection monitoring, if a contaminant is detected and confirmed by re-sampling at statistically significant levels, wells should be sampled and analyzed for Appendix I constituents. The purpose for the Appendix I sampling is to provide information for the development of a compliance monitoring program. At the Agency's direction, WMII has gone straight to corrective action rather than developing a compliance monitoring program. Because these wells are currently in corrective action and/or a request to allow corrective action has been submitted, the Appendix I sampling and analysis is not applicable and will not be conducted at this time. As described in Section 5, annual Appendix I sampling and analysis will be conducted at and around wells undergoing corrective action. WMII assumes that the annual Appendix I sampling and analysis at the well locations undergoing corrective action fulfills the requirement to perform Appendix I for R40S pursuant to the Permit.

Two administrative clarifications are being presented in this Permit Modification. The first clarification involves the use of Illinois' recently adopted groundwater quality standards with respect to a RCRA monitoring program. When the RCRA Part B Post-Closure Permit application was prepared, there were no established groundwater standards for any parameter. Table 1-1 summarizes the required parameters, the practical quantitation limit (PQL) and the permitted acceptable levels for each parameter.

TABLE 1-1
SUMMARY OF GROUNDWATER PARAMETERS

PARAMETER	PQL (ug/l)	2X PQL (ug/l)	620 GROUNDWATER STANDARDS (ug/l)
1,2-Dichloropropane	5	10	5
Toluene	5	10	1000
Benzene	5	10	5
Chlorobenzene	5	10	N/A
Chloroethane	10	20	N/A
Chloromethane	10	20	N/A
Methylene Chloride	5	10	N/A
Methyl Ethyl Ketone	10	20	N/A
Tetrachloroethylene	5	10	5
Trichlorofluoromethane	5	10	N/A
1,1-Dichloroethane	5	10	N/A
1,1,1-Trichloroethane	5	10	200
1,1,2-Trichloroethane	5	10	N/A
1,2-Dichloroethane	5	10	5
Vinyl Chloride	10	20	2
Trichloroethylene	5	10	5
Ethylbenzene	5	10	700
1,2-trans-Dichloroethylene	5	10	100
Xylene	5	10	10000
Acetone	100	200	N/A
Isobutanol	50	100	N/A
ortho-Dichlorobenzene	5	10	600
Carbon Disulfide	5	10	N/A
Dichlorodifluoromethane	5	10	N/A
Cadmium, dissolved (1)	10	20	10
Chromium, dissolved (1)	50	100	50
Lead, dissolved (1)	40	80	50
Arsenic, dissolved (1)	50	100	50
Barium, dissolved (1)	20	40	1000
Mercury, dissolved (1)	2	4	2
Iron, dissolved	1000	2000	5000
Para-dioxane	150	300	N/A

(1) Indicates a 724 Table 1 parameter. The value shown under the Groundwater Standard column represents the Table 1 maximum concentration, not the 620 standard.

Subsequent to issuance of the Permit, Illinois has adopted 35 IAC 620 which has established acceptable levels for certain parameters. The established 620 levels for Class I aquifers are also shown on Table 1-1. The Class I levels are the most conservative as they represent the standards for potable water. The groundwater below the Laraway facility is defined as Class IV groundwater. WMII will preserve the existing, permitted statistical procedure for evaluating groundwater. As a second step, however, WMII may compare groundwater results to the 620 standards in lieu of the statistical analysis.

As shown on Table 1-1, 620 standards have not been established for all parameters in the Laraway detection monitoring program. If/when standards are established, WMII requests that the standards can be utilized and that a Permit modification will not be necessary.

The second administrative clarification involves the mechanism for Laraway to return to detection monitoring following the successful completion of corrective action. The regulatory sequence assumes that if statistically significant analytical results occur during detection monitoring, the next step is to propose a compliance monitoring program by submitting a Permit Modification application and implement the approved compliance monitoring program. If statistically significant analytical results occur during compliance monitoring, the next step is to propose a corrective action program by submitting a Permit Modification application and implementing the approved program.

This regulatory sequence described above does not address the practical and appropriate scenario proposed herein, which includes immediate corrective action following a statistically significant event under detection monitoring. Compliance monitoring is neither appropriate nor practical at this time. WMII requests a Permit Modification allowing the detection monitoring to corrective action alternative. Concurrently, WMII requests that the requirement for compliance monitoring be eliminated under this scenario.

This application describes the proposed corrective actions and the mechanisms for evaluating the effectiveness of the actions. WMII requests that upon successful completion of corrective action, Laraway be allowed to return to detection monitoring.

During corrective action WMII proposes to modify the permitted detection monitoring program to add detected Appendix I parameters to the routine quarterly monitoring. In addition, a longer list of Appendix I parameters will be analyzed annually until corrective action is completed.

The following circumstances have prompted WMII to seek a RCRA Part B Post-Closure Permit Modification:

1. Low levels of organic constituents have been detected in R29D, a permitted groundwater monitoring well. As discussed previously, this occurrence should cause the facility to submit a permit modification to establish a compliance monitoring program. However, WMII was instructed by IEPA to move straight to corrective action pursuant to 724.198(h). Similarly, an Appendix I organic constituent has been detected in G130, R134, R144, R29D, and R29S. Routine detection parameters were detected in wells R144 and R40S. As specified in IAC Section 703 Appendix A (Part C.8.a), a Class 3 Modification is required if corrective action is indicated. Because WMII intends to remediate the groundwater condition, WMII formally requests IEPA to grant a Class 3 modification to the RCRA Part B Post-Closure Permit to allow for corrective action. Further, WMII requests that the wells can be returned to detection monitoring upon successful implementation of the Corrective Action. During the proposed corrective action, WMII proposes to expand the list of detection monitoring parameters to be analyzed. Also, as part of the corrective action, WMII proposes an annual Appendix I sampling and analysis program.

2. The second event involves the routine management of leachate from the facility. As described in the RCRA Part B Post-Closure Permit application, leachate removal was expected to change considerably due to the installation of new leachate collection systems. While leachate removal is considerably more effective with the new systems, WMII has found the character of the leachate, particularly from the drum trenches, to be of a nature that requires phase separation prior to off-site disposal. In accordance with IAC Section 703 Appendix A (Part E.5) a Class 2 Modification is required if changes in the post-closure plan are necessitated. Because WMII proposes to install a physical treatment process to pre-treat leachate prior to off-site disposal, WMII formally requests IEPA to grant a Class 2 Modification to the RCRA Part B Post-Closure Permit.

   WMII understands, based on a June 30, 1992 telephone conversation with Mr. Jim Moore, IEPA, that the unloading sumps, effluent accumulation tank, oil accumulation tanks, solids accumulation tanks, and oil/water separator will be permitted as 90-day accumulation tanks. Administratively, permitting the pre-treatment system as tanks is applicable in this RCRA Part B Post-Closure Permit Modification. However, as discussed with Mr. Moore, copies of the Land, Water, and Air permits applications for the tanks are provided in Appendix A.

3. Subsequent to issuance of the Permit, Illinois has adopted groundwater standards for certain parameters. WMII requests an administrative change to the Permit to allow the use of these established groundwater quality standards as an alternative to the currently permitted concentration evaluation procedure. In accordance with IAC Section 703 Appendix A (Part C.5(b)) a Class II Modification is required if changes in the concentration limits is proposed.

4. The most recent revised Permit (Effective Date 12/4/92) implies that there are thirteen (13) leachate withdrawal points from which leachate will be sampled and analyzed. The Permit also implies that all 35 IAC Part 724, Appendix I parameters must be analyzed annually. WMII requests a Class 2 Modification to; (1) clarify which withdrawal points will be sampled and analyzed; and (2) propose an Appendix I analytical program.

This Modification has been prepared as a stand-alone document in a format similar to the original RCRA Part B Post-Closure Permit application. For ease of review, each Section is contained in this Modification. In most cases, no changes are made. Some minor changes and/or clarification, which may constitute Class 1 Modifications to the Permit, are provided. In cases where WMII believes the minor change constitutes a Class 1 Modification, the change is so noted and a request for a modification is made.

SECTION 6 - POST-CLOSURE CARE, MAINTENANCE, & COST ESTIMATES

The Post-Closure Care section of the RCRA Part B Post-Closure Permit application and the Permit described the mechanisms for ensuring the integrity and/or operability of the various environmental systems at the site.

WMII does not propose any changes for the cover and gas systems. WMII does request a permit modification to allow on-site separation of leachate prior to off-site disposal. The following sections describe the proposed activity.

The addition of the leachate pre-treatment activity necessitates minor changes to the inspection, preparedness and prevention, and training programs. The revised programs are described below.

WMII is also clarifying the leachate sampling and analysis program with respect to the withdrawal points that are being sampled for chemical analyses. An analytical program is proposed which utilizes 35 IAC Part 724 Appendix I parameter list as its basis.

Finally, the Post-Closure costs have been revised to add the costs for groundwater remediation, leachate pre-treatment, and expanded leachate analysis. In accordance with IAC Section 703 Appendix A (Part E.5) WMII requests a Class 2 Modification to allow the proposed changes to the Post-Closure Plan.

6.1 Leachate Pre-Treatment

As a component of planned and approved corrective measures at the Laraway facility, WMII installed improved leachate collection systems in the two RCRA landfill units. These systems have greatly improved the ability to remove leachate. The quality of the leachate, especially from the drum trenches, periodically causes difficulty with off-site treatment. Concentrations of organics and, on occasion, PCBs are detected at levels that are not acceptable at the CID biological treatment plant. Benchscale testing has shown that the Laraway leachate can be separated into two, possibly three, phases which can be shipped off-site for final treatment and/or disposal. In general, leachate pre-treatment is expected for drum trench leachate and can also be used for Area 1 leachate.

The Laraway leachate process is a batch system utilized to separate insoluble organic and aqueous components of the leachate for off-site management. Figure 6-1 provides the flow sheet for the process. The process consists of tanker truck unloading, organic/aqueous separation, material accumulation, and container/truck loading operations. The process, with the exception of the unloading sump and the accumulation tanks will be housed in

TABLE 6-1
LEACHATE PARAMETERS
(Determination of Material Compatibility)

Waste Material	Recommended Analyses
Leachate (Whole)	pH Chlorides Priority Pollutants Percent Acidity or Alkalinity FOG Hydrocarbons
Light Fraction Organics	pH Chlorides Priority Pollutants Percent Acidity or Alkalinity FOG Hydrocarbons Water Content
Solids Fraction	pH Chlorides Priority Pollutants Percent Acidity or Alkalinity FOG Hydrocarbons Water Content
Solvent Fraction	pH Chlorides Priority Pollutants Percent Acidity or Alkalinity FOG Hydrocarbons Water Content

6.2 Procedures for Leachate Sampling and Analysis

The overall operation of the newly installed leachate collection and removal system at Laraway has been discussed at length for several years. IEPA's most recent revised RCRA Part B Post-Closure Permit (Modification Effective Date 12/4/92) includes the leachate removal procedures and the plan to determine leachate levels throughout the landfill as described by WMII in its July 31, 1992 Class 1 permit modification request. The procedures are specified in the Permit in Section II.C.10.b, paragraphs 1 and 2. There are no changes or modifications requested with respect to these activities.

WMII requests modifications to the leachate sampling and analysis procedure, as specified in Section II.C.10.b, paragraph 3 of the Permit. The purposes of these modifications are: (1) to clearly identify which leachate withdrawal locations will be sampled for chemical analyses; (2) to clearly identify the parameters which will be analyzed; and (3) to specify the schedule for sampling and analysis. In accordance with 35 IAC Section 703 Appendix A (Part E.5), WMII requests a Class 2 Modification to allow the proposed changes to the leachate sampling and analysis procedures.

6.2.1 Leachate Withdrawal and Monitoring System

There are sixteen (16) leachate withdrawal locations in the co-disposal hill. These include four (4) Interior Wells (W-1, W-2, W-3, W-4), eight (8) Leachate Extraction Risers (LER-1, LER-2, LER-3, LER-4, LER-5, LER-6, LER-7, LER-8) and four (4) Perimeter Leachate Extraction Risers (PLER-1, PLER-2, PLER-3, PLER-4). A representative sample of leachate will be collected from these leachate withdrawal locations on the schedule shown on Table 6-2. These samples will be analyzed for Appendix I parameters as discussed below.

In addition to the sixteen leachate withdrawal locations, there are thirteen (13) leachate level observation wells located in the co-disposal hill. As approved in the Permit, these devices will be used to measure leachate levels. These devices will not be sampled for chemical analyses nor will they be used as leachate withdrawal points.

TABLE 6–2
SCHEDULE
FOR LEACHATE SAMPLING AND ANALYSIS

	YEAR OF POST–CLOSURE CARE				
LEACHATE WITHDRAWAL POINT	1993 1998 2003 2008 2013 2018	1994 1999 2004 2009 2014 2019	1995 2000 2005 2010 2015 2020	1996 2001 2006 2011 2016 2021	1997 2002 2007 2012 2017 2022
AREA 1 – CO–DISPOSAL HILL					
PLER–1	X	X	X	X	X
PLER–2	X	X	X	X	X
PLER–3	X	X	X	X	X
PLER–4	X	X	X	X	X
W–1	X		X		X
W–2	X	X		X	
W–3	X		X		X
W–4	X	X		X	
LER–1	X				X
LER–2	X		X		
LER–3	X			X	
LER–4	X	X			
LER–5	X				X
LER–6	X		X		
LER–7	X			X	
LER–8	X	X			
AREA 2 – DRUM TRENCHES					
DTM–1	X	X	X	X	X
DTM–2	X	X	X	X	X
DTM–3	X	X	X	X	X
DTM–4	X	X	X	X	X
DTM–5	X	X	X	X	X
DTM–6	X	X	X	X	X
DTM–7	X	X	X	X	X
DTM–8	X	X	X	X	X
DTM–9	X	X	X	X	X
DTM–10	X	X	X	X	X

NOTE: Sampling to be performed in first quarter of the year.
Data, including chemical data, leachate level monitoring records, and leachate removal volumes, to be submitted to IEPA DLPC by June 1 of that year.

There is one (1) leachate withdrawal location in each of the ten drum trenches in Area 2. A representative sample of leachate will be collected from these leachate withdrawal locations on the schedule shown on Table 6-2. These samples will be analyzed for Appendix I parameters as discussed below.

Figure 6-3 shows the locations of the leachate withdrawal points and the leachate level observation wells.

6.2.2 Leachate Sampling Schedule

In order to develop information about spatial variation of leachate constituents within the landfill, WMII will obtain unique samples (i.e. no compositing) from the leachate withdrawal points. As shown on Figure 6-3, many of the withdrawal points are located in close proximity to one another. It is doubtful that the spatial variation for many of the withdrawal points will be significant during one sampling event because they are located close to one another. WMII has developed a schedule of sampling to ensure that spatial variations will be detected. As shown on Table 6-2, every leachate withdrawal point will be sampled and analyzed with some of the withdrawal points being sampled and analyzed on a rotating basis.

Samples will be obtained and analyzed during the first quarter of each year. Data will be reported to the Agency by June 1 each year.

6.2.3 Leachate Analysis

WMII has proposed a list of parameters to be analyzed in leachate based on the hazardous wastes accepted at Laraway. IEPA is concerned that the proposed list will not detect all 35 IAC Part 724, Appendix I constituents. In order to achieve the IEPA's goals, (i.e. to detect Appendix I constituents) WMII proposes to monitor for the Appendix I constituents listed on Table 5-2 as follows.

Initially, all leachate withdrawal points will be sampled and analyzed for the Appendix I constituents listed on Table 5-2. (NOTE: The initial sampling and analysis event will occur first quarter 1993). Data will be reviewed and, depending upon the results, a shorter list of parameters will be developed. The shorter list will include all Appendix I constituents detected during the initial analyses. During the next four years, subsequent samples will be analyzed for the shorter list of parameters.

FIGURE 6-3

LOCATIONS OF LEACHATE WITHDRAWAL POINTS AND LEACHATE LEVEL OBSERVATION WELLS

In year six, the full list of Appendix I constituents listed on Table 5-2 will again be analyzed. Data will be reviewed and, again, depending upon the results, a shorter list of parameters will be developed. The shorter list will include all Appendix I constituents detected during this second full Appendix I analyses. During the next four years, subsequent samples will be analyzed for the shorter list of parameters. Table 6-3 illustrates the proposed analytical program. This program will continue throughout Post-Closure care unless or until the list of parameters stabilizes. If this occurs, WMII will request a Modification to the Permit to propose a new list of leachate parameters.

TABLE 6–3
LEACHATE ANALYTICAL SEQUENCE

	YEAR OF POST–CLOSURE CARE				
LEACHATE WITHDRAWAL POINT	Base Year 1993	1994	1995	1996	1997
	Base Year 1998	1999	2000	2001	2002
	Base Year 2003	2004	2005	2006	2007
	Base Year 2008	2009	2010	2011	2012
	Base Year 2013	2014	2015	2016	2017
	Base Year 2018	2019	2020	2021	2022
AREA 1 – CO–DISPOSAL HILL					
PLER–1	O (1)	X (3)	X	X	X
PLER–2	O	X	X	X	X
PLER–3	O	X	X	X	X
PLER–4	O	X	X	X	X
W–1	O		X		X
W–2	O	X		X	
W–3	O		X		X
W–4	O	X		X	
LER–1	O				X
LER–2	O		X		
LER–3	O			X	
LER–4	O	X			
LER–5	O				X
LER–6	O		X		
LER–7	O			X	
LER–8	O	X			
AREA 2 – DRUM TRENCHES					
DTM–1	O	X	X	X	X
DTM–2	O	X	X	X	X
DTM–3	O	X	X	X	X
DTM–4	O	X	X	X	X
DTM–5	O	X	X	X	X
DTM–6	O	X	X	X	X
DTM–7	O	X	X	X	X
DTM–8	O	X	X	X	X
DTM–9	O	X	X	X	X
DTM–10	O	X	X	X	X

NOTES:
(1) "O" indicates the full list of the Appendix I parameters as presented in Table 5–2.
(2) "X" indicates the sample will be analyzed for the "short" list of Appendix I parameters in the preceding base year.

6.3 Post-Closure Cost Estimate

Table 6-4 presents the revised Post-Closure cost estimate for Laraway. The revised costs include the cost for the leachate pre-treatment operation, groundwater remediation at wells R29D, R29S, G130, R134, R144 and R40S off-site treatment of groundwater and the separated components of leachate. Additional costs for the expanded list of groundwater parameters and leachate parameters is also shown on the revised cost estimate.

6.4 Post-Closure Inspections

The following inspection activities will be added to the current permitted inspection program.

1. Visually inspect the groundwater remediation system each time water level measurements are obtained.

2. Inspect the components of the leachate pre-treatment process. Check for material and/or standing water and/or evidence of leakage in containment systems, around tanks, and below piping and valves. Note deterioration/corrosion/erosion to any tanks and/or piping and/or protective coatings on containment systems. This inspection will be conducted each time the process is used.

   Inspect the accumulation tanks and associated secondary containment. Check for any accumulation of standing water (from precipitation) and arrange for removal. Check for evidence of leakage. Investigate all breaches within 24-hours of occurrence and correct problem as soon as practicable. These inspections will occur daily whenever the accumulation tanks are being used.

   Check for blockage in the tank vents. This inspection will be conducted weekly.

TABLE 6–2
LARAWAY RECYCLING AND DISPOSAL FACILITY
RCRA POST–CLOSURE COST ESTIMATE

ITEM	DESCRIPTION	UNIT	RATE	NUMBER OF UNITS	NUMBER OF TIMES	TOTAL
1	Mow and Fertilize Annually	Per Acre	$90	55	30	$148,500
2	Dress and Re–seed of cover (1st & 2nd year after closure)	Per Acre	$875	2	2	$3,500
3	Dress & Re–seed 3% of cover (7th, 12th, 17th, 22nd, & 27th year after closure)	Per Acre	$875	1.65	5	$7,219
4	Inspect Cover					
	Quarterly 1st & 2nd year	Per Inspection	$250	1	8	$2,000
	Semi–annual 3rd – 30th years		$250	1	56	$14,000
5	Groundwater Monitoring (38 wells, quarterly, 28 years)					
	Analysis	Per Sample	$670	38	112	$2,851,520
	Sampling	Per Well	$120	38	112	$510,720
6	Leachate Monitoring					
	Base Year (26 Samples/Year)	Per Sample	$1,350	26	6	$210,600
	Non–Base Years (18 Samples/Year)	Per Sample	$575	18	24	$248,400
7	Maintenance – Fence & Gates	Yer Year	$1,000	1	30	$30,000
8	Leachate Management					
	Transporation – Vehicle (1)	Per Vehicle	$80,000	1	4	$320,000
	Transportation – Labor (1)	Annual Salary	$29,600	1	30	$888,000
	Disposal (2)	Per Gallon	$0.042	763000	30	$961,380
9	Inspect Gas & Leachate Systems – Annually	Per Inspection	$5,000	1	30	$150,000
10	Corrective Action					
	Pump Groundwater (3)	Per Well	$175	6	12	$12,600
	Appendix I Analysis	Per Sample	$1,165	14	1	$16,310
	Cover Inspection/Certification	Per Inspection	$250	10	1	$2,500
11	Leachate Pre–Treatment (4)	Per Year	$40,000	1	30	$1,200,000
	TOTAL POST–CLOSURE COSTS (5)					$7,577,249

(1) Based on Laraway's owning a tractor & trailer with a useful life of 7.5 years. Labor to be provided by a full–time Laraway employee.
(2) Disposal cost for leachate supported in original RCRA Part B Permit application and adjusted for inflation.
(3) Assumes corrective action will be complete after 12 months of groundwater pumping. Appendix I list to be analyzed one time on impacted wells and adjacent wells. Installation of enhanced gas and/or leachate system components considered routine operation/maintenance. Cost allowance is for cover repair inspection/certification.
(4) Cost for construction of pre–treatment system is considered routine capital investment cost. Post–closure cost includes annual cost for operation and maintenance of the system.
(5) Financial assurance documentation provided annually, most recently provided 3/28/92.

6.5 Preparedness and Prevention

The two activities discussed in this Permit Modification application require slight modifications to the preparedness and prevention plan. Portable telephones and/or two-way radios will be available during R29D groundwater remediation events.

A telephone will be installed in the leachate pre-treatment area. Sufficient aisle space will be maintained inside the pre-treatment area and between accumulation tanks to allow for easy inspections and rapid response to emergencies.

Letters describing the current activities at Laraway will be sent to the local authorities upon approval of this Permit Modification. The purpose of the letter is to familiarize emergency teams with the site layout and potential hazards.

6.6 Training

The inspection, maintenance, and monitoring activities conducted during the post-closure care period including the groundwater remediation and leachate pre-treatment described in this RCRA Part B Post-Closure Permit Modification application will be conducted by individuals trained in the review, evaluation, and performance of a particular task associated with each program element. The inspections, remediation, and pre-treatment activities will be conducted under the guidance of the General Manager.

Because the hazardous waste units are under post-closure, the potential for exposure to hazardous waste and hazardous waste constituents is minimal. Only the activities associated with the leachate and gas control systems and the R29D groundwater remediation program pose the potential for exposure. Therefore, the individuals involved in operating, inspecting and/or repairing the leachate and gas control systems, the leachate pre-treatment system, and the groundwater remediation program will be required to be trained in accordance with 29 CFR Part 1910.120. This applies to both Waste Management personnel and independent contractors.

At least three levels of basic training will be utilized in order to ensure compliance with the Post-Closure Part B Permit and to protect site workers. The first and most elementary training mechanism will be provided to all persons conducting post-closure work, inspections, and/or maintenance at the closed Laraway facility. This will be accomplished by issuing a handout to these

individuals which explains the history of the site, describes the kinds of wastes managed, explains the monitoring mechanisms, and alerts the reader of potential problems. Figure 6-4, found at the end of this section, is a sample of the type of handout which might be used.

The second level of training involves the utilization of a WMII trained employee during post-closure activities including groundwater remediation around R29D and leachate pre-treatment. This individual (Inspection/Operation Technician) will be physically present during all critical work, inspection, and/or maintenance activities at the site. He/she may conduct portions of the work, inspections, and/or maintenance or he/she will oversee others performing the work. Figure 6-5, found at the end of this section, presents the job description for the Inspector/Operator Technician.

The Inspection/Operation Technician will have completed a formal training program in accordance with the requirements of 29 CFR Part 1910 and will participate in annual training updates. In addition to formal classroom training, the Inspection/Operation Technician will have received relevant on-the-job training. He/she will be familiar with Laraway's Post-Closure Contingency Plan, its monitoring systems, the physical features of the site, and relevant conditions of the Post-Closure Part B Permit. He/she will have access to site communications and will make emergency contacts as necessary should an emergency occur during post-closure work, inspections, and/or maintenance at the site.

Figure 6-6, found at the end of this section, is an outline of the minimum training components for Laraway's Post-Closure Inspection/Operation Technician. No Inspection/Operation Technician will be assigned to Laraway until he/she has completed the formal 29 CFR Part 1910 training and the site specific training. The individual operating the leachate process will initially receive a minimum of 16 hours training/supervision on the procedures for operating the leachate process and a minimum of eight hours annual retraining thereafter. The Inspection/Operation Technician's training records will be maintained at Laraway.

The third level of training is through WMII Corporate support which oversees/directs the training of site workers, supervisors, and professionals. Instruction, guidance, and training is available from skilled individuals who are trained and educated in various aspects of hazardous waste management. Training support can be provided by industrial hygienists, chemists, engineers, and other

scientists. In addition to WMII staff, independent firms which specialize in hazardous waste training are frequently utilized for third level training. Benefits of this level of training support will be realized through the annual training provided to Laraway's Inspection/Operation Technician. Additional training support at this level will be utilized on an as-needed basis.

FIGURE 6-4

**INFORMATION ABOUT LARAWAY
FOR WORKERS INVOLVED IN POST-CLOSURE ACTIVITIES**

INFORMATION ABOUT LARAWAY
FOR WORKERS INVOLVED IN POST-CLOSURE ACTIVITIES

SITE BACKGROUND

Laraway (formerly ESL) operated a solid and hazardous waste landfill at Laraway and Patterson Roads, near Joliet, Illinois since 1972. In addition to landfilling, some treatment of hazardous waste occurred at the site. Areas used to store hazardous waste prior to treatment and disposal were also considered hazardous waste units. The Site Map attached to this handout identifies the locations of the hazardous waste activities. All hazardous waste operations at the site ceased in 1983.

From 1988 until the present, limited landfilling has occurred with municipal incinerator ash being the only material landfilled. This activity occurred in Trench 11 and is currently being filled in the Redesign Area. Metal salvaging from a portion of the ash is also occurring on-site. These areas are identified on the Site Map and are permitted by the Illinois Environmental Protection Agency (IEPA).

Although active hazardous waste management no longer occurs at the site, Laraway is strictly regulated by IEPA and operates under a hazardous waste permit called a RCRA Part B Post-Closure.

HAZARDOUS WASTE MANAGED

Laraway accepted hazardous wastes from a variety of industries including manufacturing, petrochemical, steel, and utilities. The hazardous characteristics of the wastes accepted included heavy metals, ignitability, and corrosivity. Some waste materials are automatically considered hazardous due to the process by which it is generated. Laraway accepted some of these "listed" wastes as well. Examples of listed wastes accepted include wastewater treatment sludges from electroplating operations; various solvents used in degreasing; and emission control dust from steel production.

Much of the material accepted at Laraway was from clean-up activities and generally consisted of soil contaminated with low concentrations of hazardous materials.

Areas 1 and 2 were co-disposal landfills. Co-disposal, a common practice prior to the 1980's, disposed of both hazardous waste and solid waste in the same landfill. Drummed wastes were disposed of in trenches 1 through 10.

MONITORING SYSTEMS

There are several monitoring and management systems in place at Laraway to ensure against adverse affects to human health and the environment. Circling the closed RCRA disposal areas is a system of thirty-eight groundwater monitoring wells. Samples of groundwater are obtained from each of these wells on a regular basis. The samples are analyzed for an extensive list of organic and inorganic parameters. The data is provided to the Illinois Environmental Protection Agency for review and approval. There have been two localized conditions which have resulted in low level organics being detected in two monitoring wells. To correct the localized conditions, WMII pumps groundwater near these two wells and treats the water off-site.

Methane gas, a by-product of solid waste decomposition, is commonly produced at a landfill for 7 to 15 years after the landfill cap is applied. A gas control system is operating at Laraway. Vertical wells and permeable trenches have been constructed within the landfill to promote gas migration to specified areas where it is flared and vented. The practice controls the mechanism for gas escape and minimizes pressure build-up. In addition to the active gas control system, periodic gas monitoring is conducted around the site and in the buildings.

Leachate is the liquid which forms in the bottom of a landfill as a result of waste decomposition and infiltration of precipitation. A leachate monitoring and removal system is in place at Laraway where leachate levels are monitored. Leachate is removed when unacceptable leachate levels are detected. This material is taken off-site for proper treatment and disposal. Prior to off-site management, leachate undergoes a simple pre-treatment process on-site, consisting of physical separation.

Mechanisms are in place to ensure security of the site, to respond to emergencies, and to perform regular inspections and maintenance.

PRECAUTIONS

Workers are reminded to conduct safe and sound work consistent with normal industrial practices for the specific type of work. Site specific precautions and observations are noted:

- In any emergency, notify Laraway's Inspection Technician (IT) immediately.
- Report unusual or abnormal smells to the IT. A faint methane aroma is normal.
- Report seeps or breeches in the landfill cover to the IT.
- Report breeches in the security system to the IT. Always report when entering or leaving the site.
- Report unusual observations (e.g., flares not burning, monitoring wells disturbed, abnormal wildlife activities).

FIGURE 6-5

POSITION DESCRIPTION
INSPECTION/OPERATION TECHNICIAN

POSITION DESCRIPTION
INSPECTION/OPERATION TECHNICIAN

POSITION TITLE: Inspection/Operations Technician

REPORTS TO: General Manager

BASIC FUNCTION:

- Proper operation of equipment involved in process operation.
- Inspection of leachate and gas control systems, leachate process systems, and/or groundwater remediation system
- Inventory control & sampling of leachate

SPECIFIC DUTIES AND RESPONSIBILITIES:

- Operate equipment involved in loading, unloading leachate materials and in pumping (remediation) groundwater
- Operate API Separator unit and/or groundwater pumping equipment and/or gas management system
- Perform routine system and equipment maintenance and inspections for leachate/gas control and leachate process equipment and/or groundwater remediation system
- Perform routine sampling and/or field analyses

SKILLS, EDUCATION AND QUALIFICATIONS:

- High school education
- Mechanical aptitude
- Good health

8/14/92

FIGURE 6-6

TRAINING OUTLINE FOR INSPECTION/OPERATION TECHNICIAN FOR LARAWAY POST-CLOSURE ACTIVITIES

TRAINING OUTLINE FOR INSPECTION/OPERATION TECHNICIAN FOR LARAWAY POST-CLOSURE ACTIVITIES

I. Introduction to RCRA Regulations and Responsibilities
   A. What is RCRA
   B. Overview of regulations and responsibilities
   C. Legal responsibilities of the individual and penalty provisions

II. Waste Inventory

III. Material Compatibility

IV. Management of Hazardous Waste
   A. Proper labeling, marking and packaging
   B. Inspections of the Hazardous Waste Accumulation Areas
   C. The Hazardous Waste Manifest

V. Responsibilities and Duties of the Emergency Coordinator
   A. Authority to commit resources
   B. Alert facility personnel
   C. Assess the emergency
   D. Notify authorities
   E. Provide for proper treatment, storage and disposal of residue
   F. Record incident in operating record
   G. Submit written report to regulatory agency

VI. General Emergency Action Guidelines
   A. Fires
   B. Explosions
   C. Discharge/Emissions

VII. Evacuation
   A. Alarm signal
   B. Evacuation route
   C. "Head Count"

TRAINING OUTLINE FOR INSPECTION/OPERATION TECHNICIAN FOR LARAWAY POST-CLOSURE ACTIVITIES (Cont'd)

VIII. Emergency
- A. Location
- B. How to use
- C. Limitations and capabilities
- D. Inspections, repair, and replacement

IX. Operation of Leachate Process
- A. Personal protective equipment requirements
- B. Inspection Schedule
- C. Spill control and reporting requirements
- D. Process operation and maintenance procedures
  1. Process description/function
  2. Operation of process equipment
  3. Sampling & analytical requirements
  4. Equipment safety
  5. Material handling
- E. Personnel/Equipment decontamination procedures

X. Operation of Groundwater Remediation Processes
- A. Personal protective equipment requirements
- B. Inspection Schedule
- C. Spill control and reporting requirements
- D. Process operation and maintenance procedures
  1. Process description/function
  2. Operation of pumping & collection equipment
  3. Sampling & analytical requirements
  4. Equipment safety
  5. Material handling
- E. Personnel/Equipment decontamination procedures

XI. Shutdown of Operations
- A. Notification
- B. Monitoring conditions

USEPA

Illinois Environmental Protection Agency · P. O. Box 19276, Springfield, IL 62794-9276

217/524-3300

December 7, 1992

Ms. Laura A. Pechous, P.E.
Waste Management of Illinois, Inc.
Laraway Recycling and Disposal Facility
21101 West Laraway Road
Elwood, Illinois 60421

Re: 1970450002 -- Will County
Laraway Recycling and Disposal Facility
ILD074411745
RCRA Part B Log 141-M-8
RCRA Permit File

Dear Ms. Pechous:

This letter is in response to the Class III RCRA Part B Modification Request dated August 14, 1992 submitted to and received by the Agency on August 18, 1992.

The Agency respectfully requests that Laraway Recycling and Disposal Facility (Laraway) withdraw that portion of the above referenced Class III Modification Request dealing with the design and operation of the proposed leachate pretreatment system and resubmit the proposed units as a modification request to the facility's original operating permit (1971-21 DE/OP). After extensive review by the Agency, it has been determined that the design, installation and operation of this system is not subject to the RCRA regulations (35 Illinois Administrative Code (35 IAC) 703.123(f)) but would be subject to a state developmental and operating permit (35 IAC 807.201, 35 IAC 807.202).

Attached please find Agency forms LPC-PA1, General Application for Permit; LPC-PA3, Application for a Solid Waste Management Permit to Develop Treatment and/or Storage Facilities and LPC-PA16, Notification of Permit Application for your use.

The Agency apologizes for the apparent misunderstanding regarding the August 18, 1992 submittal. Please be assured the Agency will work judiciously to expedite the review of any future submittal regarding this project. If you have any additional questions or require assistance in this matter, please contact Clarence L. Smith of my staff at 217/524-3300.

Very truly yours,

Lawrence W. Eastep, P.E., Manager
Permit Section
Division of Land Pollution Control
Bureau of Land

LWE:CLS/mls/656Z/67

cc: USEPA, George Hamper

228

B-141

cc: Maywood
USEPA

JHK
MC

Laraway Recycling and Disposal Facility
21101 West Laraway Road
Elwood, Illinois 60421
815/727-6148

A Waste Management Company

RECEIVED
AUG 4 1992
RCRA
Management Division
U.S. EPA, REGION V

July 16, 1992

Mr. Mark Crites
Division of Land Pollution Control
Bureau of Land
Illinois Environmental Protection Agency
1340 North 9th Street
Springfield, Illinois 62702

Re: **Laraway Recycling and Disposal Facility**
Schedule for Submittal of Class 3
Permit Modification

Dear Mr. Crites:

As discussed with you today and Mr. Geordie Smith yesterday, we understand the Agency has approved a revision to the scheduled submittal date for the subject modification. This revised schedule allows us time to gather field information at three additional well locations that require corrective action.

We understand the approved submittal date is August 14, 1992. Also, for your information, we are planning on having the public meeting associated with the modification on September 3, 1992.

Sincerely,

Waste Management of Illinois, Inc.

Laura A. Pechous

Laura A. Pechous, P.E.
Staff Engineer
Midwest Region

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/hsw

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EC Associates, Inc.
2055 Army Trail Road, Suite 114
Addison, Illinois 60101-1478
(708) 916-7272, FAX # (708) 916-7013

August 14, 1992

Mr. Lawrence W. Eastep
Manager, Permit Section
Illinois Environmental Protection Agency
Division of Land Pollution Control
2200 Churchill Road
Springfield, Illinois 62706

RE: 1970450002 - Will County
Joliet/Laraway Recycling and Disposal Facility
ILD074411745
RCRA Part B Permit Class 2 & Class 3 Modification

Dear Mr. Eastep:

On behalf of Waste Management of Illinois, Inc. (WMII), enclosed is one original and three copies of an application to modify the RCRA Part B Post-Closure Permit for the above referenced facility. WMII is requesting the following:

1) A Class 2 Modification to add a leachate pre-treatment procedure to the current post-closure program;

2) A Class 2 Modification to the groundwater monitoring program to allow, as a second step, data evaluation under the IAC 620 Groundwater Standards ;

3) A Class 3 Modification to allow for corrective action.

Two keys are provided in the pocket at the front of the Application which will assist the reviewer in locating requirements under the IAC 703. A copy of the newspaper public notice and a copy of the letter to the Joliet Public library are also provided in the pocket. Copies of the notifications to interested parties will be sent to you under separate cover.

If there are any questions about the application, please call WMII's Ms. Laura Pechous (815/727-6148).

Sincerely,

Patrick Ries

Patrick Ries, P.E., CHMM
Environmental Division Manager

Rebecca Ries, CHMM
Senior Project Manager

pc: L. Pechous

SECTION 6 - POST-CLOSURE CARE, MAINTENANCE, & COST ESTIMATES

The Post-Closure Care section of the RCRA Part B Post-Closure Permit application and the Permit described the mechanisms for ensuring the integrity and/or operability of the various environmental systems at the site.

WMII does not propose any changes for the cover and gas systems. WMII does request a permit modification to allow on-site separation of leachate prior to off-site disposal. The following sections describe the proposed activity.

The addition of the leachate pre-treatment activity necessitates minor changes to the inspection, preparedness and prevention, and training programs. The revised programs are described below.

Finally, the Post-Closure costs have been revised to add the costs for groundwater remediation and leachate pre-treatment. In accordance with IAC Section 703 Appendix A (Part E.5) WMII requests a Class 2 Modification to allow the proposed changes to the Post-Closure Plan.

6.1 Leachate Pre-Treatment

As a component of planned and approved corrective measures at the Laraway facility, WMII installed improved leachate collection systems in the two RCRA landfill units. These systems have greatly improved the ability to remove leachate. The quality of the leachate, especially from the drum trenches, periodically causes difficulty with off-site treatment. Concentrations of organics and, on occasion, PCBs are detected at levels that are not acceptable at the CID biological treatment plant. Benchscale testing has shown that the Laraway leachate can be separated into two, possibly three, phases which can be shipped off-site for final treatment and/or disposal. In general, leachate pre-treatment is expected for drum trench leachate and can also be used for Area 1 leachate.

The Laraway leachate process is a batch system utilized to separate insoluble organic and aqueous components of the leachate for off-site management. Figure 6-1 provides the flow sheet for the process. The process consists of tanker truck unloading, organic/aqueous separation, material accumulation, and container/truck loading operations. The process, with the exception of the unloading sump and the accumulation tanks will be housed in

the former decant/container processing building at the site. The unloading sump and accumulation tanks will be located in the concrete containment area adjacent to the former decant building. Each of these operations is discussed in more detail in the following sub-sections.

6.1.1 Unloading Operations

Vacuum tankers will remove leachate from the disposal trenches and bring the leachate to the process. The leachate will be pumped from the tanker into an insulated 8,000-gallon unloading tank. This tank will be constructed of vinyl ester coated steel to provide chemical attack protection. The unloading tank will feature a level indicator that will display the volume of material in the tank. The level indicator will trigger an alarm at high (95%) full level and automatically shut off the truck unloading pump. Additionally, a secondary float switch will be used as a redundant high level device.

6.1.2 Organic/Aqueous Separation

Leachate material from the unloading tank will be pumped to a 550-gallon API separator. An API separator functions by separating non-miscible waste components by their specific gravity differences. A chemical feed pump will inject emulsion breaking chemical (if necessary) into the leachate mixing via a static mixer up-stream of the API separator. The API separator is a 550-gallon process tank consisting of a coalescing packing element, light organic fraction collection and pumping mechanism, aqueous fraction collection and pumping mechanism, and a heavy organic/solid collection and pumping mechanism. The API separator will be constructed of vinyl ester coated steel for chemical protection, and will also be a double walled tank with a leak detection device. A high level float will prevent overfilling of the API separator by shutting down the process pump. The organic and aqueous pumping mechanisms will be float controlled units with high level interlocks to the corresponding processed material accumulation tanks. The material accumulation tanks level indicators will also, during high level conditions, shut down operation of the process pump.

6.1.3 Material Storage Operation

The separated leachate fractions will be pumped from the API unit into different less than 90-day accumulation tanks.

The aqueous leachate material will be pumped into an insulated 12,000-gallon accumulation tank. This tank will be made of vinyl ester coated steel for chemical protection. The tank will also have a level indication device that will display the tank volume. The level indicator will activate a high level alarm which will shut down the process and aqueous pumps. A float switch will be used as a redundant high level alarm.

The light organic (floating layer) will be pumped into two insulated 550-gallon accumulation tanks (only 1 tank would be normally receiving liquid at any given time). The tanks will be constructed of vinyl ester coated steel. These tanks will also have level indication devices that will display tank volumes. The devices will activate a high level alarm which will shut down the process pump and light organic pump when the pre-defined high liquid level is reached. Float switches will be used in each tank as a redundant high level alarm. The light organic tanks will have sequenced operation to allow for continued operation of the leachate process while one of the tanks is full and awaiting off-site management of its contents.

The solids/heavy organic fraction will be pumped into two insulated 550-gallon accumulation tanks. (Only 1 tank would normally be receiving liquid at any given time). The tanks will be constructed of vinyl ester coated steel. These tanks will have level indication devices that will display tank volumes and activate a high level alarm which will shut down the process pump and solids/heavy organic pump. Float switches will be used in each tank as a redundant high level alarm. These tanks will have sequenced operation to allow for continued operation of the leachate process while one of the tanks is full and awaiting off-site management of its contents.

6.1.4 Material Transfer Operation

In this manual operation, the contents of the accumulation tanks will be transferred into tankers or containers for off-site management.

The aqueous leachate fraction will be pumped from its accumulation tank into a tank or truck for processing at an appropriate off-site facility (e.g., the CID biological treatment plan or other Agency approved disposal facility).

The light organic fraction will be pumped either into a tank or truck or containers for off-site management at an appropriate TSD facility.

The contents of the solids (heavy organic fraction) tanks will be visually inspected and/or tested for the presence of insoluble organic material. If no insoluble organic material is present, the tank contents will be pumped manually, during manned operations only, into the aqueous fraction tank for off-site processing. If the contents of the tank have been determined to contain insoluble heavy organic material, it will be manually pumped into either a tank truck or containers for off-site management at an appropriate TSD facility.

6.1.5 General Facility Features

Tank dimensions are provided on Figure 6-1. A process equipment layout is provided in Figure 6-2. All pumps will have explosion proof motors and level indication units will be intrinsically safe. Piping and valving will be of chemically resistant stainless steel construction. All tanks and piping will be aboveground. All components can be easily inspected.

Containment structures will be coated with vinyl ester for chemical protection. All process materials will be constructed of materials resistent to chemical attack. It should be noted, however, that because this is a batch operation and is expected to operate once a month for about 8-hours, the likelihood of chemical attack is very minimal. Appendix E provides manufacturer and reference information regarding material compatibility. Table 6-1 contains parameters which will be analyzed in leachate to ensure compatibility. The accumulation tanks and unloading sump will be bonded and grounded. All outdoor process piping will be heat traced and insulated.

Appendix F contains calculations confirming the adequacy of containment capacity and structural foundation for placement of the tanks.

6.2 Post-Closure Cost Estimate

Table 6-2 presents the revised Post-Closure cost estimate for Laraway. The revised costs include the cost for the leachate pre-treatment operation, groundwater remediation at wells R29D, R29S, G130, R134, and off-site treatment of groundwater and the separated components of leachate. Additional costs for the expanded list of groundwater parameters is also shown on the revised cost estimate.

TABLE 6-1
LEACHATE PARAMETERS
(Determination of Material Compatibility)

Waste Material	Recommended Analyses
Leachate (Whole)	pH Chlorides Priority Pollutants Percent Acidity or Alkalinity FOG Hydrocarbons
Light Fraction Organics	pH Chlorides Priority Pollutants Percent Acidity or Alkalinity FOG Hydrocarbons Water Content
Solids Fraction	pH Chlorides Priority Pollutants Percent Acidity or Alkalinity FOG Hydrocarbons Water Content
Solvent Fraction	pH Chlorides Priority Pollutants Percent Acidity or Alkalinity FOG Hydrocarbons Water Content

TABLE 6-2
LARAWAY RECYCLING AND DISPOSAL FACILITY
RCRA POST-CLOSURE COST ESTIMATE

ITEM	DESCRIPTION	UNIT	RATE	NUMBER OF UNITS	NUMBER OF TIMES	TOTAL
1	Mow and Fertilize Annually	Per Acre	$90	55	30	$148,500
2	Dress and Re-seed of cover (1st & 2nd year after closure)	Per Acre	$875	2	2	$3,500
3	Dress & Re-seed 3% of cover (7th, 12th, 17th, 22nd, & 27th year after closure)	Per Acre	$875	1.65	5	$7,219
4	Inspect Cover					
	Quarterly 1st & 2nd year	Per Inspection	$250	1	8	$2,000
	Semi-annual 3rd - 30th years		$250	1	56	$14,000
5	Groundwater Monitoring (38 wells, quarterly, 28 years)					
	Analysis	Per Sample	$670	38	112	$2,851,520
	Sampling	Per Well	$120	38	112	$510,720
6	Leachate Monitoring (12 samples annually)	Per Sample	$83	12	360	$360,000
7	Maintenance - Fence & Gates	Yer Year	$1,000	1	30	$30,000
8	Leachate Management					
	Transporation - Vehicle (1)	Per Vehicle	$80,000	1	4	$320,000
	Transportation - Labor (1)	Annual Salary	$29,600	1	30	$888,000
	Disposal (2)	Per Gallon	$0.042	763000	30	$961,380
9	Inspect Gas & Leachate Systems - Annually	Per Inspection	$5,000	1	30	$150,000
10	Corrective Action					
	Pump Groundwater (3)	Per Well	$175	5	12	$10,500
	Appendix I Analysis	Per Sample	$1,165	15	1	$17,475
	Cover Inspection/Certification	Per Inspection	$250	10	1	$2,500
11	Leachate Pre-Treatment (4)	Per Year	$40,000	1	30	$1,200,000
	TOTAL POST-CLOSURE COSTS (5)					$7,477,314

(1) Based on Laraway's owning a tractor & trailer with a useful life of 7.5 years. Labor to be provided by a full-time Laraway employee.
(2) Disposal cost for leachate supported in original RCRA Part B Permit application and adjusted for inflation.
(3) Assumes corrective action will be complete after 12 months of groundwater pumping. Appendix I list to be analyzed one time on impacted wells and adjacent wells. Installation of enhanced gas and/or leachate system components considered routine operation/maintenance. Cost allowance is for cover repair inspection/certification.
(4) Cost for construction of pre-treatment system is considered routine capital investment cost. Post-closure cost includes annual cost for operation and maintenance of the system.
(5) Financial assurance documentation provided annually, most recently provided 3/28/92.

6.3 Post-Closure Inspections

The following inspection activities will be added to the current permitted inspection program.

1. Visually inspect the groundwater remediation system each time water level measurements are obtained.

2. Inspect the components of the leachate pre-treatment process. Check for material and/or standing water and/or evidence of leakage in containment systems, around tanks, and below piping and valves. Note deterioration/corrosion/erosion to any tanks and/or piping and/or protective coatings on containment systems. This inspection will be conducted each time the process is used.

   Inspect the accumulation tanks and associated secondary containment. Check for any accumulation of standing water (from precipitation) and arrange for removal. Check for evidence of leakage. Investigate all breaches within 24-hours of occurrence and correct problem as soon as practicable. These inspections will occur daily whenever the accumulation tanks are being used.

   Check for blockage in the tank vents. This inspection will be conducted weekly.

6.4 Preparedness and Prevention

The two activities discussed in this Permit Modification application require slight modifications to the preparedness and prevention plan. Portable telephones and/or two-way radios will be available during R29D groundwater remediation events.

A telephone will be installed in the leachate pre-treatment area. Sufficient aisle space will be maintained inside the pre-treatment area and between accumulation tanks to allow for easy inspections and rapid response to emergencies.

Letters describing the current activities at Laraway will be sent to the local authorities upon approval of this Permit Modification. The purpose of the letter is to familiarize emergency teams with the site layout and potential hazards.

6.5 Training

The inspection, maintenance, and monitoring activities conducted during the post-closure care period including the groundwater remediation and leachate pre-treatment described in this RCRA Part B Post-Closure Permit Modification application will be conducted by individuals trained in the review, evaluation, and performance of a particular task associated with each program element. The inspections, remediation, and pre-treatment activities will be conducted under the guidance of the General Manager.

Because the hazardous waste units are under post-closure, the potential for exposure to hazardous waste and hazardous waste constituents is minimal. Only the activities associated with the leachate and gas control systems and the R29D groundwater remediation program pose the potential for exposure. Therefore, the individuals involved in operating, inspecting and/or repairing the leachate and gas control systems, the leachate pre-treatment system, and the groundwater remediation program will be required to be trained in accordance with 29 CFR Part 1910.120. This applies to both Waste Management personnel and independent contractors.

At least three levels of basic training will be utilized in order to ensure compliance with the Post-Closure Part B Permit and to protect site workers. The first and most elementary training mechanism will be provided to all persons conducting post-closure work, inspections, and/or maintenance at the closed Laraway facility. This will be accomplished by issuing a handout to these individuals which explains the history of the site, describes the kinds of wastes managed, explains the monitoring mechanisms, and alerts the reader of potential problems. Figure 6-3, found at the end of this section, is a sample of the type of handout which might be used.

The second level of training involves the utilization of a WMII trained employee during post-closure activities including groundwater remediation around R29D and leachate pre-treatment. This individual (Inspection/Operation Technician) will be physically present during all critical work, inspection, and/or maintenance activities at the site. He/she may conduct portions of the work, inspections, and/or maintenance or he/she will oversee others performing the work. Figure 6-4, found at the end of this section, presents the job description for the Inspector/Operator Technician.

The Inspection/Operation Technician will have completed a formal training program in accordance with the requirements of 29 CFR Part 1910 and will participate in annual training updates. In addition to formal classroom training, the Inspection/Operation Technician will have received relevant on-the-job training. He/she will be familiar with Laraway's Post-Closure Contingency Plan, its monitoring systems, the physical features of the site, and relevant conditions of the Post-Closure Part B Permit. He/she will have access to site communications and will make emergency contacts as necessary should an emergency occur during post-closure work, inspections, and/or maintenance at the site.

Figure 6-5, found at the end of this section, is an outline of the minimum training components for Laraway's Post-Closure Inspection/Operation Technician. No Inspection/Operation Technician will be assigned to Laraway until he/she has completed the formal 29 CFR Part 1910 training and the site specific training. The individual operating the leachate process will initially receive a minimum of 16 hours training/supervision on the procedures for operating the leachate process and a minimum of eight hours annual retraining thereafter. The Inspection/Operation Technician's training records will be maintained at Laraway.

The third level of training is through WMII Corporate support which oversees/directs the training of site workers, supervisors, and professionals. Instruction, guidance, and training is available from skilled individuals who are trained and educated in various aspects of hazardous waste management. Training support can be provided by industrial hygienists, chemists, engineers, and other scientists. In addition to WMII staff, independent firms which specialize in hazardous waste training are frequently utilized for third level training. Benefits of this level of training support will be realized through the annual training provided to Laraway's Inspection/Operation Technician. Additional training support at this level will be utilized on an as-needed basis.

FIGURE 6-3

INFORMATION ABOUT LARAWAY
FOR WORKERS INVOLVED IN POST-CLOSURE ACTIVITIES

INFORMATION ABOUT LARAWAY
FOR WORKERS INVOLVED IN POST-CLOSURE ACTIVITIES

SITE BACKGROUND

Laraway (formerly ESL) operated a solid and hazardous waste landfill at Laraway and Patterson Roads, near Joliet, Illinois since 1972. In addition to landfilling, some treatment of hazardous waste occurred at the site. Areas used to store hazardous waste prior to treatment and disposal were also considered hazardous waste units. The Site Map attached to this handout identifies the locations of the hazardous waste activities. All hazardous waste operations at the site ceased in 1983.

From 1988 until the present, limited landfilling has occurred with municipal incinerator ash being the only material landfilled. This activity occurred in Trench 11 and is currently being filled in the Redesign Area. Metal salvaging from a portion of the ash is also occurring on-site. These areas are identified on the Site Map and are permitted by the Illinois Environmental Protection Agency (IEPA).

Although active hazardous waste management no longer occurs at the site, Laraway is strictly regulated by IEPA and operates under a hazardous waste permit called a RCRA Part B Post-Closure.

HAZARDOUS WASTE MANAGED

Laraway accepted hazardous wastes from a variety of industries including manufacturing, petrochemical, steel, and utilities. The hazardous characteristics of the wastes accepted included heavy metals, ignitability, and corrosivity. Some waste materials are automatically considered hazardous due to the process by which it is generated. Laraway accepted some of these "listed" wastes as well. Examples of listed wastes accepted include wastewater treatment sludges from electroplating operations; various solvents used in degreasing; and emission control dust from steel production.

Much of the material accepted at Laraway was from clean-up activities and generally consisted of soil contaminated with low concentrations of hazardous materials.

Areas 1 and 2 were co-disposal landfills. Co-disposal, a common practice prior to the 1980's, disposed of both hazardous waste and solid waste in the same landfill. Drummed wastes were disposed of in trenches 1 through 10.

MONITORING SYSTEMS

There are several monitoring and management systems in place at Laraway to ensure against adverse affects to human health and the environment. Circling the closed RCRA disposal areas is a system of thirty-eight groundwater monitoring wells. Samples of groundwater are obtained from each of these wells on a regular basis. The samples are analyzed for an extensive list of organic and inorganic parameters. The data is provided to the Illinois Environmental Protection Agency for review and approval. There have been two localized conditions which have resulted in low level organics being detected in two monitoring wells. To correct the localized conditions, WMII pumps groundwater near these two wells and treats the water off-site.

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Mechanisms are in place to ensure security of the site, to respond to emergencies, and to perform regular inspections and maintenance.

PRECAUTIONS

Workers are reminded to conduct safe and sound work consistent with normal industrial practices for the specific type of work. Site specific precautions and observations are noted:

- In any emergency, notify Laraway's Inspection Technician (IT) immediately.
- Report unusual or abnormal smells to the IT. A faint methane aroma is normal.
- Report seeps or breeches in the landfill cover to the IT.
- Report breeches in the security system to the IT. Always report when entering or leaving the site.
- Report unusual observations (e.g., flares not burning, monitoring wells disturbed, abnormal wildlife activities).

FIGURE 6-4

POSITION DESCRIPTION
INSPECTION/OPERATION TECHNICIAN

POSITION DESCRIPTION
INSPECTION/OPERATION TECHNICIAN

POSITION TITLE: Inspection/Operations Technician

REPORTS TO: General Manager

BASIC FUNCTION:

- Proper operation of equipment involved in process operation.
- Inspection of leachate and gas control systems, leachate process systems, and/or groundwater remediation system
- Inventory control & sampling of leachate

SPECIFIC DUTIES AND RESPONSIBILITIES:

- Operate equipment involved in loading, unloading leachate materials and in pumping (remediation) groundwater
- Operate API Separator unit and/or groundwater pumping equipment and/or gas management system
- Perform routine system and equipment maintenance and inspections for leachate/gas control and leachate process equipment and/or groundwater remediation system
- Perform routine sampling and/or field analyses

SKILLS, EDUCATION AND QUALIFICATIONS:

- High school education
- Mechanical aptitude
- Good health

8/14/92

FIGURE 6-5

TRAINING OUTLINE FOR INSPECTION/OPERATION TECHNICIAN
FOR LARAWAY POST-CLOSURE ACTIVITIES

TRAINING OUTLINE FOR INSPECTION/OPERATION TECHNICIAN FOR LARAWAY POST-CLOSURE ACTIVITIES

I. Introduction to RCRA Regulations and Responsibilities
   A. What is RCRA
   B. Overview of regulations and responsibilities
   C. Legal responsibilities of the individual and penalty provisions

II. Waste Inventory

III. Material Compatibility

IV. Management of Hazardous Waste
   A. Proper labeling, marking and packaging
   B. Inspections of the Hazardous Waste Accumulation Areas
   C. The Hazardous Waste Manifest

V. Responsibilities and Duties of the Emergency Coordinator
   A. Authority to commit resources
   B. Alert facility personnel
   C. Assess the emergency
   D. Notify authorities
   E. Provide for proper treatment, storage and disposal of residue
   F. Record incident in operating record
   G. Submit written report to regulatory agency

VI. General Emergency Action Guidelines
   A. Fires
   B. Explosions
   C. Discharge/Emissions

VII. Evacuation
   A. Alarm signal
   B. Evacuation route
   C. "Head Count"

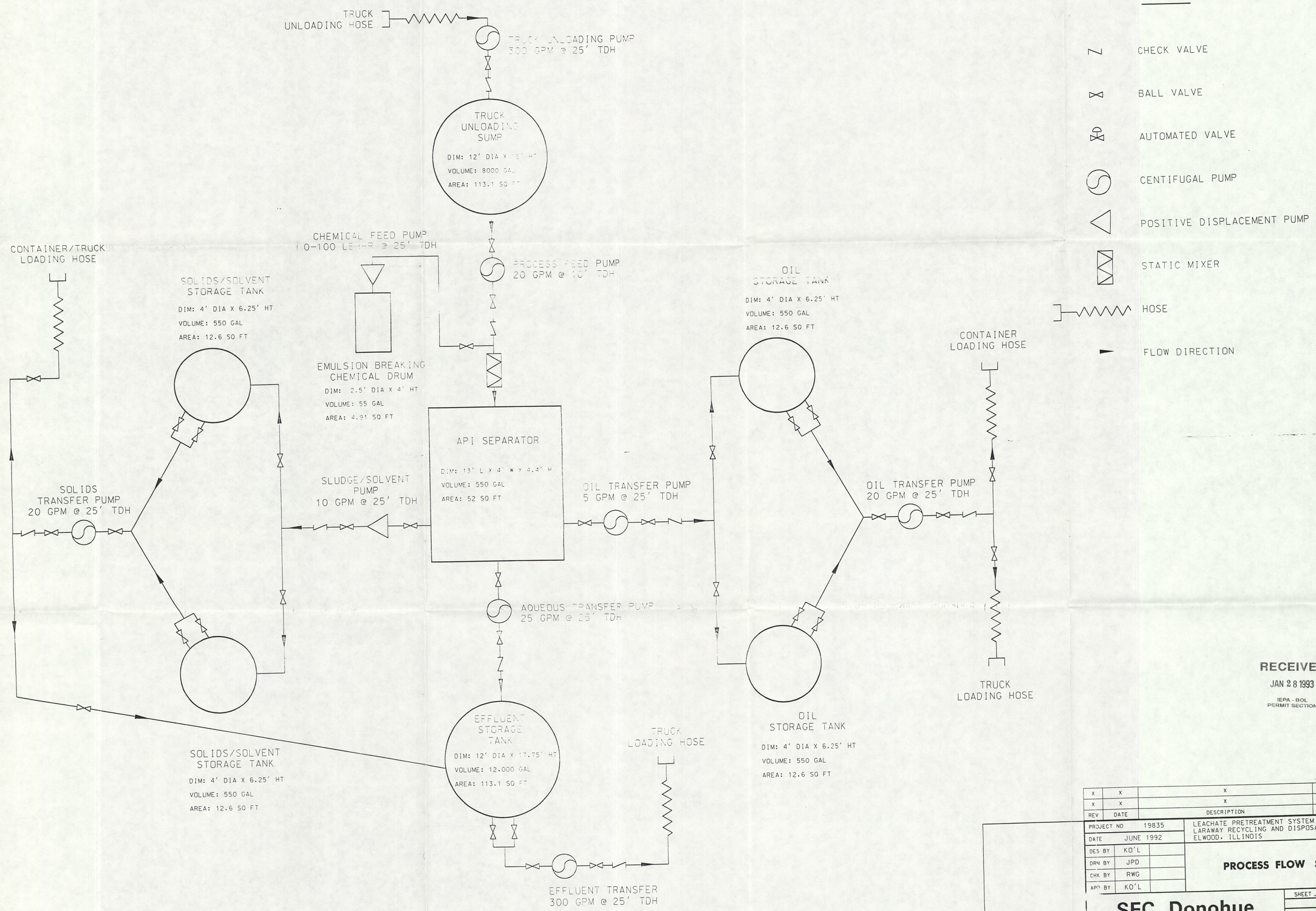
TRAINING OUTLINE FOR INSPECTION/OPERATION TECHNICIAN
FOR LARAWAY POST-CLOSURE ACTIVITIES (Cont'd)

VIII. Emergency
- A. Location
- B. How to use
- C. Limitations and capabilities
- D. Inspections, repair, and replacement

IX. Operation of Leachate Process
- A. Personal protective equipment requirements
- B. Inspection Schedule
- C. Spill control and reporting requirements
- D. Process operation and maintenance procedures
  1. Process description/function
  2. Operation of process equipment
  3. Sampling & analytical requirements
  4. Equipment safety
  5. Material handling
- E. Personnel/Equipment decontamination procedures

X. Operation of Groundwater Remediation Processes
- A. Personal protective equipment requirements
- B. Inspection Schedule
- C. Spill control and reporting requirements
- D. Process operation and maintenance procedures
  1. Process description/function
  2. Operation of pumping & collection equipment
  3. Sampling & analytical requirements
  4. Equipment safety
  5. Material handling
- E. Personnel/Equipment decontamination procedures

XI. Shutdown of Operations
- A. Notification
- B. Monitoring conditions



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PERMIT SECTION

ALL DRAWINGS ARE NOT TO SCALE EXCEPT WHERE NOTED.

REV	DATE	DESCRIPTION	DES BY	APP BY
X	X	X	X	X
X	X	X	X	X

PROJECT NO	19835
DATE	JUNE 1992
DES BY	KO'L
DRN BY	JPD
CHK BY	RWG
APP BY	KO'L

LEACHATE PRETREATMENT SYSTEM
LARAWAY RECYCLING AND DISPOSAL FACILITY
ELWOOD, ILLINOIS

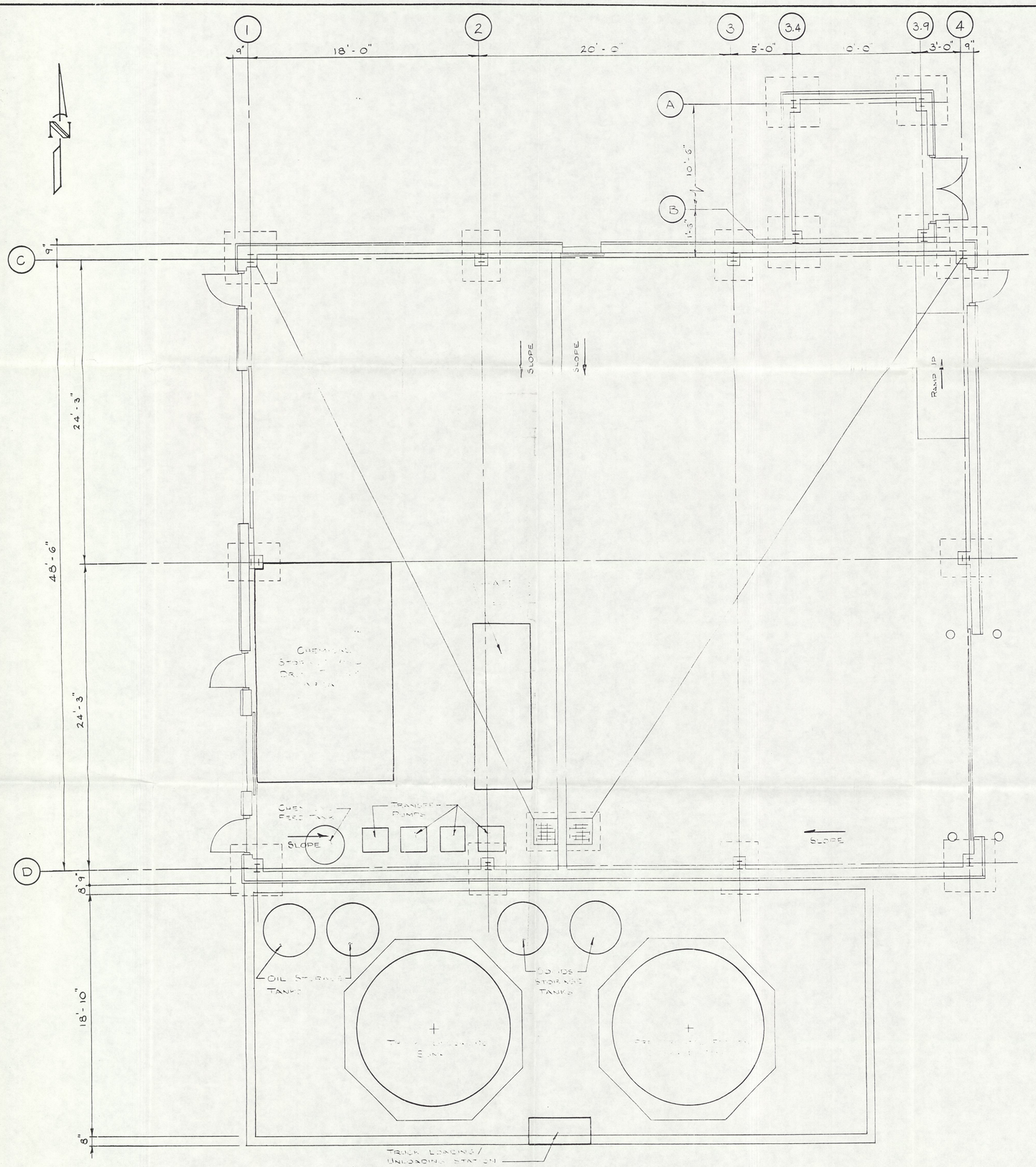
PROCESS FLOW SHEET

SHEET 1 OF 2
DRAWING NO

SEC Donohue
OAK BROOK DIVISION

FIGURE 6-1

FILE NAME: /for/project/training/flow19835.dgn
PLOT DATE: 26-JUN-1992 15:42



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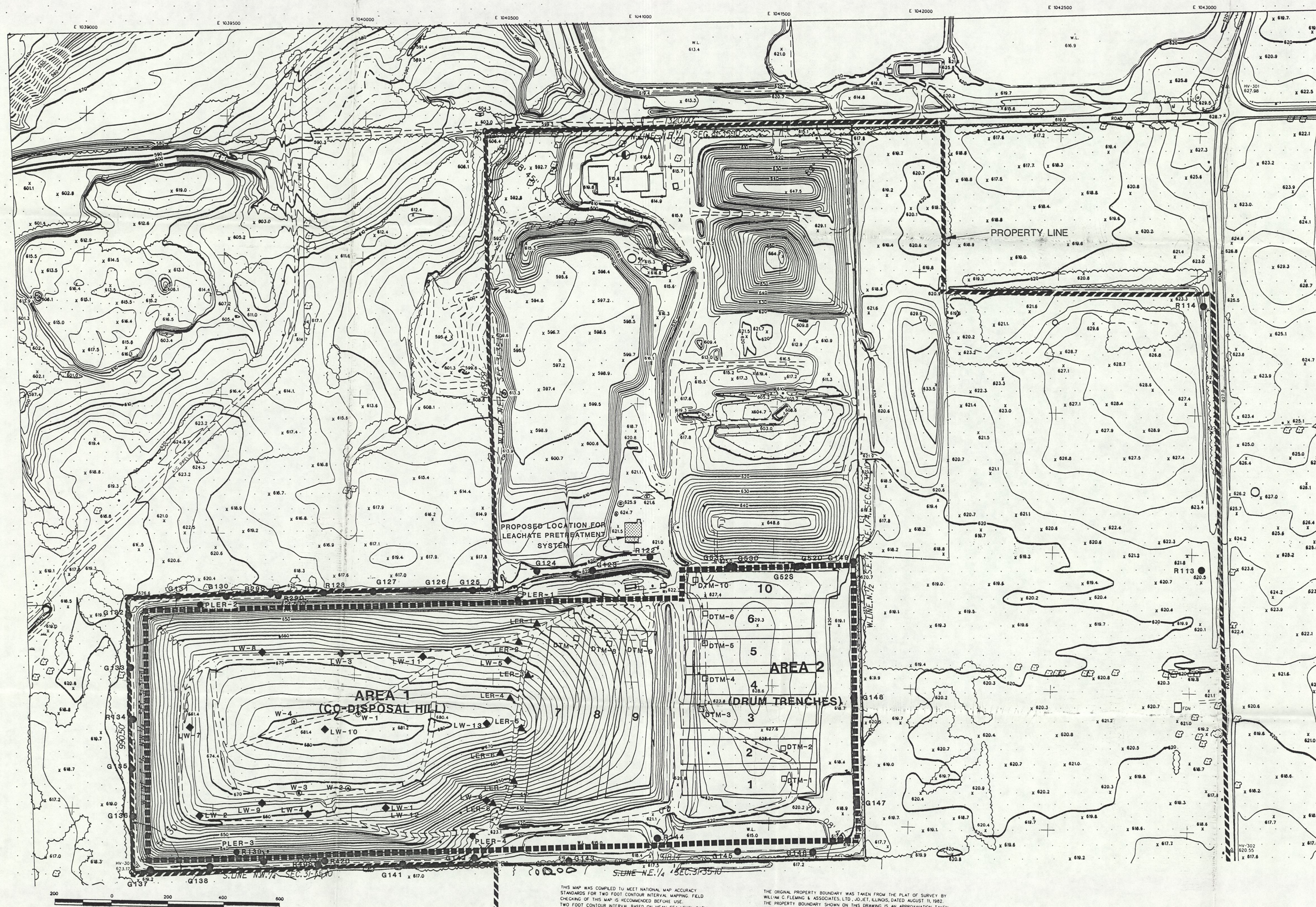
REV	DATE	DESCRIPTION	DES BY	APP BY

PROJECT NO	17835	LEACHATE PRETREATMENT SYSTEM LAKEWAY RECYCLING AND DISPOSAL FACILITY ELWOOD, ILL.
DATE	JUNE 1992	
DES BY	RWG	6/26/92
DRN BY	RWG	6/26/92
CHK BY	RWG	6/26/92
APP BY	KJL	6/26/92

EQUIPMENT GENERAL ARRANGEMENT

SEC Donohue
OAK BROOK DIVISION

SHEET 2 OF 2
DRAWING NO
FIGURE 6-2



SCALE IN FEET

NOTE: DASHED CONTOURS INDICATE APPROXIMATE ELEVATIONS AS DEFINED IN PARAGRAPH 7.1.3.6 OF THE MANUAL OF PHOTOGRAMMETRY, 4TH EDITION.

THIS MAP WAS COMPILED TO MEET NATIONAL MAP ACCURACY STANDARDS FOR TWO FOOT CONTOUR INTERVAL MAPPING. FIELD CHECKING OF THIS MAP IS RECOMMENDED BEFORE USE.
TWO FOOT CONTOUR INTERVAL BASED ON MEAN SEA LEVEL DATUM.
HORIZONTAL DATUM BASED ON ILLINOIS STATE PLANE COORDINATE SYSTEM
DATE OF PHOTOGRAPHY: 4-28-92
DATE OF COMPILATION: MAY 1992
AERO-METRIC ENGINEERING PROJECT NO. 049235
SCALE 1"=200'

THE ORIGINAL PROPERTY BOUNDARY WAS TAKEN FROM THE PLAT OF SURVEY BY WILLIAM C. FLEMING & ASSOCIATES, LTD., JOLIET, ILLINOIS, DATED AUGUST 11, 1982. THE PROPERTY BOUNDARY SHOWN ON THIS DRAWING IS AN APPROXIMATION TAKEN FROM THE JUNE 1991 DRAINAGE AND ACCESS ROAD CONSTRUCTION PLANS DONE FOR LARAWAY RECYCLING AND DISPOSAL FACILITY, ELWOOD, ILLINOIS BY THE ENGINEERING GROUP OF WASTE MANAGEMENT OF NORTH AMERICA, INC.

SCALE IN FEET

NOTE: LOCATIONS ARE APPROXIMATE

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LEGEND

- ● MONITORING WELL LOCATION
- □ DRUM TRENCH LEACHATE MANHOLE (DTM)
- ▲ LEACHATE EXTRACTION RISER (LER)
- ■■■■ HAZARDOUS WASTE MANAGEMENT LIMIT
- ◆ LEACHATE LEVEL OBSERVATION WELL (LW)
- ● PERIMETER LEACHATE EXTRACTION RISER (PLER)
- ⊙ LEACHATE WITHDRAWL WELL (W)

REV	DATE	DESCRIPTION	DES BY	APP BY
	1/26/93	ADDD LEACHATE LOCATIONS		

PROJECT NO 049:35
DATE JULY 19:2
DES BY
DRN BY
CHK BY
APP BY

LARAWAY RECYCLING AND DISPOSAL FACILITY
WILL COUNTY, ILLINOIS

LOCATIONS OF LEACHATE WITHDRAWL POINTS AND LEACHATE LEVEL OBSERVATION WELLS

Waste Management of North America, Inc.
Oak Brook, Illinois 60521

SHEET 1 OF 2
DRAWING NO
FIGURE 6-3